University of KwaZulu Natal

Access to Higher education in the Health Sciences – A

Policy Implementation Analysis

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Access to Higher education in the Health Sciences – A Policy Implementation Analysis

By

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And

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Dedication

To Jamie

The wind beneath my wings

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DECLARATION

I Penelope M. Orton, declare that this thesis titled "Access to Higher Education in the Health Sciences – A Policy Implementation Analysis" is my original work and has not been submitted to any university other than the University of KwaZulu Natal (Durban). The sources of information that I have used in this work have been acknowledged in a complete reference list.

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ABSTRACT

Introduction

Access to health sciences education in South Africa is a challenging and contested area of higher education seeped in politics and history within a context of transformation. There are a large number of students wanting to study health science courses but there are limited places.

The first democratically elected government in South Africa issued White Paper 3: A Programme for the Transformation of Higher Education with a vision of transforming the higher education system to one that was more representative of the country`s demographic profile. However in the absence of any guidelines for the implementation of this White Paper 3, higher education in many instances has not been transformed as the government envisaged.

Aim of the study

The aim of this study was to identify the factors affecting access to health sciences education at universities in South Africa and to develop guidelines to broaden access for social redress.

Research methodology

This study was conducted within a pragmatic paradigm using a mixed methods sequential exploratory design in the complementarity genre. Universities offering traditional health science courses` including medicine were included in the study. The research consisted of 3 Phases – Phase 1 reviewed existing policies and practices through the review of relevant documents; Phase 2 assessed existing practices through one-on-one interviews and Policy Delphi and Phase 3 developed policy implementation guidelines and two policy briefs to broaden access using the information gathered from the literature reviewed and data

collected from stakeholders. The Policy Delphi questionnaire was developed following the analysis of qualitative data collected in Phase 2 and the instrument was subjected to 2 cycles of item content validity index (I-CVI).

Results

The results indicated that achieving equity of access is multi-factorial and has diverse and complex challenges. Some of these challenges are ingrained in South Africa`s apartheid history, some are rooted in the process of access and some in the mind-set of the actors involved in access. The research identified eight categories, promotion of health science disciplines; challenges to transformation; competitiveness; health sciences sets the "bar"; alternative access; reason for choosing a health sciences profession; innovation in teaching and learning and retention and throughput rates which were related to access to health sciences education in universities. The data indicated that the student demographic has changed substantially in Health Science programmes but more could be done. Faculties of Health Sciences need to implement some strategies to reach out to the eligible students in rural and remote areas. Student success in Health science courses is relatively good as would be expected as the selection and admission criteria, is generally higher. Health Sciences at many of the universities are committed to the imperative of transformation for social redress but there are others who are caught between facilitating transformation and overwhelming demand for their programmes. Guidelines for the Implementation of the Access Policy in Health Sciences Education and the Access for Success in Health Sciences Education in Universities Policy briefs were informed by the results.

Conclusion

Universities have implemented a number of initiatives to address the past injustice in higher education access however the issue of enabling access for those who are socio-economically disadvantaged is very much more complex and challenging to address.

Transformation of health sciences education in universities is essential to the transformation of the health service to reflect a health service that is accessible, available, affordable and agreeable, something that every South African citizen

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LIST OF ACRONYMS

CHE   Council on Higher Education

DoH   Department of Health

DoHET   Department of Higher Education and Training

FNIF   Florence Nightingale International Foundation

FTE   Full time equivalent

HEQsF   Higher Education Qualifications sub-Framework

ICN   International Council of Nurses

NQF   National Qualifications Framework

NSC   National Senior Certificate

SAQA   South African Qualifications Authority

SC   Senior Certificate

StatsSA   Statistics South Africa

UCT   University of Cape Town

UKZN   University of KwaZulu Natal

UNESCO   United Nations Education, Scientific and Cultural Organization

WHO   World Health Organization

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter makes the case that access to higher education, particularly for previously disadvantaged groups, remains a challenge. There will be a special focus on access to higher education for health professionals' education in light of the health care related needs faced by South Africans.

1.2 Background

Education is a catalyst for reducing inequality (Haralambos, 1985) and higher education is essential for the development and sustainability of societies. Education helps to reduce poverty, assists in narrowing extreme inequality, and improves public health services (CHSE, 2008; Bloom, Canning & Chan, 2006). Unequal education opportunities perpetuate inequalities in income, health and other life possibilities and traps people in poverty and inequality (UNESCO, 2008). Education is an important driver of economic development and productivity which, in knowledge-driven societies, can make the difference between a country being rich or poor (UNESCO, 2008). At the 1998 World Conference on Higher Education in the Twenty-First Century: Vision and Action, higher education was identified as an essential component of the sustainable development of individuals, communities and nations (UNESCO, 1998). Higher education is an important determinant of individual benefits such as personal development, social status, career possibilities, and lifetime earnings (CHSE, 2008; James, 2007; Forsyth & Furlong, 2000).

The African Union, a Pan African continental organisation, regards education as an significant mechanism in achieving its vision of an

> *integrated, prosperous and peaceful Africa driven by its own people to take its rightful place in the global community and knowledge economy* (Woldetensae, 2013).

The African Union identified higher education as a focus area of the Second Decade of Education for Africa 2006 to 2015 and sought to revitalise higher education in Africa in an effort, amongst others, to appreciably raise educational achievements including access, quality, efficiency and relevance (African Union, 2005). Education has been an important driver in uplifting people who were denied educational opportunities in South Africa prior to democracy in 1994. Higher education carries considerable responsibilities in South Africa, where citizens see this as making a significant contribution to social and economic development.

1.2.1 South Africa's plans for higher education transformation

Emerging democracies face considerable challenges in the design and implementation of social policy, such as that of education. The legacy of the country's colonial and apartheid past has left an indelible scar on the education of the majority of her citizens, many of whom were denied access to quality programmes. The post-apartheid South African government places education as an important determinant in addressing poverty. The first democratically elected government in South Africa developed the Education White Paper 3: A Programme for the Transformation of Higher Education which identified a vision "of a transformed, democratic, non-racial, and non-sexist system of higher education" (Department of Education, 1997, p. 6). This vision included equity of access, the fair chance of success to all citizens who want to achieve their potential through higher

education, elimination of any unfair discrimination, and advancing redress for past inequalities (Department of Education, 1997). The White Paper 3 (1997) further recognised that higher education opportunities needed to extend to people who were denied access under apartheid, from low socio-economic backgrounds, women and those who had missed the opportunity post-democracy as they had passed the age where one traditionally accessed higher education. This White Paper 3 (1997) provided the framework for the changes needed to overcome the fragmentation, inequality and inefficiency of the past higher education system (p.2).

Higher education transformation, as envisaged in the White Paper 3 (1997), did not occur as quickly as desired and no implementation guidelines had been included in the White Paper 3 (Fourie, 2001). The policy implementation vacuum that followed the release of the White Paper 3 was largely due to the incremental implementation approach adopted within a broad transformation agenda that lacked clear implementation and funding guidelines (Department of Education, 2001). There were a number of unintended consequences as a result of this lack of an implementation guideline, one of which related to equity and redress (Department of Education, 2001). As a result of on-going analyses of trends in higher education, the National Plan for Higher Education (2001) was developed, which defined the framework and methods for implementing and achieving the policy goals of the Education White Paper 3. The policy framework of the National Plan was based on the framework, goals, values and principles outlined in the White Paper 3. Professor Kader Asmal, the Minister of Education in the South African government at the time, stated "The National Plan therefore provides the strategic framework for re-engineering the higher education system for the 21st century" (Department of Education, 2001, p.2). The National Plan for Higher Education (2001) consisted of seven sections of which two relate to this study: 1) Producing the graduates needed for social and economic

development in South Africa and 2) Achieving equity in the South African higher education system. The White Paper for Post School Education and Training, released 12 years later, reinforced the transformation agenda and undertook to address inequalities in access with respect to socio-economic status, race, gender, geographical location, age, disability and HIV status (DoHET, 2013).

1.2.2 Access and success of disadvantaged populations in higher education

Students from low socio-economic groups are under-represented in higher education throughout the world (Asplund, Adbelkarim & Skalli, 2008; Bibbings, 2006), and their success in higher education has become increasingly important as countries try to widen participation in their higher education systems (Bowden & Doughney, 2009; Yorke & Thomas, 2003). There are a number of reasons given for the low participation of students from low socio-economic groups including low aspiration for higher education (James, 2002), poor school academic achievement (Millward, Turner & van der Linden, 2012), poverty (Yang, 2010; Astin & Oseguera, 2004) and first generation university student (Pascarella, Pierson, Wolniak & Terenzini, 2004).

According to the South African census (2011), Black Africans make up 79.2% of the total population, 8.9% Coloured, 2.5% Asian/Indian and 8.9% White (Statistics South Africa, 2012). The 2011 Census reported 69.4% of students enrolled higher education programme were Black African, 5.4% Coloured, 5.6% Asian/Indian and 19.7% White (Statistics South Africa, 2012). But when looking at participation rates, which are defined as total head count of young students (ages 20 – 24), enrolled in higher education divided by the total population, Black African and Coloured populations have participation rates of 14% each and Asian/Indian and Whites have participation rates of 47% and 57% respectively clearly

indicating a mismatch. Equity in higher education remains problematic despite a number of measures to address this, including but not limited to financial aid policies, access policies, race and gender equity goals, and recognition of prior learning policies, all of which are attempts to level the playing field and redress the past inequalities. However, the South African Higher Education Management System (HEMIS) data shows incremental increases in overall participation rates of young people (ages 20-24) overall from 14.1% in 2001 to 16.7% in 2008 and 18% in 2010.

Throughput is also an issue. While the White paper 3 required both equity of access and equity of outcomes (Department of Education, 1997) it intended to prevent the 'revolving door' syndrome, where students who did not have a chance of success were admitted but drop out or fail and do not complete their degree (Department of Education, 2001). This was done in recognition of South African universities having poor retention and pass rates (CHE, 2013; DoHET, 2013; Strydom, Mentz & Kuh, 2010; Scott, Yeld & Hendry, 2007) with a success rate (includes retention and progression to the next level) of 74% in 2010 compared with the required national norm of 80%, and a graduation rate of 15% against the national norm of 25% for students in three year degree programmes (DoHET, 2013). In this regard, the Department of Higher Education and Training (2013) reports that well under a third of students complete their degree in regulation time and one in three completes within four years.

The low graduation rates seen in South African universities are largely racially differentiated, with Black African students graduating at lower rates compared with White students, which negates some of the gains made by the increased access of the former

group (Scott, Yeld & Hendry, 2007). Parker and Van Staden (2013) report a dropout rate of 55.7% among Black African students, compared to 41.6% among White students, who were enrolled in four year professional degrees over a five year period.   This is in comparison to the average national higher education sector dropout rate of 50.8% and a graduation rate of 49.2% over the same five year period. Access for success is a concept that universities have to keep in mind when deciding on access for transformation. Student access is inextricably linked to successful completion of university education.

The Council on Higher Education (CHE) (2013) recommended that in order to meet the needs of the country for social and economic development, an overall higher education participation rate of 23% of young adults is necessary. The decrease in White student enrolment was not government policy and the Department of Education has stated emphatically that the achievement of equity will not be at the expense of White students (Department of Education, 2001, p.33). Despite the changes in racial distribution in higher education, this has not translated into greater participation by young adult Black African students. Changes in the student demographic profile is possibly due to a decrease in White enrolment and not an increased participation to any meaningful level by Black African students (CHE, 2013). Despite changes in the student demographic profile, higher education in South Africa remains accessible to a small and elite group, albeit with the gap between those who have access to higher education and those who do not having decreasing (Cloete, 2007).

1.2.3 Health-related challenges in the early part of the 21ˢᵗ Century

As a country challenged by the burden of HIV/AIDS, communicable and non-communicable diseases, violence and injuries that result in high morbidity and mortality rates, South Africa needs well educated and skilled, competent health care professionals to improve health outcomes (Department of Health, 2013; Mayosi, Flisher, Lalloo, Sitas, Tollman & Bradshaw, 2009; Bradshaw et al., 2003). This changing landscape of disease is leading to new priorities and the South African National Department of Health is committed to ensuring an appropriately trained and sustainable health workforce (Department of Health, 2011; Frenk et al., 2010). South Africa has a mal-distribution of health care professionals between provinces, private and public health sectors and rural and urban communities, which impacts on equity of access to health care for those requiring these services. (Ditlopo, Blaauw, Bidwell & Thomas, 2011; Department of Health, 2011; George, Quinlan & Reardon, 2009; Loewenson & Thompson, 2003). Nurses play an essential role in addressing these needs and the Ministry of Health acknowledges this role in realizing the goal of "a long and a healthy life for all South Africans" (Department of Health, 2013, p. 16). Educating and training programmes for health care professionals including nurses, medical doctors, pharmacists, occupational therapists, physiotherapists and others need to address changing health indicators and the environments in which there is limited access to health care.

1.2.4 Health outcomes and qualified health professionals

The availability of health care professionals has been shown to positively correlate with improved health outcomes (Rawat, 2012). The shortage of health professionals throughout the world will have a negative impact on all countries ability to achieve the Millennium

Development Goals (MDG`s) by 2015. Eight MDG`s were set out by the United Nations (United Nations, 2005) in 2000 and adopted by 189 member states, including South Africa, with three referring directly to health:

1. To reduce infant and under-5 mortality by two thirds

2. To reduce maternal mortality by three fourths and

3. To halt and reverse HIV/AIDS, tuberculosis and malaria epidemics (International Council of Nurses & Florence Nightingale International Foundation, 2013).

The inability to meet the eight MDG`s may be due to there not being enough of a particular health profession and/or to their mal-distribution. However, unless education for health sciences is designed to meet the health system needs, countries will have problems delivering accessible, affordable, available and acceptable health care (WHO, 2013; Frenk et al., 2010)

Frenk et al. (2010) reported an incongruence between health care professional`s competence and the needs of the population they serve, and that health science institutions must therefore take cognizance of healthcare needs to ensure an adequate supply of competent Practitioners. South Africa needs a health workforce that is well equipped to deal with and understand the health priorities of the communities they serve.

1.2.5   Shortage of all health professionals

There is a shortage of all cadres of health care professional including nurses, physiotherapists, occupational therapist, pharmacists, medicine practitioners, speech and language therapists and audiologists, all of whom are essential components of the health

care team and all in short supply (WHO, 2013; Kuehn, 2007). Frantz (2007) reported that in 2000 it was estimated that developed countries had a physiotherapist to population ratio of 1:1 400, while in developing countries this ratio was 1:550 000. In 2011, Mars reported that the South African public health care sector had 2.5 physiotherapists and 2 occupational therapists per 100 000 population.   As with nursing, medical and dental professionals, physiotherapists in Australia are reported to be ageing, with 41% of those in practice in 2001 being predicted to retire by 2026 (Schofield & Fletcher, 2007). This pattern of ageing health care professionals is a worldwide phenomenon and is predicted to seriously reduce the capacity of many countries to address the health care needs of their populations.

Pharmacists comprise the third largest health care professional group globally, and their unequal distribution between developed and developing countries has serious ramifications for delivering health care to many millions of people (Rennie & Anderson, 2013; Hawthorne & Anderson, 2009). South Africa has a severe shortage of pharmacists (Rothmann & Malan, 2011) with Dr Aaron Motsoaledi, the National Minister of Health, recently saying that 90% of hospitals in rural areas do not have a qualified pharmacist (SABC, 2013). South Africa has approximately 450 new graduates in pharmacy per year, with 1 200 being needed (Manana, 2013), one reason being the constraint on the number of prospective students who can be accommodated at universities. As a result, the South African Deputy Minister of Higher Education and Training addressing the 1st National Pharmacy Conference appealed to all stakeholders to co-operate with each other to ensure an increase in graduates (Manana, 2013).

South Africa is also experiencing a shortage of nurses across all healthcare services (Department of Health, 2013), which is not confined to this country, as there is a worldwide shortage of nursing professionals (Oulton, 2006; Brodie, Andrews, Andrews, Thomas, Wong & Rixon, 2004). In many countries, this shortage is compounded by an ageing nursing workforce and a reduced recruitment into the profession (International Council of Nurses & Florence Nightingale International Foundation, 2013; Littlejohn, Campbell, Collins-McNeil & Khanyile, 2012). In South Africa, 43.7% of registered professional nurses are over the age of 50 years, and will retire at a rate of 3 000 per year for the next 10 to 15 years (Department of Health, 2013). Although the 2011 output of registered nurses graduating from the 4 year professional nurse programme was 2 966, it is reported that 40 % of those graduates choose not to register as nurses (Department of Health, 2013).

While the nursing profession is the largest single group of health care professionals in the health system and critical to the efficient and effective delivery of health care, it is in the midst of a crisis which prompted the Minister of Health to call for a Nursing Summit which was held in April, 2011 (Department of Health, 2013). The theme of the summit was: *Reconstruction and Revitalising the Nursing Profession for a Long and Healthy Life for all South Africans* (Department of Health, 2013, p. 15) and it sought to highlight the concerns of nurses regarding the future of their profession in meeting the healthcare needs of South Africa.

1.2.6   Health professionals' education programmes

The World Health Organization (2005) outlined a set of core competencies that they believed should form the framework for all training programmes, complement those already there, and make the health care professional more responsive to the needs of those with chronic diseases. South Africa needs to educate health care professionals who are appropriate, accessible, affordable and acceptable to the communities that they serve. In many instances, these graduates should come from the communities in which they will return to work, which in the South African context refers to students from low socio-economic groups and those of rural origin, these often being intertwined in South Africa. Attention to this would go some way to achieving equity in the South African higher education system as well as address some of the inequities of the past. Admission criteria for university health science programmes are usually developed by the Faculties or Schools of Health Science, and approved by University Senates. These criteria need to be informed by the transformation agenda of the South African government (DoHET, 2013) and the university`s commitment to transformation and redress. Other considerations include the human resources for health needs of the country, in some instances the professional boards of the various health professions and the academic proficiency required to pursue a health science professional degree. In addition, degree completion in regulation time affects the nature of the government subsidies universities receive for each student (CHE, 2013; Ministry of Higher Education & Training, 2009). Student success in regulation time refers to the throughput rates of universities within a specified time, and is considered a measure of effectiveness and efficiency of the higher education system (CHE, 2013). This results in admission policies considering students ability to graduate in the regulation time as a selection criteria, requiring higher school leaving grades to access the health sciences programmes. For example, research has shown that school leaving grades

are good predictors of success in the first year of university, although in the South African context this may be disputed in light of the manipulation of the scores in the National Senior Certificate (NSC) (Monyooe, Tjatji & Mosese, 2014; Mouton, Louw & Strydom, 2013; Mouton, Louw & Strydom, 2012; Naidoo, 2004). Faculties may therefore increase the required grades in the NSC to try and ensure student success which has the potential to exclude large numbers of prospective students who do not meet the criteria.

The four year Health Sciences degrees, with the exception of medicine and dentistry, had a graduation rate of 36% in regulation time (CHE, 2013). This is marginally better than the national average recorded for the three year degrees (29%), and may be due to the higher academic requirements students need to meet in order to be selected for health science programmes (CHE, 2013).

1.2.7   Nursing education programmes and the need for university education

Nursing education in universities is not the preferred system in South Africa, with just under 25% of professional nurses being educated in these programmes, the majority preferring Colleges of Nursing, which fall under the auspices of the Department of Health rather than the Department of Higher Education and Training. While this cadre of nurse is important, nurses trained at universities contribute to the continued professionalization of nursing, improved patient outcomes and the sustained growth of the nursing body of knowledge. In addition, the changing health care milieu requires an increase in graduate professional nurses (Raholm, Hedegaard, Lofmark & Slettebo, 2010; Kapborg, 1998).

Patient outcomes are improved when hospitals have greater numbers of university educated nurses. Aiken, Clarke, Cheung, Sloane and Silber (2003) reported a 5% decrease in surgical patient's mortality and failure to rescue for every 10% increase in baccalaureate educated nurses. Nurses have to make complex decisions about individualised patient care in a great variety of settings, and university education prepares them for problem solving, reflection, decision making and the ability to use deductive and inductive learning strategies that are all required for clinical decision making (Raholm, Hedegaard, Lofmark & Slettebo, 2010; Brodie, Andrews, Andrews, Thomas, Wong & Rixon, 2004). Nurses are increasingly practising as independent practitioners and involved in developing individualized care for patients, requiring increased knowledge and skills and therefore a higher level of education (Idvall et al., 2012; Kubsch, Hansen & Huyser-Eatwell, 2008; Waters & Easton, 1999; Redfern, 1996). With South Africa's very high HIV prevalence, estimated to be 12.3% in 2012 (Van der Linde, 2013), it has become necessary to engage nurses in task shifting to cope with the enormous treatment burden this has presented, requiring nurses to have higher levels of education (Fairall et al. 2012; Zachariah et al. 2009). Recruitment and retention of new nurses with university education is therefore crucial to the sustainability of a competent, skilled and knowledgeable nursing workforce.

To summarize, in South Africa, there is a tension between transformation policy expectations, student success, and funding of higher education in a context of university discretionary authority and institutional autonomy. Despite robust transformation policies, the lack of implementation guidelines has meant its universities invoke issues of autonomy when implementing selection criteria, and in so doing, may create barriers to access for disadvantaged students.

1.3 Statement of the problem

Despite a number of policies that address the transformation of higher education in South

Africa, access to higher education by specific groups of students, Black African, female

and disabled people, ages 18 – 24 remains a challenge (DoHET, 2013). The reasons for

this slow pace of transformation could be due to differences in policy implementation,

definition and execution thereby highlighting the tension between the policy developers,

who are often politicians, and the administrators who implement them (deLeon & deLeon,

2001).

Many countries are addressing similar problems of inequality of access to higher

education, but often with access for minority populations (Chowdry, Crawford, Dearden,

Goodman & Vignoles, 2013; Altbach et al., 2009; CHSE, 2008; Guri-Rosenbilt et al.,

2007). South Africa`s dilemma is enabling transformation in access for the majority Black

African population who had limited access due to previous political policies (CHE, 2010;

Bunting, 2008).

In 2006, the WHO suggested that the main objective of health workforce development

should be to produce sufficient numbers of skilled workers with the requisite competencies

whose background, language and social attributes make them accessible and able to extend

their work to populations who are diverse in respect of their socio-cultural and

demographic features. There is a critical shortage of health care professionals, not just in

South Africa but worldwide (Deloitte, 2013; WHO, 2013), with the WHO estimating a

deficit of 12.9 million skilled nurses, midwives and physicians by 2035. A report

published in 2013 entitled *the universal truth: no health without a workforce* indicated that there can be no health without a competent, skilled accessible, quality health care workforce (Global Health Workforce Alliance & World Health Organization, 2013). Dr Marie-Paule Kieny, WHO Assistant Director-General for Health Systems and Innovation, said at the Third Global Forum on Human Resources for Health in November 2013:

"The foundations for a strong and effective health workforce for the future are being corroded in front of our very eyes by failing to match today's supply of professionals with the demands of tomorrow's populations," (WHO, 2013).

The education of an appropriate and sustainable health care workforce is necessary in order to provide healthcare to the nation, and is a goal of the Department of Health in South Africa (Department of Health, 2011). Dr Carissa Etienne, WHO Regional Director for the Americas, highlighted the need for everyone, but especially people in vulnerable communities and remote areas, to have access to a well-trained, culturally sensitive and competent health workforce (WHO, 2013). South Africa has many vulnerable communities and a large rural population, all of whom require health care, but who did not receive adequate services under the country's apartheid system and this need has been exacerbated by the HIV/AIDS epidemic. In order for health care professionals to be representative of the populations that they will serve, transformation of the health science student body needs to occur. Health sciences education in universities in South Africa is caught between transformation of higher education, providing skilled human resources for health, limited student places and a funding formula that rewards success and graduation all in the context of poorly prepared students from the secondary education milieu some of whom also come from low socio-economic backgrounds.

1.4 Research questions

1. What are the factors related to access to health sciences education in universities in South Africa in the context of social redress?

2. What are the implications of these challenges and facilitators on access to health sciences education in universities in South Africa?

1.5 Aims

The aims of this study were to 1) identify the factors affecting access to university health sciences education and 2) develop guidelines to broaden access for social redress.

1.6 Research objectives

1. To establish current access criteria to health sciences education at South African universities

2. To identify how the access criteria to university health sciences education are implemented

3. To collate findings and identify criteria to use in questionnaire development

4. To establish the implications of existing practice on demographic representation and throughput rates of students in the health sciences

5. To identify the criteria that need to inform the guidelines

6. To develop guidelines to broaden access into Health Sciences higher education.

7. To develop policy briefs on access for key government and university officials

1.7 Significance of the study

As the data indicate, transformation in South Africa's higher education institutions including in health sciences programmes has not yet been achieved. It is therefore important to understand how higher education access has been facilitated in the health sciences. Access to health sciences education in higher education is critical to transforming the health care workforce. While most tertiary academic institutions have policies with regard to who can be accepted, a number of challenges related to access remain particularly with respect to people from low and middle socio-economic groups and those who were previously disadvantaged

For the South African health human resource needs to be met, access to higher education needs to be facilitated through targeted strategies that improve access and throughput success, resulting in many new qualified graduates. This will result in a more demographically representative health professional workforce with the competencies needed to deliver appropriate, accessible, acceptable, quality health care.

There is a considerable body of work available on barriers to access to higher education but very little addressing the complex issues of policy implementation at a university level and how these affect access. In light of this, it is important to understand the perspectives of the officials who are responsible for ensuring that their institutional policies are effectively implemented and what the implications of these facilitators and challenges have been on the objectives of higher education transformation and social redress.

It is envisaged that the guidelines developed out of this study will assist Faculties of Health Sciences implement the South African governments` vision for transforming higher education through increasing access for talented students into the health sciences.

1.8   Operational definitions

The following definitions apply for this study:

Access in this study refers to the ability of a student to enter a programme of instruction, these being dependent upon the requirements of that particular university.

Throughput rates refers to the number of students who complete their qualification in the regulation time and is calculated by dividing the total number of qualifications awarded by the total number of students enrolled (Council on Higher Education, 2010).

Deans in this study refer to the heads of Faculties of Health Sciences in which a number of schools or departments may be found, each of which has an independent Head who are managed by the Dean.

Faculties in this study refer to an operational unit defined by the University Council which includes a group of academic disciplines that form the secondary academic structure within a college. An example of a Faculty of Health Sciences might be the collection of School of Nursing, School of Medicine, a Department of Pharmacy, School of Physiotherapy, Department of Occupational Therapy and Department of Bio kinetics.

Health Sciences in this study refers to the professions associated with human health such as medicine, nursing, physiotherapy, pharmacy, occupational therapy, optometry, speech language pathology, audiology, dietetics, bio kinetics, radiography, dentistry and dental

therapy. Those health professions which are registered with the Health Professions Council of South Africa (HPCSA), the South African Nursing Council (SANC) and the South African Pharmacy Council (SAPC) but excludes allied health professions such as chiropractic, homoeopathy and somatology which are registered with the Allied HPCSA (AHPCSA).

Higher education refers to education provided by tertiary academic institutions that offer qualifications on the Higher Education Qualifications Sub-Framework.

Policy refers to long range statements or intended courses of action adopted by either the South African government and/or the universities being studied (Gillies, 1982) which in this study refers to the White Paper 3 (1997), the National Plan for Higher Education in South Africa (2001) and the White Paper for Post-School Education and Training (2013).

1.9 Conclusion

Equitable access to higher education for health sciences is a multi-facetted, global concern that has an additional layer of complexity in South Africa by virtue of its colonial and apartheid past. Health systems throughout the world need to transform, as do higher education institutions, yet in an environment with a number of enabling policies, transformation in South Africa has not occurred to the desired extent. The next chapter will present a review of the literature.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on access to higher education and human resources for health and policy implementation processes in the South African and international contexts, predictors of participation in higher education, and the chasm between secondary and higher education in South Africa. An extensive search of the literature was conducted using a number of databases that included ERIC, CINHAL, Medline, Academic Search Complete, Africa-Wide Information, MasterFILE Premier and Google Scholar. A variety of search terms were used to search English text literature which included but were not limited to: access; higher education; policy; social justice; transformation; participation; success; health sciences education; rural health; equity of access. A number of websites were frequently visited, namely: the World Health Organization, UNESCO, the Departments of Health, Higher Education and Training in South Africa, the Council on Higher Education and universities in South Africa which offer health science education and other essential stakeholders. This was done to keep abreast of the latest developments and information available in higher education and health care provision.

2.2   The international context for higher education

Following the end of the Second World War, there was a growing demand for access to higher education (Guri-Rosenblit, Sebkova & Teichler, 2007; World Bank, 2006) that continues to this day. As a result, higher education throughout the world has experienced transformation on an unparalleled scale in both extent and range (Altbach, Reisberg &

Rumbley, 2009; Guri-Rosenbilt et al., 2007). The second half of the 20th Century saw a remarkable growth, with student enrolments increasing six-fold (UNESCO, 1998) and by 2000, the total enrolment was approximately 100 million students (Powell & Solga, 2011; Guri-Rosenblit, 2007; Osborne, 2003). The percentage of the young adult cohort enrolled in higher education worldwide has risen from 19% in 2000 to 26% in 2007 (UNESCO, 2010; Altbach et al., 2009; Osborne, 2003) with an annual increase of 5% between 1991 and 2004 (UNESCO, 2010; OECD, 2008). However in low income countries this participation has only marginally increased from 5% in 2000 to 7% in 2007 and Sub-Saharan Africa has the lowest participation rate at 6% (UNESCO, 2010; Altbach et al., 2009). Sub Saharan Africa has seen the fastest growth in higher education participation of all regions in the world, with an average growth rate of 8.6% each year between 1970 and 2008 compared with a global average of 4.6% over the same period (UNESCO, 2010) but has also been growing from a very low base. The participation in Sub Saharan countries is characterised by enormous variations from a low of 0.5% in Malawi to 25.9% in Mauritius (UNESCO, 2010). However with this massification in higher education came an increase in disparity between industrially developed countries, developing countries and the least developed countries in terms of access and resources for higher education (UNESCO, 1998). The massive expansion of higher education has created enormous pressures on national governments in trying to cope with the problems arising out of the massification (Guri-Rosenblit et al., 2007). Not least of these challenges is the diversification of higher education – diversity in institutional type as well as diversity in backgrounds, talents and job expectations of the burgeoning student population (Reichert, 2009; Guri-Rosenbilt et al., 2007 Bleiklie, 2004; Guri-Rosenblit & Sebkova, 2004).

Countries throughout the world continue to grow their higher education systems in order to satisfy an increasing demand for higher education. The United Kingdom had a goal of increasing participation in higher education from 43% of 18 to 30 year olds in 2007 to 50% in 2010 (Department of Business, Innovation and Skills, 2012; Cable & Willetts, 2011; James, 2007; Corver, 2005). Japan has moved from massification and post massification to a near universal access higher education system (Huang, 2012). By 2007 Japan had an enrolment of 54.6% of the age cohort in higher education (Huang, 2012). The move towards universal access in Japan has been driven by the growth in numbers of female students who constitute a majority of the student body (Huang, 2012). Germany has a relatively low (34%) participation in higher education, relative to other European countries (Powell & Solga, 2011) with a differentiated system of higher education which includes universities, universities of applied science and vocational academies together with a highly prized vocational training system (Powell & Solga, 2011; Osborne, 2003). This is thought to contribute to the relatively low participation rates (Powell & Solga, 2011).

Internationally, the massification of higher education has not led to the increased participation of people from low socio-economic backgrounds, minority populations and disadvantaged regions and communities (Chowdry, Crawford, Dearden, Goodman & Vignoles, 2013; Chou Chuing & Wang, 2012; CHSE, 2008; Maassen & Cloete, 2007; Fahmi, 2007), who remain underrepresented in higher education.

2.3 Predictors of participation in higher education

There are a number of factors which have been found to predict participation in higher education that range from socio-economic status, secondary school achievement, parental education level, geography and rural-origin (Connor, Dewson, Tyers, Eccles, Regan & Aston, 2001; Marks, Fleming, Long & McMillan, 2000). It is reported that, in Australia for example, people from low socio-economic groups, indigenous people and those from remote areas are under-represented in higher education and that the Australian government has set a target of 20% of under graduate enrolments from disadvantaged backgrounds by 2020. The Review of Australian Higher Education reports some of the reasons for the under representation being previous educational achievement, no awareness of the long term benefits of higher education and therefore no aspiration to participate in higher education and those that do access higher education require increased levels of academic and financial support to succeed. These barriers to participation are not confined to Australia but are a reflection of those faced by citizens throughout the world (Commonwealth of Australia, 2008).

Social class is the most reliable predictor of participation in higher education in most countries in the world (Deller & Oldford, 2011; James, 2007; Archer, Hutchings, Ross, Leathwood, Gilchrist & Phillips 2003; Connor et al., 2001) including South Africa (Scott, Yeld & Hendry, 2007) who has a marginalised, majority population with a background of poverty. Many European countries higher education systems are characterised by socio-economic class inequalities despite signatories to the Bologna Process agreeing to cut the ties between social and demographic background and participation in higher education (Riddell & Weedon, 2014). Germany`s higher education has a history of being class-based

and segregated which really restricts the progression of potential candidates to higher education (Powell & Solga, 2011). The country has a highly stratified secondary schooling system which means those in lower socio-economic groups are nine times less likely to access higher education than those who have an upper socio-economic background (Powell & Solga, 2011; James, 2007). In Portugal, students in the highest socio-economic group are ten times more likely to access higher education than those in the lowest (James, 2007).

The United Kingdom (UK) higher education system has significant social imbalances (Higher Education Funding Council for England (HEFCE), 2013) with half of the population in England classified as low socio-economic but only 28% of young, full time entrants to first degree courses represented (James, 2007; Corver, 2005). Young people from more affluent areas are five to six times more likely to go to university than those from working class areas (James, 2007). The government adopted an ambitious equity agenda of "widening participation" by removing upfront fees, funding incentives to universities and encouraging part time attendance (Department of Business, Innovation and Skills, 2012; James, 2007), however the economic austerity measures seen throughout the Western world has meant that the current British government has had to institute some reforms (HEFCE, 2013) which have not always been well received by the student population. Ireland, where socio economic class is used to define social inequality (Clancy & Goastellec, 2007), has seen a large increase in participation with an overall rate of 60% but continues to experience social class differences (Keane, 2011). It is also students from the managerial and professional classes who are taking advantage of the expanded higher education system in Ireland (Higher Education Authority, 2008; James, 2007).

In the United States of America (USA) people from lower socio-economic groups are accessing higher education less than before due to standardised entrance tests and higher tuition costs (Layer, 2005). The USA has an enormously diverse system of private and public universities which range from highly inclusive to highly socially elite (James, 2007; Obst & Forster, n.d.). There is some evidence to show growing inequality in USA higher education, as suggested by Astin and Oseguera (2004) that there are substantial socio-economic inequalities in who can get access to the most sought after colleges and universities and these inequalities have increased despite interventions such as financial aid, affirmative action and outreach programmes (Wolfenden, 2013; Golden, 2006). USA higher education is more socio-economically stratified now than at any time in the last thirty years (Astin & Oseguera, 2004). The reasons for this are not well known but are thought in part to be due to the increasing competitiveness among high school graduates for admission to the country`s most sought after colleges and universities. Numerous universities in the USA have implemented aggressive and effective equity programmes that specify admission targets (James, 2007; Allen, Teranishi, Dinwiddie & Gonzalez, 2002). Several of these programmes focused on participation of minority groups and were legislated in order to address the legacy of racial discrimination (Garces, 2012; James, 2007; Allen, Teranishi, Dinwiddie & Gonzalez, 2002). However these affirmative action policies have been challenged legally (Wolfenden, 2013; Garces, 2012; James, 2007; Douglass, 2007; Allen, 2005).

The Brazilian higher education landscape is also populated by those from the wealthy classes and in 2001 the Brazilian government introduced a quota system for non-white Brazilian students in higher education in an effort to address these inequalities. The Brazilian education system is such that public secondary education is poorly resourced and

attendance at a public secondary school is a marker of poor socio-economic status (Telles & Paixao, 2013). The wealthy people in Brazil attend private schools and then transition into public universities which are generally of higher quality than the private universities (Telles & Paixao, 2013). University entrance was almost solely based on an entrance examination which those from private schools were well prepared for but those from public schools were poorly prepared for resulting in a preponderance of wealthy students at the public universities which are generally free (Telles & Paixao, 2013). The students from poor socio-economic backgrounds who managed to qualify for university entrance generally ended up in private universities. In 2010 45 000 students benefited from the affirmative action policy in public universities but this was only 11% of all students in public higher education. In 2012 a law was passed that all public universities must implement a quota system for students – by 2016, 50% of places at universities must be earmarked for students who attended public schools, have low family income or are of indigenous, Black or Brown race (Telles & Paixao, 2013) – all proxies of socio-economic disadvantage. This law of quotas has been received with mixed reaction. Critics argue that Brazil has never had policy along racial lines and that introducing quotas will lead to a lowering of quality in Brazilian universities and that the government should rather focus on improving basic education so that all people can compete on an equal footing (Carneiro, 2013; Telles & Paixao, 2013; Francis & Tannuri-Pianto, 2012). However those in support of the law, like the Rector of the University of Rio de Janeiro, Ricardo Vieralves, have had a positive experience with these students – they work harder, generally graduate in shorter time, drop out less often and they admit that initially these students marks are not as good but they quickly catch up and often do better than those who accessed on merit (Carneiro, 2013; Telles & Paixao, 2013; Cardoso as cited in Francis & Tannuri-Pianto, 2012, p.5)

Admission to Chinese universities was merit based and linked to college entrance examinations but in 1997 the user pay principle was adopt widely and financial criteria were added to the selection criteria (Wang, 2011). Government funding for higher education decreased dramatically from 93.5% of University income in 1990 to 42.6% of income in 2006 and higher education fees increased 25 times (Wang, 2011). As family support is the primary source for university fees many low and middle income families could not afford to send their children to university (Wang, 2011). It has generally been thought that socio-economic status has a bearing on Chinese student`s achievement in the Gaokao selection tests but in Eastern China socio-economic status does not appear to have influenced performance as much as socio demographic factors have (Lui, 2013).

Higher education participation is more common amongst students whose parents have higher education qualifications (Powell & Solga, 2011; Osborne, 2003). In Finland, despite an egalitarian public school system, participation in higher education is heavily skewed according to parental educational background (James, 2007). A young person whose parents have an academic background is seven times more likely to go to university than someone from a less educated background (James, 2007). In Norway over 50% of students who start an academic track in upper secondary school have parents who have higher education, however this is changing with increasing numbers of students accessing higher education whose parents do not have higher education (Hovdhaugen, 2013). Students whose parents were educated in higher education were 9 times as likely to attend higher education in 1999 and four times as likely in 2011 (Hovdhaugen, 2013).

Inequalities in access to higher education, throughout the world, are often as a result of geography – where people are born or where they live. For example the *Hukou* system (population registration) in China precludes people moving from the rural to the urban areas although population mobility is just part of this social control policy (Chan & Zhang, 1999). The higher education opportunities in China are greater in the urban areas than in the rural areas (Jacob, 2006; Wang, 2011) and therefore higher education it is more easily available to those living in urban areas than those from rural areas (Jacob, 2006). China has seen massive growth in enrolments in higher education – in 2000 they had 7 364 111 students enrolled and in 2007 that had grown to 25 346 279 (Wang, 2011; Altbach, et al., 2009) however with this has come issues of equity and access to higher education particularly amongst their minority population which is over 100 million people (Jacob, 2006). For potential students from rural areas access to higher education is difficult due to factors such as socio-economic status, distance from family support and the lack of financial resources (Yang, 2010; Jacob, 2006). Language is also a barrier to higher education in China for minority groups (Jacob, 2006). The minority language groups learn Mandarin at school but often their language fluency is not good enough for higher education (Jacob, 2006). Many of these minority groups come from rural areas which compounds the disadvantage they have in accessing higher education. In 1992 only 156 981 children were admitted to primary schools in rural China, 12 years later only 8.2% (12 872) of the cohort successfully completed school, whereas in the urban areas they report a 61% completion rate (Yang, 2010). Even fewer than those who completed took the College Entrance Examination (76%) and of those only 83% (8120) secured admission to higher education (Yang, 2012). This is an example of the disadvantage that rural students in China face in accessing higher education.

Countries which have a colonial and "settler" history commonly have higher education systems which are predicated on the needs of the colonising nation (Metcalfe, 2009), examples of which could include Canada, South Africa, Australia, New Zealand to name a few. These higher education systems are concentrated in coastal areas and other well developed centres which grew around trade (Metcalfe, 2009). In 2008, British Columbia, Canada re-configured the institutions of higher education but this did not address the geographic diversity of institutions with most of the institutions of higher education situated in the south-western area of the province (Metcalfe, 2009). The effect of this is that Aboriginal students, who are not well represented in higher education, are still not catered for as the new universities are in areas of low Aboriginal residence (Metcalfe, 2009). In 2007, people from remote areas accessing higher education in Australia represented 1.2% which was a participation ratio of 0.44, for those from low socio-economic groups a 15% participation rate was reported, a ratio of 0.60 and for indigenous people a participation rate of 1.3% was reported representing a ratio of 0.59 (Commonwealth of Australia, 2008). Secondary school achievement is also an important predictor of both access to and success in higher education throughout the world (Rodrigues Vieira & Viegas Vieira, 2011). A study in Holland reported that educational achievement was a stronger predictor of participation in higher education than parental income was with 93% of students with a pre-university education accessing higher education (Vossensteyn, 2013).

2.4 The context for higher education in South Africa

South Africa emerged out of apartheid in 1994 with the first democratically elected government and set about transforming the higher education system. The goal of which

was to redress past inequalities and to meet the needs of the country (Department of Education, 1997). Higher education in South Africa was seen as the vehicle by which South African citizens would equally enjoy the opportunities and achievements afforded the new democracy (Department of Education, 1997).

The National Plan for higher education in South Africa (2001) has five key policy goals and strategic objectives which the Ministry of Education views as fundamental to the transformation of the higher education system in South Africa. Two of these policy goals address access to higher education:

1. "to provide access to higher education to all irrespective of race, gender, age, creed, class or disability and to produce graduates with the skills and competencies necessary to meet the human resource needs of the country" (South Africa, 2001, p. 12) .

2. To promote equity of access and to redress past inequalities through ensuring that the staff and student profiles in higher education progressively reflect the demographic realities of South African society" (South Africa, 2001, p. 12).

At the time of democracy the higher education landscape, amongst other deficiencies, enabled an inequitable distribution of access and opportunity for students along lines of race, gender, class and geography (Department of Education, 1997). The democratically elected government started transforming higher education to be more representative of a new non-racial, non-sexist, democratic society which was committed to equity and justice (Department of Education, 1997).

One of the pillars upon which the transformation of the Higher Education agenda rests is *increased and broadened participation which includes increased access for black, female, disabled and mature students.* The South African Ministry of Education in 1997 had a vision to eradicate all forms of unfair discrimination and promoting redress for the inequalities of the apartheid era so that all people of South Africa could realise their potential in higher education if they so wished.

One of the fundamental principles guiding the process of higher education transformation is: Equity and redress requires fair opportunity both to enter higher education programmes and to succeed in them (Department of Education, 1997). A key feature of the single co-ordinated higher education system was the broadening of the social base in terms of race, gender, class and age (Department of Education, 1997).

The South African higher education setting prior to 1994 was divided along racial, language and cultural lines, was fragmented and uncoordinated and assumed the profile of the apartheid South African policy framework (Cloete, Maassen, Fehnel, Moja, Gibbon and Perold, 2007). Higher education institutions were divided along racial lines with exclusive use designation – 19 for the exclusive use of White South Africans, 2 for the exclusive use of Coloureds (mixed race), 2 for the exclusive use of Indians and 6 for the exclusive use of Black South Africans (Cloete et al. 2007).

The Nationalist or apartheid government of South Africa further divided the racially fragmented higher education system into two groups in terms of functions they were or were not permitted to do – universities and technikons (Cloete et al., 2007). That

government assigned the notion of science to universities and the notion of technology to technikons (Cloete et al. 2007). "Science" was used to "designate all scholarly activities in which knowledge for the sake of knowledge" (p. 37) was studied and "technology" designated "all activities concerned with the applications of knowledge" (p. 37). Bunting (2007) suggested that higher education prior to 1994 might be classified using the broad categories of "historically white/historically black" and "university/technikon" (Cloete et al. 2007). Historically White universities were further divided by language – 5 Afrikaans speaking, 1 dual medium (University of Port Elizabeth) and 4 English medium. During the apartheid era higher education in South Africa was skewed in such a way as to "entrench the power and privilege of the ruling White minority" (Bunting, 2007 p.52).

The democratically elected government sought to address this fragmentation and discrimination through the creation of a single, national co-ordinated higher education system (Department of Education, 1997). The Council on Higher Education initially proposed a segregated system of three types of institutions with hard boundaries between them (CHE, 2000), however the government rejected the notion of hard boundaries (Department of Education, 2001). The White Paper 3 (1997) called for a differentiated and diverse system which would accommodate different types of institutions, diverse programmes within the institutions and would be premised on the mandate, vision and mission of the institution (Department of Education, 2001; CHE, 2000).

Between 2001 and 2007 the South African public higher education system went through a period of merging institutions in an effort to rationalise the fragmented uncoordinated system, 36 institutions were merged into 23 (Arnold, Stofile & Riyaadh, 2013). South

Africa now has 25 Universities with the University of the Northern Cape (Sol Plaatjies) and the demerging of Medunsa from the University of Limpopo. Merging of institutions is not unique to South Africa and has been done throughout the world for different reasons – changing political landscape, economic reasons, changes in government and therefore ideology, amongst others (Arnold, Stofile & Riyaadh, 2013; Jansen, 2003). Jansen (2003) proposed that another reason not commonly spoken about in the public domain was the need for South African higher education to takes its place in the globalised economy. Mapasela & Hay (2005) suggested increased student enrolments, changing needs of the society from one of oppression and discrimination towards one of democratisation, and the global opportunities and challenges of new technologies, research and training as some reasons for the mergers. South Africa had been isolated from the rest of the world in areas of education, economics and many others as a result of the apartheid ideology.

Currently South Africa has 25 public higher education institutions which comprise 11 traditional universities, offering mostly bachelor`s degrees and post graduate studies up to doctoral level, six universities of technology which offer vocational training at diploma level up to bachelor`s level and post graduate studies are limited to a few programmes up to doctoral level and six comprehensive universities which offer a mix of traditional bachelor`s degrees with vocational training and also offer up to doctoral level and two which have recently opened and have limited offerings at degree level (DoHET, 2013). Continuing with the process of rationalising higher education the current government has published the White Paper for Post-School Education and Training (2013) which considers the whole post-school milieu of which higher education is but one part. The White Paper also alludes to a vision for a single, coherent, differentiated and highly articulated post-school education and training system (DoHET, 2013, p.x). The idea being that this system

will afford many more young people opportunities for post-school education and training by expanding access, achieving equity and attaining excellence and innovation (DoHET, 2013).

The vision for a single differentiated higher education system included amongst other things one, integrated qualification framework which is called the National Qualification Framework (NQF) which would facilitate access to and mobility and progression within education, training and career paths (Republic of South Africa, 2008). The NQF framework has 10 levels where level 10 is a doctoral degree. Most of the health science courses are professional 4 year degrees and are pitched at Level 8 on the NQF.

South Africa has a skewed distribution of higher education institutions predominantly in the urban areas with few in rural areas catering for predominantly rural students. In two rural provinces, the Northern Cape and Mpumalanga, there have been no institutions of higher education until 2014 when two new higher education institutions opened, which meant students from these areas had to move to other provinces for higher education. Many students from rural areas have severe economic constraints and so having to move to study in an urban area is often unattainable. These new institutions however have limited offerings at present which means that many students from these areas will still have to move to other provinces to study.

The previously White advantaged universities are recognized internationally for the work they do but it is in the previous Black universities that the inequalities persist. Many of these universities are located in the poorest parts of the country and attract the most

underprivileged students who are not able to pay fees and who are generally the most inadequately prepared for university by virtue of their deprived schooling. The number of students in higher education has increased substantially from 1990 when the headcount was 304 625, in 2003 it was close to 490 000 (Council for Higher Education, 2010) and the Department of Higher Education and Training reports 938 201 students enrolled at universities in South Africa in 2011 (Statistics South Africa, 2013). However the overall expansion of higher education in South Africa has not made a significant impact on the participation rate of the cohort aged 20 to 24 years with a gross participation rate of 18% in 2011 (Statistics South Africa, 2013) against a target of 23% (Council for Higher Education, 2013). The proportion of Black African students enrolling in universities has increased from 40% in 1993 to 69.4% in 2011. However the Census 2011 found student participation rates for individuals aged between 18 to 29 years by population group were 4.2% for Black African, 17.2% for White, 3.6% for Coloured and 14.6% for Indian/Asian (Statistics South Africa, 2012). In spite of these apparent gains in transforming the demographic profile of Higher Education in South Africa these numbers for Black and Coloured students remain proportionally low in comparison with White and Indian/Asian students (Statistics South Africa, 2013). Here in lies the problem – despite the enormous gains made in transforming the demographic profile of students in higher education this still only reflects 12% of the eligible 18 to 24 year old Black African cohort (South Africa, 2010) and in health sciences the numbers of Black African student`s participation is even lower.

South Africa does not escape the worldwide trend of low socio-economic status being a predictor of participation in higher education. The previously marginalised, majority Black population in South Africa is mired in poverty and despite the National Student Financial

Aid Scheme (NSFAS) established to assist poor students access higher education, poverty remains a barrier (Wangenge-Ouma, 2013; Mdepa & Tshiwula, 2012). State funding of higher education in South Africa has declined from 0.72% of GDP in 1995 to 0.69% in 2012 which has meant that higher education institutions have increased tuition fees to compensate (Wangenge-Ouma, 2013) which puts increasing pressure on the NSFAS which was funded to the tune of 10 billion Rand in 2014 and was still not enough for all deserving students.

2.5   The chasm between secondary school and higher education in South Africa

The legacy of the apartheid education system in South Africa has meant that the school system experiences enormous disparities in the provision of education, between schools that were previously White and those that were previously Black. The schools are representative of the socio-economic strata in South Africa with education skewed in favour of urban schools and those in the upper socio-economic strata (Wangenge-Ouma, 2013; Taylor & Yu, 2009). Despite the fact that historically Black and previously disadvantaged schools constitute 80% of the schools in South Africa they only produce 20% of eligible students for higher education (Wangenege-Ouma, 2013). The disadvantaged schooling means failure rates in higher education because disadvantaged students are not adequately prepared for higher education (Mji, 2002; Zaaiman, van der Flier & Thijs, 1998). Taylor and Yu (2009) reported that schools in South Africa are organizations where socio-economic status is deepened. Having to attend a school full of poor students intensifies poverty-stricken students disadvantage (Taylor & Yu, 2009).

There is a lot of evidence showing that school leaver`s in South Africa are in many cases not well prepared for university education and despite qualifying for university they struggle to succeed in the first year (Wilson-Strydom, 2011; Jansen, 2009; Jones, Coetzee, Bailey & Wickham, 2008). Of concern is the university entrance level – a National Senior Certificate (NSC) score of 4 subjects at 40%, and the remaining subjects at 30% with the home language being one of the 40%. Professor Jonathan Jansen refers to this as "sinking into mediocrity (Jansen, 2011, p.106)." The standardized adjustment of the NSC grades also known as statistical moderation of raw scores, a practice used all over the world to mitigate learner performance which might have been caused by things other than knowledge, aptitude or ability (Republic of South Africa, 2001) is also argued to be a contributing factor to the articulation gap between secondary school and higher education (Nel & Kistner, 2009; Foxcroft, 2006; Yeld & Hendry, 2002). Standardization is done to ensure consistency and comparability across the years (Republic of South Africa, 2001).

The quality of the NSC bachelor passes is another area of concern for university administrators who have seen a significant fall off in mathematics, science and accounting results. South African school pupils perform extremely poorly in mathematics by international standards (Spaull, 2013; Reddy, van der Berg, Janse van Rensburg & Taylor, 2012; Nduna-Watson, Brombacher, Reddy & Khoza, 2010). Mathematics and science are two subjects which are critical to most health science courses. There is disparity between students achieving bachelor passes on the NSC between the race groups – two out of every three Whites who write the NSC examinations gets a Bachelor`s pass while only one in five Black children gets a bachelor`s pass (Taylor & Yu, 2009).

Limited funding of primary and secondary education means compromised preparedness of potential students for health science education (WHO, 2006). Coughlan (2006) argues that very few black South Africans experience quality teaching in mathematics and the sciences. International studies have shown that South African school pupils perform very poorly in mathematics, science and literacy (Fisher & Scott, 2011; Bloch, 2009; Christie, 2008). In 2011, only 18.51% of students who wrote the NSC mathematics examinations passed with 50% or more (Jansen, 2012). In light of the urgent need to address the critical health human resource deficit in South Africa broadening access to higher education is imperative. This is more often than not an equity issue and relates to a University`s initiatives in making its educational offerings accessible to a diversity of students (CHE, 2004). In the African higher education context where a differentially resourced secondary education system yields many under-prepared students (CHE, 2001), access involves, inter alia developing flexible entry requirements and selection mechanisms, assessments for the recognition of prior learning, programme-specific admission tests and alternative admission tests (CHE, 2004) and retention strategies.

2.6 The policy and legislative framework which govern higher education for health sciences in South Africa

Of the 25 public universities in South Africa eight (8) of them offer medicine and other health sciences education. These public universities work within a policy and legislative framework which includes the following:

- The Higher Education Act No. 101 of 1997 (South Africa, 1997) which inter alia provides for the regulation of higher education.

- The Department of Higher Education and Training revised strategic plan 2010/11-2014/15 (Department of Higher Education and Training, 2012) which prioritizes an increased participation in undergraduate and postgraduate programmes in science (including health sciences), engineering and technology, an increase in the size and credentials of the academic workforce to generate the requisite knowledge for economic and societal development by addressing the challenges of access, success, translating equity of access into equity of outcome, quality teaching and learning and relevant knowledge production to support the country`s growth plans.

- The White Paper on the Transformation of Higher Education 1997 (Department of Education, 2001).

- White Paper for Post-School Education and Training 2013 (Department of Higher Education and Training, 2013).

Health science faculties within the universities further operate with cognisance of the following legislation and policy:

- The National Health Amendment Act No. 12 of 2013 (South Africa, 2013) which redresses the inequalities of the past in the distribution of healthcare and seeks to create a national health system that is patient centred and for the benefit of all.

- The National Human Resources Plan for Health (Department of Health, 2006) which implements a national guideline for human resources policy and planning to ensure that the entire health system obtains the quality and quantity of staff required, makes optimum use of its human resources, anticipates and manages changes in staffing and develops a multi-skilled, representative and flexible workforce to meet the healthcare needs of its diverse communities experiencing several and diverse disease burdens.

• The Strategic Framework for the Human Resources for Health Plan (Department of Health, 2005) which promotes access to health services by the equitable distribution and use of skilled healthcare professionals and which seeks to render accessible, appropriate, high quality healthcare at all levels by healthcare professionals equipped with the appropriate capacity and skills.

• The Health Science Professions Council of South Africa (HSPCSA) which regulates the training and practice of medical doctors and other health professionals such as physiotherapy, occupational therapy, environmental health and so on.

• The South African Nursing Council (SANC) which regulates the training and practice of nurses and midwives in South Africa.

• The Pharmacy Council of South Africa which regulates the training and practice of pharmacists in South Africa.

All three of the professional councils accredit institutions offering training for medicine and health science professionals, nurses and pharmacists.

2.7 Equity in higher education.

The United Nations (1948) in the Universal Declaration of Human Rights states in Article 26, paragraph 1, that "…higher education shall be equally accessible to all on the basis of merit (p.10)" which was endorsed at the Convention against Discrimination in Education which commits member states to "make higher education equally accessible to all on the basis of individual capacity (UNESCO, 1960, p.5)." Increasing participation in higher education is a global trend, however despite these massive increases, demographic imbalances have persevered (James, 2007). The more affluent groups have maintained

their relative advantage in nearly all countries (Altbach et al., 2009) but those disadvantaged by geography, unequal distribution of wealth and resources find it difficult to compete competitively for places (Altbach et al., 2009). Higher education, internationally, has been striving to achieve parity between university populations and those of the national demographic (James, 2007). The imbalances in demographic profile of students accessing higher education are commonly amongst ethnic minorities, women, the disabled and so on however the most widespread and persistent source of disadvantage in access is low social class or low socio-economic status (James, 2007). James (2007) has suggested that some of the reasons for the poor participation in higher education of people from low socio-economic backgrounds, coupled with finance, are endemic educational disadvantage, low school completion rates, lower levels of educational achievement in school which limits opportunities for competitive entry based on academic achievement, "lower levels of academic aspiration, lower perceptions of the personal and career relevance of higher education and perhaps alienation from the culture of universities..." (p.2).

Equity in higher education can include:

1. Those who have the ability to go to university are able to do so

2. There are no barriers to access to university.

3. The selection for university places is on academic merit.

4. The selection for university places is without discrimination on the basis of social class, gender, religion and ethnicity; and

5. All people have the same opportunity to develop their talents (James, 2007, p.1).

Providing higher education to all her citizens means a nation confronting many of the social disparities, deeply rooted in history, culture and economic structure, that influence a person`s ability to compete (Altbach et al., 2009).

2.8 Social justice in higher education

South Africa, one of the most unequal societies in the world with a Gini Co-efficient of 0.63 in 2011 (Blaine, 2013) is grappling with the issue of access for success in higher education.

Countless South Africans experience many of the factors which preclude individuals from participating in higher education, such as poverty, disadvantaged schooling, parents who do not have tertiary education and rural-origin. The benefits of access to and success in higher education to both individuals and society at large are essential to achieving social justice and for young people to realize their potential. Every person who meets the requirements for higher education should have an equal opportunity to attend if they so wish and any eligible person who is denied access based on ethnicity, gender, poverty and language is a loss in human capital for society (World Bank, 2009). Education is a strong predictor of socio-economic status and is a way of enabling people to improve their social mobility (Taylor & Yu, 2009). Denying people the opportunity of a decent education restricts their social mobility and mires them in intergenerational poverty (Taylor & Yu, 2009) and advancement towards the equalization of opportunity in education is one of the most important conditions for overcoming social injustice and reducing disparities (UNESCO, 2009). The very poor efficiency of the South African higher education system characterised by high drop-out rates and limited success particularly for Black student`s highlights the social injustices inherent in the education system from early education to higher education. Wilson-Strydom (2011) argues that instead of focusing on the

educational outcomes in an environment of equal resources that the attention should shift to one of individual capabilities in light of the complex personal, social and environmental factors which impact access and success in higher education.

2.9 Conceptual framework

Policy analysis is complex and challenging and a number of approaches, both theories and frameworks, have been used to study public policy (Howlett & Ramesh, 2003).

The policy process, of which implementation is but one aspect, is extremely complex requiring the analyst to find ways of simplifying the situation in order to understand it (Sabatier, 2007). Analysts use frameworks, theories or models to help make sense of this complexity.

2.9.1   Theories of the policy process

A few of the influential theories of the public policy process include multiple streams (Kingdon, 1996), punctuated-equilibrium (Baumgartner and Jones, 1993) and top-down and bottom-up implementation (Mazmanian & Sabatier, 1989). These theories were considered but the researcher decided against using them in this study because the study was particularly interested in the implementation of the policy on access to higher education for health science education and less about how the access policy was developed, how it came into being and the interplay between the various actors to get the access to higher education agenda onto the government policy radar.

Implementation theories share the insight that policy implementation can only be understood and evaluated in the context of the existing collection of actors and institutions within which implementers make their decisions (Howlett & Ramesh, 2003). The implementation theory literature is subjected to a "discourse as to whether decision-making is top-down or bottom-up or a synthesis of the two" (Walt et al., 2008, p. 312). Dye (1987) suggests that public policy reflects the values, interests and preferences of the governing elite. This can be said for the policy on access to higher education in South Africa, this was a South African government policy based on the need for the country to transform from an apartheid state to one of democracy where the ruling party sought to get rid of all apartheid structures.

The criticism of the top-down approach in the 1980`s led to the development of the bottom-up or "street level" approach (Howlett & Ramesh, 2003). This approach has shown that the success or failure of policies often depends on the commitment and skills of the actors directly involved in the implementation of the policy (Howlett & Ramesh, 2003), those "street level bureaucrats" who can change policies significantly through their implementation (Walt et al., 2008). The significance of this approach is that it directs attention to the formal and informal relationships involved in making and implementing policies (Howlett & Ramesh, 2003). However the bottom-up and top-down approaches are not contradictory but complementary and so a synthesis of the two provide better insights into policy implementation (Walt et al., 2008; Howlett & Ramesh, 2003). The complexity of access to higher education has meant that those tasked with implementing the access aspects of the transformation of higher education White paper 3 have not enabled transformation in higher education, to occur as the South African government had envisaged it.

The *principle-agent theory* was developed to explain the gaps between legislative or political intent and administrative practice which were often seen as the major reason for policy failure (Howlett & Ramesh, 2003; Braun & Guston, 2003). This theory was not appropriate for this study because this study did not attempt to understand what the political intent was in access for transformation in higher education in South Africa.

2.9.2   Frameworks used in policy analysis

Frameworks are used in research to arrange the inquiry by identifying aspects and relationships among these aspects that need to be demonstrated (Walt et al., 2008). There are a number of ways that policy theorists can examine policy:

- The organisation of the political system – to associate particular types of policies or policy outcomes with the nature of the political regime (Howlett & Ramesh, 2003).

- To look for causal variables in public policy-making, the "policy determinants" (Howlett & Ramesh, 2003).

- Policy content – the nature of the problem and the solutions devised to address the problem determine how it will be managed by the political system. Theodore Lowi (1972) suggested that "policy may determine politics" (as cited in Howlett and Ramesh. 2003).

- An evaluation of "policy impacts" or outcomes (Howlett & Ramesh, 2003).

The most well-known public policy framework is the stages heuristic (Lasswell, 1956; Brewer & deLeon, 1983). This framework divided the public policy process into four stages – agenda setting, formulation, implementation and evaluation. The criticism of this framework is that it assumed the policy process to be linear which it is not (Sabatier, 2007). It does however offer a simple structure for evaluating the whole public policy process (Walt et al., 2008). This framework was not considered in this study as the researcher was only looking at the implementation of the policy within faculties of health sciences in universities and not the policy as a whole.

2.9.3   Walt and Gilson Policy Analysis Triangle

The theoretical framework chosen for this study was the Walt and Gilson policy analysis triangle framework. This framework is "grounded in a political economy perspective" (p.310), and considers how policy context, actors, content and processes interact to shape policy making (Walt et al., 2008). This framework was specifically developed for health policy analysis but its relevance extends beyond this sector (Walt et al., 2008) and has been adapted for this study (see Figure 2.1).
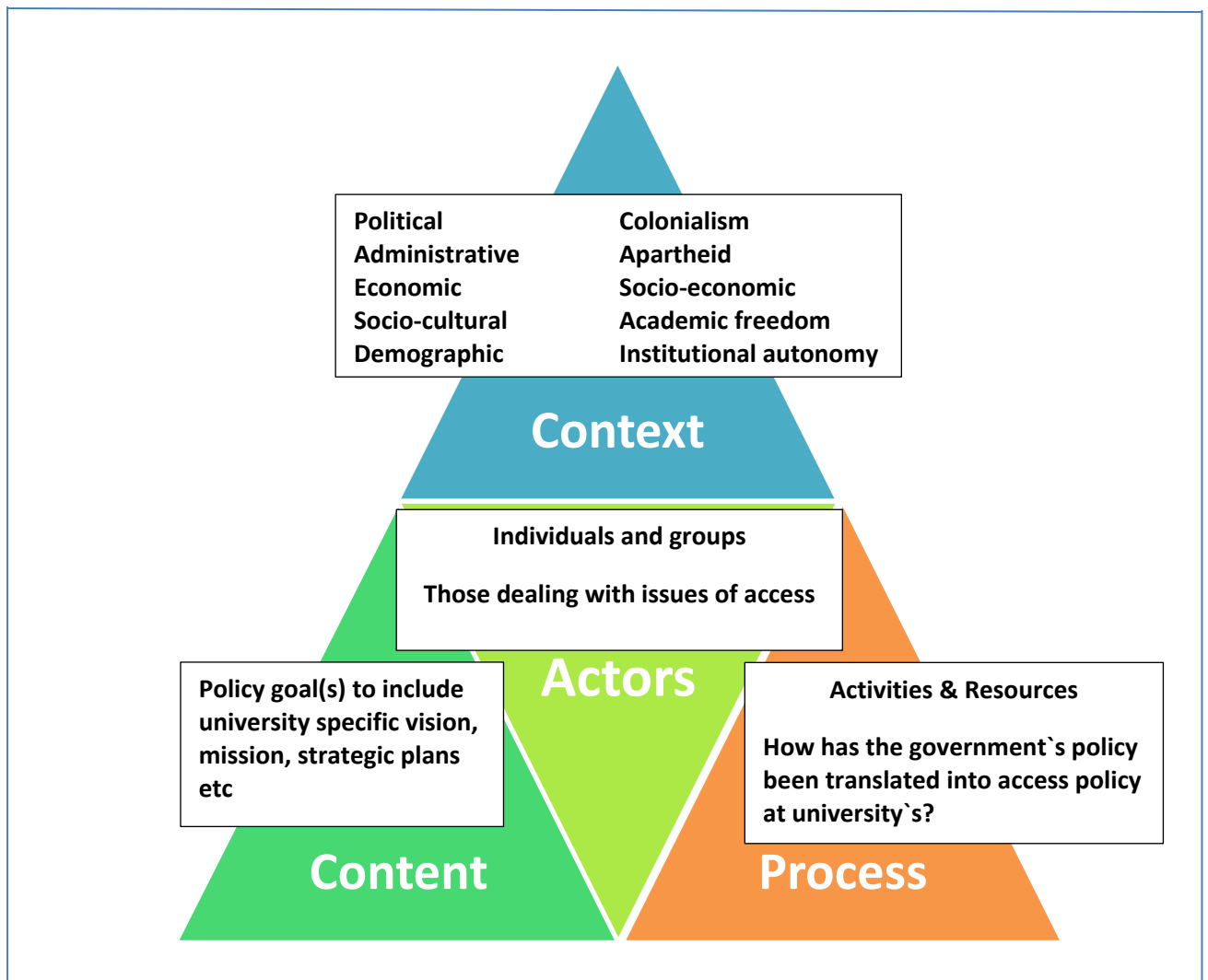
Figure 2.1: Walt and Gilson Policy Analysis Triangle adapted (Walt & Gilson, 1994).

2.9.3.1 Context analysis

Policy analysis is often concerned with the role of the state in policy reform and whether

the state has a central role or an increasingly marginalised role (Walt & Gilson, 1994).

Education policy is embedded within a political, administrative, economic, socio-cultural

and demographic context and cannot be analysed without considering these factors. In

South Africa, a multicultural society, cognizance needs to be taken of socio-cultural

aspects when analysing public policy – language, the role of gender in the society, the role

of religious beliefs and so on. One cannot ignore the economic scenario both globally as

well as within the country – it will exert an impact, for example, on the financial commitments the policy acknowledges.

Here we may think of the effects of the National Student Financial Aid Scheme (NSFAS) on ones` ability to access higher education. When considering access to higher education in the South African context one needs to consider the colonial and apartheid education systems and the effects of those on student`s ability to access higher education – to mention a few considerations. The issues of autonomy and academic freedom in universities inform the context of higher education access policy.

2.9.3.2 Content analysis

The beliefs, values and attitudes of those actors involved in the policy process, towards the problems and proposed solutions are significant determinants of policy content (Howlett & Ramesh, 2003). These deep seated long-term sets of ideas are referred to as the policy paradigm and are only one of a number of idea sets that go into public policy making (Howlett & Ramesh, 2003). Others include programme ideas, symbolic frames and public sentiment (Howlett & Ramesh, 2003). A policy paradigm sets the tone for the policy and helps to frame it and so prevent it from extending beyond its core focus or mandate (Howlett & Ramesh, 2003).

Within the perspective of this research policy content referred to the policy goals and the actions needed to achieve those goals – the goal of transformation of the higher education milieu in South Africa. Documents from the South African government and those of the universities which outline their vision, mission and strategic plans were used in assessing

the content – do the university policies address the governments` vision of transformation in higher education?

2.9.3.3 Actor analysis

Actors are involved in every aspect of the public policy process such as agenda building, policy formulation, implementation, monitoring and evaluation. These actors include the "policy elites" in government and decision makers down to the general public who are consumers of the policy goal (Walt & Gilson, 1994). These actors may include individuals or groups and are sometimes known as stakeholders. Research has shown the importance of actors as a key determinant in policy change (Walt & Gilson, 1994). In summing up the various papers, Walt and Gilson (1994) argue for analysing the role of the actors as individuals and as groups within and outside of government.

In this study the people who are responsible for implementing access policy at the universities are featured – the Deans of Health Sciences, Deans of Students, Recruitment/Schools Liaison Officers, Heads of Schools within Faculties of Health Sciences, Admissions officers at higher education institutions and Financial Aid Officers.

2.9.3.4 Process analysis

The analysis of the policy process takes into consideration how public policy is made and who influences it, how do issues get onto the policy making agenda (Khan, 2006; Walt & Gilson, 1994). The policy process is divided into different phases which include: agenda

setting, planning, implementation, monitoring, evaluation and feedback (Walt, 1994; Dye, 1987). In analysing the policy process one would take into consideration both the support for and the resistance to particular policies, the resources needed for implementation and any enabling or constraining contexts (Walt & Gilson, 1994). In this study the process analysis considered the translation of the governments` transformation of higher education policy into access policy at university level.

2.10 Review of the current access criteria to university health sciences education in South Africa

Access to university health sciences education is very competitive with many more students applying to the universities than places are available. Table 2.1 describes Minimum Admission Points Score for various health science degrees at the eight universities in South Africa offering health sciences education. Health sciences education generally requires a good matriculation pass with mathematics and science subjects included. This section describes the information available on the various university website on access to health science courses at the eight universities in South Africa which offer medicine and other health sciences. These universities include: University of Limpopo; University of Pretoria; University of the Witwatersrand; University of KwaZulu Natal; University of the Free State; Walter Sisulu University; University of Cape Town and Stellenbosch University.

2.10.1 University of Limpopo

The University of Limpopo has a vision

To be a leading African university focused on the developmental needs of its communities and epitomising academic excellence and innovativeness.

And a mission to be:

> *A university which responds actively;*

1. *To the development needs of its students, its staff members and its communities*

2. *Through relevant and high quality higher education and training, research and engagement and*

3. *In partnership and in collaboration with its different stakeholders* (University of Limpopo, 2014)

The University of Limpopo (2014), Faculty of Health Sciences vision and mission statements allude to their focus on rural communities, an emphasis on student centeredness with concepts such as community based service learning, innovative and interactive teaching and learning, competency based shared curriculum and workplace learning in communities but appears to have tenuous links to the University vision and mission statements. The website (www.ul.ac.za) is very varied in what it offers prospective students. Each school of which there are five (5) appears to develop their own web page and the content is not standard which would make it very difficult for students to find appropriate information. Nursing for example does not list what the admission requirements are for a matriculant exploring their options where the School of Oral Health, for example, has the admission requirements outlined very clearly. A booklet is available

on the website, not easily found, which is entitled 2013 Orientation booklet, a 52 page booklet, which is 80 MB in size and therefore not easily accessed by disadvantaged rural students who have limited bandwidth, data access or computer skills to navigate the website. The orientation booklet is not intended to assist potential students but it is available on the website and so potential students might think it appropriate to access it for information.

Students entering for a first degree are required to write the National Benchmark Tests (NBT`s). The mathematics test is only required to be written by students whose selected degree programme requires mathematics (University of Limpopo, 2014). The admission requirements are available at academic programmes under 2015 students, on the web site however the route to this document is cryptic. The Faculty of Health Sciences stipulates that life sciences, mathematics, physical sciences and English are compulsory subjects for health sciences and each degree programme stipulates the points value needed to access the programme, for example for medicine the minimum required is the following:

- Life Sciences   60% to 69%   5 points

- Mathematics   60% to 69%   5 points

- Physical Sciences   60% to 69%   5 points

- English   50% to 59%   4 points

- Life Orientation   60% to 69%   5 points

- One other subject   50% to 59%   4 points

A minimum of 28 admission points are required for admission to medicine (see Table 2.1). The admission criteria for the Faculty of Health Sciences supports the Faculty vision of

addressing the needs of the communities they serve by facilitating educationally disadvantaged students access which is reflected in the admission points needed for the various degree programmes as well as offering an extended degree programme for those who would benefit from an additional year of study (University of Limpopo, 2014).

2.10.2 University of Pretoria

The University of Pretoria, Faculty of Health Sciences has four (4) Schools offering nine (9) Bachelor degree programmes and aim for more appropriately trained health care professionals which are able to meet the health care needs of South Africans. They do this through The Faculty of Health Sciences vision and mission is designed to support that of the University of Pretoria through their service learning platform, quality specialist care for the poor, excellence in teaching and learning and to increase access, throughput and diversity of the students (University of Pretoria, 2014). Despite language such as excellence, quality and research intensive used in the goals of the university there is an attempt to facilitate the admission of students who meet the minimum requirements but have challenges in the languages of teaching and learning – Afrikaans and English. The selection and admission criteria are readily available on the University website in a number of handbooks and include both online and paper based applications. The University of Pretoria, Faculty of Health Sciences appear to make no excuse for striving to attract the best students into their health science programmes with minimum admission points scores (APS) between 35 for medicine and dentistry to 25 for nursing, dietetics, clinical medical associate training and radiography (see Table 2.1). The selection process includes academic merit, National Benchmark Tests (NBT`s), a value-added questionnaire and in many instances an interview. The value-added questionnaire is not available on the website

and there is no information as to what it is. The Faculty of Health Sciences uses the best results of six (6) subjects to make up the APS and in most programmes physical sciences, mathematics and English are compulsory subjects. Preliminary admission is given on the Grade 11 results, provisional admission on the final Grade 11 results plus the results of the NBT`s and then final admission based on the APS, NBT`s and value-added questionnaire. The Faculty of Health Sciences does offer an opportunity for alternative access into for 10% of admissions into Medicine based on achievement in the first semester of a Bachelor of Science (Biological Science) degree.

2.10.3 University of the Witwatersrand

The University of the Witwatersrand (Wits) makes their admissions policy available on their website which advocates diversity in respect of: race, gender, socio-economic background, urban and rural geography, culture, ethnicity, disability, religion, sexual orientation and national origin (University of the Witwatersrand, 2014). The university undertakes to continue to develop the diversity of the students to meet the demographic profile of the wider Gauteng region. Wits acknowledge that in order to facilitate equity as a strategic intervention to promote redress fair discrimination in the admissions policy is necessary (University of the Witwatersrand, 2014). This university does not rely solely on school leaving examinations (matriculation points) to identify potential students from disadvantaged schools and deprived socio-economic groups. They actively try to admit students who might previously have not been admitted but who have the potential to succeed – the tension between adherence to equity and diversity but also with recognition of academic excellence (University of the Witwatersrand, 2014). The website is informative for potential students and offers transparency in admissions. There is a proviso

that they will not admit students who they do not have the financial, material and human resources to support towards success. The university undertakes not to sacrifice student success on the-alter of access if they have insufficient resources to facilitate success.

The Faculty of Health Sciences comprises seven (7) schools and offers nine (9) Bachelors` degree programmes. The vision of the Health Sciences includes responsibility to be relevant and responsive to the health needs of the communities it serves and to the country. Their reputation remains important, nationally as well as internationally. The website contains the application procedures and documents as well as Faculty guides and handbooks. The University does not stipulate APS but calculates a composite index of five (5) subjects using the actual percentage achieved and not a symbol as used by most other universities. The university of the Witwatersrand uses academic performance and NBT`s to make selections. They do stipulate the minimum requirements for example: Nursing English 4; Mathematics 4 or Mathematics Literacy 7 and Life Science and/or Physical Sciences 4. There is some discrepancy in the minimum requirements for physiotherapy. The University`s *Guide for Applicants 2015 NSC Admission Requirements* stipulates for physiotherapy English 5; Mathematics 5; Life Science and/or Physical Sciences 5 but if one goes onto the Bachelor of Science in Physiotherapy link on the Health Sciences web pages, it stipulates a minimum pass of 70% in these subjects which gives a symbol of 6. This is confusing for prospective students and does not pay homage to the universities transparent admissions policy.

An alternative access opportunity is available for medicine through the Graduate Entry Medical Programme. Students accessing this programme do not have to write the NBT`s but might have to write the Wits Additional Placement Test. These students are admitted into the third (3rd) year of medicine if they have a Bachelor`s degree with a minimum of 60% average in the final year. This Bachelor`s degree should include a full course of

biology at first (1st) year university level or equivalent, a half course in chemistry at first (1st) year, a half course in physics at first (1st) year and National Senior Certificate mathematics with a minimum symbol 5 (60 - 69%). This alternative access route enables students who were not selected from school to access medicine having shown their capabilities in another Bachelors` programme and so addresses the admissions policy objective of giving students who might not have previously had an opportunity but are capable to access medicine.

2.10.4 University of KwaZulu-Natal

The University of KwaZulu-Natal (UKZN) has a vision to be *the premier university of African scholarship* supported by a mission statement which includes words such as truly South African, academically excellent, innovation, critically engaged, demographically representative, redressing disadvantages, inequities and imbalances and underpinned by principles of change and transformation (University of KwaZulu-Natal, 2014).

The UKZN College of Health Sciences consists of four (4) schools offering twelve (12) Bachelor`s degrees. The Undergraduate brochure on the College of Health Sciences webpage is for 2013 and it does not open. Prospective students looking for information will find the 2014 Undergraduate Prospectus useful for all the qualifications at UKZN. This booklet which has 116 pages and 1.89MB to download has all the information necessary to make an informed decision about studying at UKZN. Some information of the university website is available in both English and isiZulu.

The College of Health Sciences does not use NBT`s in selection for admission to their programmes, they calculate an arithmetic average of six (6) subjects on the NSC , rank the

applicants and admit them to the respective programmes in descending order until all the places are filled (University of KwaZulu-Natal, 2013). The College believes the NBT`s disadvantage some students, particularly those from rural areas who do not have access to test centres. Alternative access and extended curricula programmes are not available in the College of Health Sciences except in the Bachelor of Medicine Bachelor of Surgery degree for mature students. In the medicine degree APS are not stipulated, although a minimum requirement of 65% in Mathematics, Physical Sciences, Life Science and English is required. Race quotas are applied as determined by the Board of the School of Medicine. Mature students can access medicine if they meet the minimum school leaving requirements and one year or more of another Bachelor`s degree with outstanding results (University of KwaZulu-Natal, 2013). The University of KwaZulu-Natal purports to transformation and redress but it would appear from the 2014 prospectus that there are, no alternative access or extended curriculum programmes in Health Sciences (University of KwaZulu-Natal, 2013).

2.10.5 University of the Free State

The University of the Free State (UFS) has a vision to be:

The university recognised across the world for excellence in academic achievement and in human reconciliation.

Their mission statement is peppered with words such as highest standards, best and most diverse, excellence in scholarship, human togetherness and solidarity, social justice, multiple opportunities for disadvantaged students, innovative, distinctiveness and leadership, transparent opportunities and lifelong learning (University of the Free State,

2014). This mission is reflected in the admission criteria for the health science courses which require higher APS than the other universities so they make no excuse for wanting to attract the best and do not appear to have any alternative access routes to their courses. This would fly in the face of the statement about multiple opportunities for disadvantaged students but does pay homage to the mission for excellence. The UFS website has *prospective students* in a prominent place on the website so it is very easy to find the information if you are a prospective student, you would not have to mine for the information!

The Faculty of Health Science courses require an APS of 36 except Nursing, which requires 30. The Faculty booklet contains all the information a prospective student would need to make an informed decision to apply to UFS, is 18 pages long and easily downloaded. The information on selection is very transparent and includes the requirements for each course. Medicine, for example takes 50% from the school average and 50% from the NBT`s but also considers extra mural activities and achievements in Grade 12 (University of the Free state, 2014).

2.10.6 Walter Sisulu University

The Walter Sisulu University (WSU) has as two of its values:

Access and success: We provide equitable access to higher and continuing education at all stages of adult life to students who have a potential to succeed.

Transformation: We are committed to addressing equity imperatives, diversity, and entrepreneurship and to democratic governance (Walter Sisulu University, 2014).

The Faculty of Health Sciences at WSU comprises three (3) Schools offering five (5) Bachelor`s degrees. The admission requirements to the five (5) Bachelor`s degree programmes, do not stipulate an APS but do list the minimum subjects and grade for those subjects. The Faculty of Health Sciences at WSU also considers the applicants personal attributes through a biographical questionnaire and an interview. In keeping with their principle of recruiting from communities with greatest need WSU includes community members on the selection panel (Walter Sisulu University, 2014).The information is readily available on the website and includes, amongst other booklets, the Health Sciences Prospectus 2014 which is 139 pages and 1.59MB to download. This university is placed to recruit from rural and very disadvantaged communities so the size of the documents might prove challenging, however the information is available to any who chose to access it.

2.10.7 University of Cape Town

The University of Cape Town (UCT) has been at the forefront of the admissions debate in South Africa with the Vice Chancellor nailing his controversial colours to the mast with respect to using race as a proxy for disadvantage. The mission statement of UCT includes words such as premier, expanding global networks, internationally recognised, locally applicable, engaged citizenship and social justice, diversity and transformation (University of Cape Town, 2014). To this end UCT has been transparent in its decisions regarding lower academic points for prospective students of colour. In an effort to address the inequalities of the past UCT has set a target for each population group in each programme, the targets are representative of the demographic profile, minimum threshold marks are set where they feel confident students will succeed and they consider the pool of applicants with good enough results in the appropriate subjects (University of Cape Town, 2014).

UCT stipulates the minimum subjects and grades for the courses but does not stipulate an APS. They compute a Faculty Points Score which comprises admission points score and NBT scores divided by 900 to get a composite score which is used to rank applicants within their targeted population group (University of Cape Town, 2014).

The criteria for admission into programmes in the faculty of Health Sciences at UCT are readily available on the UCT website. The Prospectus is easily accessed, 77 pages and 2.42MB.

2.10.8 Stellenbosch University

Stellenbosch University (SUN) Faculty of Health Sciences vision is:

To be a dynamic, people centred and inclusive environment, internationally recognised for its excellence in research, education and clinical training in medicine and health sciences and for the contribution it makes to improving health and healthcare in South Africa, the African continent and beyond (Stellenbosch University, 2014).

The Faculty of Health Sciences offers five (5) Bachelor`s degrees and the admission criteria are readily available on the SUN website. Each programme has a booklet outlining the requirements. SUN does not stipulate the APS but recommends an aggregate of six (6) NSC subject scores and which subjects are compulsory. Medicine for example requires an aggregate of >75% for the mainstream programme and 70% for the Extended Degree Programme. The selection criteria for admission into the five (5) programmes consists of 45% academic performance at school, 30% NBT scores (see Table 2.1) and 25% non-academic merit which is elicited via a structured questionnaire. The Faculty then stratifies selection according to various criteria which includes merit, racial quotas and some

alternative access opportunities for mature students and those who are enrolled in other science courses (Stellenbosch University, 2014). The Extended Degree Programme in Medicine is only available to Black, Coloured and Indian students from disadvantaged school backgrounds (Stellenbosch University, 2014). Of interest is SUN does not address issues of transformation, redress or social justice in their vision and mission statements but appear to be doing it anyway.

2.11 Conclusion

Access to health sciences education in universities is complex and competitive making it difficult for most. This is not only true for South Africa with her legacy of colonialism and apartheid but is a feature of university access worldwide. The South African universities in their effort to transform the student body and enable access for previously disadvantaged students have a number of initiatives to facilitate access.

Table 2.1   **Minimum Admission Points Score for various health science degrees at eight universities in South Africa**

Universities	UL	UP	Wits	UKZN	WSU	UFS	UCT	SUN
Medicine	28	35	N/A	N/A	Not available	36	N/A	N/A
Nursing	Not available	25	N/A	30	Not available	30	N/A	N/A
Dentistry	27	35	N/A	N/A	N/A	N/A	N/A	N/A
Pharmacy	25	N/A	N/A	33	N/A	N/A	N/A	N/A
Physiotherapy	27	30	N/A	30	N/A	36	N/A	N/A
Occupational therapy	25	30	N/A	30	N/A	36	N/A	N/A
Communication Pathology: Audiology	22	N/A	N/A	30	N/A	N/A	N/A	N/A
Communication Pathology: Speech and Language	22	N/A	N/A	30	N/A	N/A	N/A	N/A
Optometry	Not available	N/A	N/A	33	N/A	36	N/A	N/A
Dietetics	25	25	N/A	N/A	N/A	36	N/A	N/A
Radiography	N/A	25	N/A	N/A	N/A	N/A	N/A	N/A
Clinical Medicine Practice	N/A	25	N/A	N/A	Not available	N/A	N/A	N/A
Dental Therapy	22	N/A	N/A	30	N/A	N/A	N/A	N/A

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the three different phases of the research: Phase 1 which was review of existing policies and practices related to access to higher education in health care programmes; Phase 2 used both qualitative and quantitative methods to identify factors important in existing practices related to access to health sciences higher education programmes; and Phase 3 was the development of guidelines for the implementation of access policy in health sciences education for health sciences university leadership and policy briefs on access for success in health sciences education for the Minister of Higher Education and Training.

3.2 Research paradigm

The research was conducted within a pragmatic paradigm, a philosophy with its roots in 19th Century America, credited to the philosopher C.S Peirce (1839 to 1914) and improved through the writings of William James (1842 to 1910) and John Dewey (1859 to 1952) (Malachowski, 2009). Pragmatism has been defined as a philosophy embedded in common sense and committed to altering culture (Sleeper, 1986 as cited in Tashakkori & Teddlie, 2003).

Pragmatism as a research philosophy embraces the mixed methods approach to applied research questions (Giacobbi, Poczwardowski & Hager, 2005). Pragmatists do not make one form of inquiry any more important or valuable than another, as they see all forms of inquiry as tools for helping to understand the world as it is experienced (Badley, 2003).

Pragmatism presents a method of enquiry that is practical and outcome orientated, and offers the researcher the opportunity for action and iteratively, further action and eradicating uncertainty (Johnson & Onwuegbuzie, 2004). Pragmatism emphasizes the practical problems experienced by people, the research questions posed and the effect of the investigation (Giacobbi, Poczwardowski & Hager, 2005). It allows for the choice of methods based on how best to answer the research question and the ongoing phase of the inductive-deductive research cycle (Teddlie & Tashakkori, 2009). Pragmatists believe that the research question can fall anywhere on the inductive-deductive research cycle, and that they can start their research at any point on the cycle (Teddlie & Tashakkori, 2009). The social, historical and political context from which inquiry begins are important to the pragmatic researcher, who is also cognizant of the morality, ethics and issues of social justice throughout the inquiry (Giacobbi, Poczwardowski & Hager, 2005). Pragmatism takes a manifest value-oriented approach to research (Johnson & Onwuegbuzie, 2004), with the pragmatist working from a premise of ordinary experience and the desire for a better world (Tashakorri & Teddlie, 2003).

The pragmatic position was chosen for this study as the researcher believes that the problem of transformation of higher education in an effort to address the inequities of the apartheid past in South Africa requires an open and pluralistic approach to the enquiry (Badley, 2003). The problem of access to health science programmes offered in settings of higher education requires acknowledgement of the past social, historical and political context in understanding the need for redress and how best this can be achieved. The researcher contends that this complex question of access to health sciences education in universities is best understood from diverse viewpoints that can be both objective and subjective, and supposes that this is a continuum on which the researcher and participants

are at different points at different times in the research. In this current study, the researcher considers values important to the understanding, inference and pragmatism allows for this. Cherryholmes (1992) suggests that pragmatic research is driven by anticipated consequences. The use of the pragmatic paradigm allowed the researcher to describe and analyse the complexities of the factors related to access to health science education in universities as they might "best be described" (Badley, 2003, p. 302) in the context of redress, practical answers to the question of access.

3.3 Study design

Mixed methods research has been conducted throughout the 20th century but only described as a methodological approach due to the paradigm wars during the 1980`s (Creswell & Plano Clarke, 2007; Tashakkori & Teddlie,2003). The paradigm wars were a major catalyst for the emergence of mixed methods research as the third methodological movement (Creswell & Plano Clarke, 2007; Tashakkori & Teddlie, 2003). The incompatibility thesis, which rested on the assumption that compatibility between qualitative and quantitative methods was impossible, led scholars using mixed methods to adopt a paradigm to support their preference, i.e. pragmatism together with the transformative-emancipatory paradigm was adopted as the philosophical underpinning of this methodological approach (Creswell & Plano Clarke, 2007; Tashakkori & Teddlie, 2003).

Mixed methods research has been defined as a research design that utilises both quantitative and qualitative research approaches in research questions, methods, data collection and analysis as well as inferences (Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2003). Mixed methods researchers believe that the research cycle moves

inductively and deductively in an iterative manner, and that a particular research method is used appropriately depending on where the researcher is in this process (Teddlie & Johnson, 2009). When conducting mixed methods research it is important to:

1. Consider the theoretical drive of the project

2. Recognize the role and range of approaches which might be imported into the project as it progresses in order to verify or further explore an unexpected finding

3. Adhere to the methodological assumptions of the core method

4. Work with as few data sets as possible (Morse, 2003).

Throughout the current study the researcher has made every effort to adhere to these considerations.

Sampling in mixed methods studies involves combining the well-established techniques of both qualitative and quantitative research designs in creative ways to answer the research questions (Teddlie & Yu, 2007). In mixed methods research the researcher will often have to make decisions about sampling based on resources of time and money, and may need to make trade-offs between representativeness and saturation (Teddlie & Yu, 2007). The sampling strategies employed in this study are explained in detail further on in this chapter with the principles inherent to the research designs of both the qualitative and quantitative phases having been respected.

Mixed methods research is not without criticism. Researchers embarking on a mixed methods study need to think carefully about the methodologies and designs they intend using, as not all study questions lend themselves to be mixed or blended (Lipscomb, 2008). The use of a mixed methods approach to the current research was justified by the research questions, which required the exploration, identification and description of factors

related to access to health sciences in higher education and what the implications of these factors were on health sciences education. Mixed methods research, it may be argued, is less rigorous than multi-methods research, with the supplemental data it is claimed, being 'thin' (Morse, 2003). In order to overcome this criticism, this research reports in detail how the data was collected, analysed and verified. It outlines the verification method, which allows the reader to assess whether the research has been rigorous and if inferences were made. Creswell (2011) outlined some of the controversies in mixed methods research, including the definition of mixed methods research, the use of quantitative and qualitative research terms, philosophical issues, the discourse of mixed methods, the design possibilities, and its value. However, he postulated a number of recommendations to address these controversies (Creswell & Plano Clarke, 2011):

- Write a mixed methods methodological paper to advance the literature on mixed methods

- "Define mixed methods" (p. 273)

- Use mixed methods terminology in the research report

- Make your philosophical position known and discuss it in the report

- Be clear about your mixed methods design, why it is appropriate and ensure you show rigor

- Substantiate the value of the mixed methods approach for your study.

In the current study, the researcher has endeavoured to be true to the research language of each method, and to use mixed methods terminology, to report the philosophical underpinning of the research as well as her position with respect to why the particular mixed methods design was chosen and the value of the design to this study.

If the researcher does not pay particular attention to whether the research has an inductive (reasoning from specific observations to more general (Polit & Beck, 2012) or deductive (reasoning from the general principles to the specific (Polit & Beck, 2012) drive, a mixed methods study may compromise the validity of the research (Morse, Niehaus, Wolfe & Wilkins 2006). The current research has an inductive theoretical drive and throughout the study the researcher has therefore endeavoured to adhere to the underlying assumptions of inductive qualitative research. While this study has a quantitative phase, the overall thrust of the study is inductive, and the quantitative results were used to develop the Policy Delphi questionnaire that was used in the qualitative phase in a larger and more diverse sample of role players. The inductive theoretical drive was temporarily suspended during the deductive, quantitative phase because the qualitative phase had been completed. The inductive drive continued when the findings from the quantitative phase were integrated into those of the qualitative phase and a further review of the literature was done.

Transforming higher education in South Africa is a policy imperative of the national government (Department of Education, 1997), but the matter has not been extensively researched in South Africa. The mixed methods design allowed for the factors associated with access to health sciences education in universities to be identified, and then to establish whether these factors were perceived to be important to access to health sciences education in a larger and more diverse sample of universities. A mixed methods research design was used to encourage a deeper and more comprehensive understanding of the phenomenon under study. It allowed for data from the qualitative phase to be used to develop the Policy Delphi questionnaire that was used to collect data in the quantitative phase, enabling the corroboration of findings from the dominant qualitative phase.

3.3.1   Mixed methods sequential exploratory design

The design used to conduct this research was the mixed methods sequential exploratory design (Creswell & Plano Clark, 2007), which consists of two distinct phases: qualitative followed by quantitative. The first qualitative phase allows for categories of factors to emerge that indicated the criteria used to determine who can access health sciences education. The quantitative phase identified the implications of these factors on access to health sciences education in universities using a Policy Delphi method. The qualitative phase preceded the quantitative phase because the study was exploratory, as not much research has been done in the area of access to health sciences education in South African universities.

Greene, Caracelli & Graham (1989) identified five purposes for mixed-method research: triangulation, complementarity, development, initiation and expansion. This study was in the *complementarity genre*, which is defined as using the different methods to seek elaboration, enhancement, illustration and clarification of the results from one method with results from the other method (Caracelli & Greene, 1993).

The researcher first collected and analysed qualitative data to identify and describe the factors related to access to health sciences education in four universities that offer health science education. This information was used to develop a questionnaire that asked about the policy implications of the identified criteria in Phase 2 as identified on Table 3.1. The results of the first two phases were used to develop guidelines to assist the Faculties of Health Sciences at South African universities regarding policies to inform access to health sciences education during the third phase of the research.

3.4 Objectives, methods and outcomes

There were seven study objectives which were achieved during the three different phases of the research which are presented in Table 3.1. This table also identifies specific methods to achieve those objectives along with outcomes related to each of the seven objectives.

Table 3.1   Objectives, methods and outcomes

	Objective	Phase	Method	Outcome
1	To establish current access criteria to health sciences education at South African universities	Phase 1: review of existing policies and practices	Document review of universities admission policies: tool 1	Literature review of the current access criteria – chapter 2
2	To identify how the access criteria to university health sciences education are implemented		Qualitative interviews with a dean, deputy deans and a senior administrator: tool 2	Factors described in the South African context – chapter 4
3	To collate findings and identify criteria to use in questionnaire development	Phase 2. Assessment of existing practices	Qualitative content analysis	Content to include in Delphi Questionnaire identified- chapter 4
4	To establish the implications of existing practice on demographic representation and throughput rates of students in the health sciences		Quantitative Policy Delphi Technique – Deans, Deputy Deans, and Administrators: tool 3	Implications of policies on throughput rates established - chapter 4
5	To identify the criteria that need to inform the guidelines		Qualitative and quantitative data analysis	Criteria identified that needs to inform guidelines – chapter 5
6	To develop guidelines to broaden access into Health Sciences higher education.	Phase 3. Development of Transformation Guidelines to broaden access and develop policy briefs	Qualitative and quantitative data analysis	Guidelines developed – chapter 6
7	To develop policy briefs on access for key government and university officials		Develop policy brief for Minister of Higher Education and Training and university officials	Finalization of policy brief for government and university officials – chapter 6

3.5 Phase 1–review of existing policies and practices

The purpose of Phase 1 was to review the existing policies and practices related to accessing university health sciences education in South Africa in the context of social redress. Objectives 1: To establish current access criteria to health sciences education at South African universities and Objective 2: To identify how the access criteria to university health sciences education are implemented were addressed during this phase.

3.5.1   Research setting

There are eight universities offering traditional health science courses', including medicine, in South Africa, as indicated in Chapter 2, and a decision was made prior to the research commencing that only those health science faculties that included medical schools would be included in the research. The choice of health science faculties was made because the South African National Department of Health has identified Nursing, Pharmacy and Medicine as scarce skills in the South African public health sector (Department of Health, 2011). Four institutions were identified, these being three traditional universities and one comprehensive university, which represents two of three types of universities found in South Africa. They were purposefully chosen because they were representative of the universities offering health sciences education landscape. The third type are Universities of Technology, which offer vocational training in a limited number of health science professions, such as nursing, emergency medical care and rescue, biomedical technology and clinical technology, but do not offer medicine, and were therefore not included.

The four universities sampled have different academic administrative structures which have not been described in this section in order to maintain the confidentiality of the

universities. It might be possible to identify the university from the description of the academic administrative structure. The following four institutions were sampled:

- University A, a historically disadvantaged institution (HDI), is a multi-campus, comprehensive university situated in a historically disadvantaged area of the country serving a largely rural population. This university resulted from a merger of a traditional university and two technikons. University A is a comprehensive university which offers both academic and vocational qualifications.

- University B represents an urban, historically advantaged institution (HAI) which is also the product of a merger between an HDI and an HAI in 2004. It is a large multi campus university with over 40 000 students spread over five campuses in two centres. This is a traditional university in the South African context in which traditional, comprehensive and universities of technology comprise the higher education milieu.

- The University C is a historically advantaged institution which is situated in an urban centre but with a rural satellite campus. This university has a student body of 33 000 students who are situated in seven faculties spread over three campuses. This is a multi-cultural parallel medium traditional university, which has not merged with any other institution.

- University D is one of the largest universities in South Africa with more than 50 000 students. It is a historically advantaged university in the traditional style and has not been merged with another university. This university has nine faculties

spread over seven campuses and a number of other sites of operation such as the academic hospital.

3.5.2 Sampling

Purposeful sampling of four (4) universities offering health science education were used as they offered diversity found in universities in South Africa in respect to settings (rural or urban) and population served.

Mixed methods sampling of the setting and participants (Teddlie & Yu, 2007) was used in this sequential exploratory study and consisted of three steps. This sampling strategy was used to identify four universities and the Deans, Deputy Deans and Senior Administrator from these universities who had knowledge and experience in the implementation of access policy in university health sciences education who were in a position to address Objective 2.

3.5.2.1 Research participants

Within these four universities purposeful sampling of the Deans of Health Science faculties, as the gatekeepers of access to universities, within the homogeneous tradition was employed (Onwuegbuzie & Leech, 2007). Deans of Health Sciences are administrative heads of faculties which include a number of schools, departments and/or research institutes. A faculty of health sciences could include a school of nursing, a school of pharmacy, department of physiotherapy, a department of occupational therapy and a school of clinical medicine as an example. Each of these schools or departments would have a head who would report to the Dean of the Faculty of Health Sciences. Depending on the size of the university the Deans would report to a Deputy Vice Chancellor or the

Vice Chancellor/Principal of the university. The homogeneous tradition involves sampling those who possess similar characteristics or attributes of interest (Onwuegbuzie & Leech, 2007; Patten, 1990). These participants were considered to be homogenous as they are similar in respect of education level and seniority within the university (Kemper et al., 2003). In this study the Deans of Health Sciences were thought to have an intimate knowledge of the access policies at the participating universities and so were key informants in the early stages. The Deans of Health Sciences are responsible for the recruitment and enrolment of students into the various schools and/or departments within the Faculties of Health Sciences in order that they meet the enrolment targets set by the university, the development of access policy and the implementation thereof.

Face to face recruitment was a strategy utilised to recruit Deans of Health Sciences. This strategy was used in an effort to get increased participation in the study. The issue of access to higher education is a challenging area and recruitment into the current study was difficult. The Dean of Health Sciences at the University of KwaZulu-Natal was the Chairperson of the Committee of Health Science Deans of South Africa who personally knew all the Deans of Health Sciences in South Africa and facilitated the researcher meeting and requesting participation of these Deans of Health Sciences. The researcher was able to use the Committee of Health sciences Deans of South Africa meetings to gain access to the Deans. These personal relationships and endorsement for the study from the Dean of Health Sciences at the University of KwaZulu-Natal was a feature in the enrolment of Deans of Health Sciences into the study. The Deans in some cases suggested other participants who they thought would be able to contribute to the data.

Snowball sampling was the sampling strategy of choice for the third level in order to get a broad range of opinions and experiences a cross-section of participants had been identified as being directly involved in access to health sciences in universities with the intention to transform higher education in South Africa (Onwuegbuzie & Leech, 2007). The Deans of Health Sciences in each of the four settings identified relevant stakeholders who were approached to participate in the study based on their knowledge and working experience of the various policies addressing access for students to health sciences education in universities in South Africa.

3.5.3   Qualitative Phase 1 data collection methods

Evidence was collected from two sources:

- Document review (appendix 1) of a number of documents dealing with access to higher education in South Africa and human resources for health in South Africa. These documents were sourced off the internet, the sampled university websites and the websites of the Department of Health and DoHET.
- In depth semi-structured interviews (appendix 2) with Deans, Deputy Deans and Senior Administrator in Health science Faculties (N=6).

a.   Objective 1. To establish current access criteria to health sciences education at South African universities

A document summary form was used to clarify and summarize the document (appendix 1) and to collate and organize all the information gathered from the documents reviewed (Bloomberg & Volpe, 2008). The documents, which referred in some way to access to higher education and/or health sciences within the universities were sourced from the various websites of the Department of Health and the Department of Higher Education and

Training as well as participating universities following a search of the websites by the researcher. The document review of South African government policies regarding access to higher education and human resources for health as well as University specific policies on access, was employed to ensure as much information as possible was accessed in order to identify categories of factors related to access to health sciences education in universities in South Africa and the implications of these for health sciences education. University documents were reviewed to corroborate information given by the interviewees. They were used to see whether there was any alignment between, for example, the university vision and mission and whether this was actually reflected in the implementation of access policy at the university.

b. **Objective 2. To identify how the access criteria to university health sciences education are implemented**

In depth one-on-one interviews were conducted with participants identified as having experience of access to health sciences education in universities in South Africa. The in depth semi-structured interviews were voice recorded electronically and transcribed verbatim.

Participants were approached, either face to face or via e-mail and telephone and asked to participate in the study. Information was given to them about the study by the researcher who also gave them an information sheet and consent form to sign (appendix 3). Once the consent form was signed a suitable place was agreed upon to conduct the interview and permission was sought from the participant to record the interview on a voice recorder. The interviews were conducted with participants who had been identified by the researcher or by their Dean, as having in-depth knowledge of access to health sciences education in higher education. The interview addressed the issue of access to health sciences education

in universities and how the South African government policy on transformation of higher education has impacted on access of demographically-representative students. This method was chosen so that the interviewees felt free to express their opinions and share their experience with regard to access for health sciences education at the four universities (Yin, 2009; Sim & Wright, 2000). The interviewer began the "conversation" with a broad question:

> *I trust you are aware of the governments` White paper on the Transformation of higher education which came out in 1997? One principle of this white paper was redress for past inequities. The universities, as autonomous institutions, have translated parts of that white paper into selection and admission policies. I am interested to hear of your knowledge and experience of how the implementation of these policies is affecting access to health science education.*

This is also known as a grand tour question (Crabtree & Miller, 1999).   Nine guide questions (see appendix 2) were used to prompt the interviewee in order to illicit information necessary to answer the research questions.

The in depth interviews were conducted with the following categories of participants:

- Two Deans of a Health Science Faculties

- Three Deputy Deans of Health Science Faculties

- One Senior administrator in Faculties of Health Sciences

Dean A was approached face to face and asked to participate in the study. The Dean was interviewed in her office during normal working hours. The interview was disturbed a couple of times until the secretary was asked to hold any queries until the interview was over.

Dean B was recruited via e-mail following the recommendation of an interviewee and agreed to be interviewed. This Dean was interviewed in his office during working hours. The interview was uninterrupted and conducted in a relaxed atmosphere. Dean A and Dean B were from the same university.

The three Deputy Deans of Health Sciences Faculties from three different universities were interviewed in a neutral venue away from their places of employment while they were attending a meeting of the Committee of Health Science Deans of South Africa. These participants had been referred by their Deans to participate in the study. These interviews were done in a neutral venue and the researcher felt that the participants were not as relaxed as those who had been interviewed in their own offices. An element of anxiety crept into the interviews because of time constraints and competing agendas – the interview and the meeting. Two of the interviews occurred during the lunch break at the request of the interviewees. One of the Deputy Deans interviewed made an offer to the researcher to follow up with a telephone interview if the need arose and a second Deputy Dean shared that her Dean would be very happy to answer any questions the researcher might have, over the telephone.

The Senior Administrator was also recruited via e-mail following the recommendation of an earlier interviewee and was interviewed in his office during office hours. This interview was disturbed once by the noise of protesting students. The Senior Administrator initially asked to keep the door open so that he could hear what was going on but when the protest became disruptive to the interview he asked to close the door. The interview then proceeded uninterrupted.

3.5.4 Phase 1: Data analysis

Data analysis in mixed methods research is a continuous, iterative process (Onwuegbuzie & Teddlie, 2003). Qualitative content analysis (Graneheim & Lundman, 2004) was employed to analyse the data in this phase of this study. This analytical method was chosen because the researcher wanted to identify codes and categories in the data in order to develop a quantitative questionnaire in the second phase of the study.

Interviews were voice recorded and transcribed verbatim by the researcher. The verbatim transcripts were read and re-read in order for the researcher to get a global impression of the data (Henning et al., 2004). This allowed the researcher to become immersed in the data, an important concept which permit`s a thorough grasp of some of the subtleties in the data (Bloomberg & Volpe, 2008; Sim & Wright, 2000). Qualitative content analysis using the framework developed by Graneheim & Lundman (2004) was used to analyse the qualitative data. The raw data was translated into meaning units close to the text consisting of sentences and statements which related to each other through content and context. These meaning units were further abstracted to a higher level resulting in condensed meaning units and coded. Abstraction of the data is when the condensed text is described and interpreted on a higher level (Graneheim & Lundman, 2004). Codes are the labels given to meaning units and enable the researcher to interrogate the data in novel ways (Graneheim & Lundman, 2004). Related codes were grouped into sub-categories and categories which were further reduced into a theme (Graneheim & Lundman, 2004; Henning et al. 2004).

3.6 Phase 2: assessment of existing practices

The purpose of Phase 2 of this study was to establish the implications of existing practice on access to university health sciences education.

a. **Objective 3: to collate findings and identify criteria to use in questionnaire development,**

b. **Objective 4: to establish the implications of existing practice on demographic representation and throughput rates of students in the health sciences and**

c. **Objective 5: to identify the criteria that need to inform the guidelines were addressed in this second phase of the study.**

This was an important step towards meeting the objectives of the study namely: Phase 1 to review existing policies and practices on access to health sciences education in universities, Phase 2 the assessment of existing practice and Phase 3 to develop transformation guidelines to broaden access to health sciences education in universities in South Africa in the context of social redress and develop policy briefs.

3.6.1 Research setting

All eight (8) universities in South Africa offering health science education were included in the quantitative phase of the study. These universities are distributed in six of the nine provinces in South Africa and therefore representative of the diversity of language, population demographics and rural/urban environments which mirror the complexity of South African higher education. The 8 universities are a mix of both traditional and comprehensive universities.

3.6.2 Sampling of participants

Phase 2 of this sequential exploratory study employed quantitative methodology and purposive sampling of the categories of employees responsible for access at eight (8) public universities, offering health science education, in South Africa. This sampling strategy was used as the researcher wished to elicit information from participants who are

knowledgeable about and recognized as experts on the issues under study (Creswell& Plano Clarke, 2007). The university employees invited to participate in this phase of the study included:

- Deans of Faculties of Health Sciences

- Deputy Deans of Faculties of Health Sciences

- Registrars

- Deans of students

- Admissions officers at higher education institutions

- Recruitment/Schools Liaison Officers

- Financial Aid Officers

- Extended programme officers

- Heads of departments/schools within Health Science faculties

- Other categories of employee`s who were identified during the course of data collection as having specific knowledge about the issues under inquiry.

3.6.3   Phase 2 data collection tool

The results of the qualitative phase were used to develop a questionnaire which was used to establish the categories, which had emerged from the analysis. Eight categories emerged out of the qualitative data and three questions per category were developed from the condensed meaning unit. The items on the questionnaire were subjected to two (2) rounds of item content validity and the content validity index for the items (I-CVI) was calculated. The items were tested for relevance of item and clarity of wording.

Round one of the Item Content Validity was conducted amongst delegates attending the annual conference of the South African Committee of Health Science Deans on *Training*

competent healthcare professionals for the 21st Century: Challenges and Solutions.
Questionnaires were handed out by the researcher to delegates at the invitational
conference. Participants were asked to put the completed questionnaires into boxes which
were placed in the conference venue.

In the second round of I-CVI eighteen 25-item questionnaires were posted in July 2013,
together with a self-addressed, stamped envelope to a randomly selected sample of heads
of schools, departments or programmes at the 8 universities offering health science
education. The sample was randomly selected using the computer software SPSS. This
randomly selected sample represented 44% of the schools, departments or programmes
offered at these universities. This received a poor response rate and so in order to improve
the response rate a second cohort of 18 (44%) heads of schools, departments or
programmes was randomly selected, again using SPSS to generate a random selection and
questionnaires posted, in September 2013, together with a self-addressed, stamped
envelope for the return of the completed questionnaire. This 2nd round of I-CVI was done
parallel to the quantitative data collection process as the initial items had been validated in
respect of relevance and clarity. The process was continued in an endeavour to develop a
validated and reliable instrument which could be used in future research on access to
higher education for health sciences education.

3.6.4   Phase 2 data collection

The quantitative data collection of the second phase of the study was done in order to test
the categories which emerged in Phase 1 in a larger sample in an effort to generalise the
results to health science education in public universities in South Africa. The Policy
Delphi (Linstone & Turoff, 1975) method of data collection was utilised in phase 2 of the

study. This iterative method was considered to be applicable to mixed methods research as a method which merges the qualitative and quantitative phases of the study. The Policy Delphi method was deemed appropriate for this study as the study was exploratory sequential and so data from the first phase could be considered the first round of the Delphi data collection. This method enabled the researcher to collect data from participants who were judged to be experts on access to health sciences education in universities. This meant that a cross section of expert opinion was gleaned. The Delphi method was an appropriate method of data collection in this study not just for data reasons but also for methodological reasons – being a mixed methods study. The Delphi technique allowed for the collection of both qualitative and quantitative data and facilitated mixing in the final analysis. The method starts with the qualitative method by identifying factors and then moves to quantifying the factors which have been identified (Hall, 2009). Franklin & Hart (2007) have called the Delphi method of data collection a *hybrid* of the two different methodologies in qualitative and quantitative inquiry. It has been described by Elmer Hall (2009) as the "ultimate mixed methods study tool (p.8)." The researcher would argue that the Delphi technique facilitates a pragmatic approach to data collection by collecting both quantitative and qualitative data in one instrument.

3.6.4.1. Policy Delphi Method

Policy Delphi represents a significant departure from the original Delphi in that it seeks to generate as much opinion as possible on the major policy issue (Linstone & Turoff, 1975) and not consensus. There are three types of Delphi methods – classical, decision making and policy Delphi (Franklin & Hall, 2007). The classical Delphi is used to generate facts about a specific situation and the decision-making Delphi is used to support collective decision making (Franklin & Hall, 2007). The classical Delphi and the decision-making

Delphi seek consensus from participants and this is the major difference between them and Policy Delphi (Franklin & Hall, 2007; Linstone & Turoff, 1975).

The Policy Delphi is a tool for the analysis of policy issues and not for decision making (Linstone & Turoff, 1975) – it is premised on wanting as many views as possible and is a methodical way of comparing these views and information relating to a specific policy area, which in the current study is access to health sciences education in universities in the context the South African government`s commitment to transformation of higher education. Policy Delphi tries to ensure that all possible options are put forward by informed advocates, for consideration and was fitting for use in this study to glean as much opinion as possible on the implementation of access policy in higher education. Varied opinion from participants who are involved with admission policy at the universities was sought in order to develop guidelines on access health sciences education in universities in South Africa. This opinion was sought across different categories of staff both academic staff as well as administrative staff and across all levels of seniority.

The questionnaire was generated from the qualitative data and e-mailed to a panel of expert participants who were asked to rate the questions and return their responses; this had occurred over two (2) rounds (Sim & Wright, 2000).

a.   Number of rounds

The Policy Delphi method involves six (6) rounds which, according to Linstone & Turoff, 1975 (p.88) include:

1. Formulation of the issues

2. Exposing the options

3. Determining initial positions on the issues

4. Exploring and obtaining the reasons for disagreements

5. Evaluating the underlying reasons

6. Re-evaluating the options.

However it is important not to develop participant fatigue by having too many rounds so the literature reports variations between two and four rounds as being reasonable (Keeney et al., 2006; De Villiers, De Villiers & Kent, 2005) and most Policy Delphi`s aim to keep the rounds limited to three or four (Linstone & Turoff, 1975). This was achieved in the current study by using the information gleaned from the qualitative phase of the study to develop the initial range of categories and asking the participants to state their position and underlying assumptions on the second round (Linstone & Turoff, 1975). Participants were encouraged to add to the initial range of items, any that they felt should have been included but were not.

Policy Delphi seeks to get as many differing positions and the main for and against arguments for these positions (Turoff, 1975). In analysing the results of the rounds the researcher decided on positions that were supported by most participants, those that were cause for disagreement and those which were not important and could be discarded (Turoff, 1975). Despite the fact that Policy Delphi does not seek consensus, it is important in deciding what to include in the guideline and what to leave out, that the researcher makes a decision on what she considers support for a factor and what is considered *not important* with regard to access to health sciences education in universities, not everything can be included into the guideline. Keeney et al. (2006) suggest that when deciding on a consensus rate one might consider the importance of the research topic – in a life and death issue one might look for 100% consensus but something less critical one might decide on a somewhat lower level of consensus. There is little in the literature to guide researchers

using the Delphi Technique, on what consensus level to set and Keeney et al. (2006)
suggest it is good practice to set a consensus level before data collection starts. These same
authors do recognize that if the consensus level is set too low, for example at 51%, then
those who fall into the 49% category could be disgruntled and it may be hard to justify the
results of the Policy Delphi. For these reasons a consensus rate of 75% was selected, for
the current study, as indicating importance for access to health sciences education in
universities in South Africa and 20% for positions deemed unimportant to include in the
guidelines. This rate was decided on before the research began (Keeney et al, 2006). The
selection of a consensus percentage was crucial as this determined what were considered
common positions and what were considered not important and could therefore be
discarded during the development of the guidelines. All positions are reported in the final
report which will enable users of the research to understand the varying positions and the
importance of some of the positions adopted.

b.   Enhancing response rates

Poor response rates are a feature of quantitative questionnaire research and therefore it is
good practice to have some strategies for enhancing respondent participation (Keeney et
al., 2006; De Villiers, et al., 2005; McKenna, Hasson & Smith, 2002). The length and
complexity of the questionnaire also influences response rates (De Villiers et al., 2005;
Bowling, 2005). In this study the researcher used a variety of ways to enhance
participation. The questionnaire was kept to 25 questions with tick box answers and space
available for qualitative responses which made the questionnaire easy to complete in a
short time. The questionnaire was made available online through SurveyMonkey™ and so
delivered directly to the participants e-mail box. This allowed for convenience and ease in
answering – no paper, envelopes or post boxes. Two follow up reminders were sent to

individuals, 2 weeks apart, via e mail, through the SurveyMonkey™ facility at the time of each round of questionnaires.

c. Selecting the experts

Purposive sampling of participants who were thought to have expert knowledge in the area of access to health sciences education in universities was undertaken. "Experts" are defined as "specialists in their field" (Goodman, 1987), individuals who are "knowledgeable and/or influential" (Green et al., 1999; Lemmer, 1998; White, 1991) and as informed individuals (McIlrath, Keeney, McKenna & McLaughlin, 2009). The entire population of the below mentioned categories of employees in eight (8) universities offering Health Science education in South Africa were invited to participate in the study. Members of the panel of experts had one or more of the following criteria:

Table 3.2   *Panel membership for Policy Delphi methods*

Dean of a Faculty of Health Sciences in a university or equivalent position involving Health Sciences.
Dean of students in universities
Registrars
Extended programme officers
Admissions Officer/Recruitment Officer in universities
Recruitment/School Liaison Officers in universities
Financial Aid Officer or equivalent in universities
Heads of Departments/Schools within Health Science Faculties at universities
Other person deemed to have expertise in the area of access to universities, identified in the snowball sampling phase of the study.

d. Estimation of timeframe

It was estimated that this phase of the study would take approximately six (6) months to complete. Time is generally underestimated when using the Delphi method and it is estimated that each round takes approximately 8 weeks (Keeney et al., 2006). Sufficient time is needed to develop the questions, distribute the questionnaires, get them back, analyse the data, re-develop the questions for the next round and so it goes on until no new positions are emerging.

3.6.5 Phase 2 data analysis

The questionnaire was analysed in rounds – the results of the first round informing the second round and so on.

Frequencies and descriptive statistics were computed on the data. Statistics such as percentages, measures of central tendency, variance and reliability alpha were computed. Computer software, SPSS Version 21, was utilised for the analysis of the quantitative data.

Both qualitative and quantitative data was utilized for sequential qualitative-quantitative analysis using exploratory data-analytical techniques. Mixed analysis is the term given to analysing data in mixed research (Onwuegbuzie & Combs, 2011). The model for the mixed methods data analysis process suggested by Onwuegbuzie and Teddlie (2003) has been used in this study. This model utilizes seven (7) stages which are sequential but not necessarily linear (Onwuegbuzie & Teddlie, 2003).

The seven stages were:

- Data reduction

- Data display

- Data transformation

- Data correlation

- Data consolidation

- Data comparison and

- Data integration (Onwuegbuzie & Teddlie, 2003).

3.6.5.1. Data reduction

Data reduction refers to selecting; focusing, simplifying, abstracting and transforming (Miles & Huberman, 1994) both the qualitative and quantitative data.

The qualitative data was abstracted and transformed into sub-categories, categories and an overarching theme. The quantitative data was reduced through the computation of frequencies and descriptive statistics – including measures of central tendency and variance.

3.6.5.2 Data display

The reduced data is displayed in appropriate "... selective and simplified gestalts or easily understood configurations" (Miles & Huberman, 1994, p.11). The displays can take the form of matrices, graphs, charts, rubrics networks, lists and Venn diagrams (Onwuegbuzie & Teddlie, 2003; Miles & Huberman, 1994). Tables were used in this study to display the data.

3.6.5.3 Data transformation

During the data transformation phase of mixed analysis, the qualitative data can be *quantitized* (Sandelowski, Voils & Knafl, 2009; Onwuegbuzie & Teddlie, 2003; Miles & Huberman, 1994).This involves transforming qualitative data into numerical codes (Onwuegbuzie & Combs, 2010). Quantitative data can be *qualitized,* by transforming the quantitative data with qualitative techniques (Onwuegbuzie & Teddlie, 2003; Miles & Huberman, 1994). *Quantitizing* of data refers to the assignment of numerical values to data

which was not considered numerical (Sandelowski, Voils & Knafl, 2009). The *quantitizing* of qualitative data allows for descriptive statistics to be applied to the underlying qualitative data (Sandelowski, Voils & Knafl, 2009; Onwuegbuzie & Combs, 2011; Onwuegbuzie, 2003).

In this study the qualitative data was *quantitized* through counting the frequencies of the emergent sub-categories and representing the data statistically (Sandelowski, 2000). Manifest (sub-categories which were obvious in the data) and latent (sub-categories which were seen to be there, between the lines) effect sizes were computed on emergent sub-categories (Sandelowski, Voils & Knafl, 2009; Sandelowski, Barroso & Voils, 2007; Onwuegbuzie & Teddlie, 2003).

The effect size was computed by first taking the sub-categories and "binarizing" them (assigning a 1 or 0), and then by acknowledging for each participant whether the sub-category was attributed to them or not (Sandelowski, Barroso & Voils, 2007; Onwuegbuzie & Teddlie, 2003). The binarizing of the sub-categories enabled the development of, what Onwuegbuzie (2003) refers to as an *inter-respondent matrix* (participant x sub-category matrix) and an *intra-respondent matrix* (unit x sub-category matrix). The *intra-respondent matrix* is one in which the statements or observations which had contributed to the sub-categories were displayed in a matrix (Onwuegbuzie, 2003). In this study, the inter-responder and the intra-responder matrices were, both, developed from the qualitative data and so enabled the computation of the effect sizes. The computation of the effect sizes of the emergent sub-categories was important to the development of the quantitative questionnaire. The effect size gave an indication of the importance of the sub-categories in the qualitative data and could be compared with the quantitative data.

3.6.5.4 Data correlation

Data correlation in a mixed analysis refers to the correlation of qualitative data with quantitative data (Onwuegbuzie & Combs, 2011). In the current study the quantitized data was correlated with the quantitative data collected in the second phase.

3.6.5.5. Data consolidation

Data consolidation refers to the combining or merging of multiple data sets to create new or consolidated codes, variables or data sets (Onwuegbuzie & Teddlie, 2003). This was not done in the current study.

3.6.5.6 Data comparison

Data comparison refers to the comparing of the qualitative and quantitative data (Onwuegbuzie & Combs, 2011; Onwuegbuzie & Teddlie, 2003) which in the current study, was done by using the codes analysed from the qualitative data to develop an instrument which was used to collect data in Phase 2, the quantitative phase.

3.6.5.7 Data integration

Some form of data integration is the essence of a mixed-method approach (Caracelli & Greene, 1993). In this study the data was collected sequentially with the qualitative data informing the Policy Delphi questionnaire. The qualitative data from the various interviews was integrated and initial interpretations made. The quantitizing of the qualitative data is a strategy for the integration of data (Bazeley, 2009) which was employed, as mentioned earlier, in this study. From this, inferences were made which required further data collection in order that a conclusion could be drawn (Onwuegbuzie & Teddlie, 2003). The use of the results of Phase 1 of the study to develop the Policy Delphi questionnaire for Phase 2 was another strategy for integrating data which was used in this research (Bazeley, 2009). This process was subjected to legitimation (as discussed below).

3.7 Phase 3: Guideline and Policy brief development

During phase 3 the following objectives were addressed: objective 6: to develop guidelines to broaden access into Health Sciences higher education and objective 7: to develop policy briefs on access for key government and university officials.

A guideline could be defined as a recommendation designed to assist the decision making processes (Atkinson, 2008). Guidelines are there to assist decision making and should be appropriate to the circumstance – they do not force a specific decision (Atkinson, 2008; Bowker, Lakhanpaul, Atkinson, Armon, MacFaul & Stephenson, 2008). Guidelines essentially define best practice (Campbell, Braspenning, Hutchinson & Marshall, 2003).

While all universities in South Africa grapple with the issues of access, transformation and maintaining standards, guidelines on access to health sciences might go some way to assisting the universities to make appropriate decisions regarding access. As Mokadi (2004) pointed out in a paper delivered at the Council for Higher Education Colloquium in November 2004, transformation is more than changing the racial composition of the student body. Therefore access guidelines which capture best practice, rooted in evidence and developed by those who are directly involved in access to health science education at university can assist with the aspect of access for redress necessary on the path to transformation.

The process of guideline development requires rigour and participation of stakeholders in order that the guideline is used by those it is intended for. The following process was adhered to in the current study.

a) Scope of the guideline

The overall objective of the guideline is to give some guidance to those who have responsibility for access to health sciences education in universities in the context of social redress to facilitate greater transformation in the health sciences in universities.

b) Forming relevant questions

The research questions for this study were utilised as the questions from which the guideline was developed. The research questions were:

1. What are the factors related to access to health sciences education in universities in South Africa in the context of social redress?

2. What are the implications of these challenges and facilitators on access to health sciences education in universities in South Africa?

c) Searching the literature for evidence

As described in chapter 2, a comprehensive search of the literature was done using diverse electronic databases and internet sites from key organizations. A document review of relevant documents, such as, various Department of Education and Department of Higher Education and Training reports and White Papers, Department of Health Human Resources for Health and the universities policy documents, was part of the data collection which contributed to the guideline

d) Conducting a formal consensus study

The Policy Delphi Technique as described was employed to gather opinions from informed participants and enabled the researcher to make decisions about what to include into the guideline. This was done by setting a level for support of the factor and a level

considered unimportant to include into the guideline. Seventy five percent was considered

to be supportive of the factor and twenty percent was deemed to not be important enough

to include in the guideline. These levels were decided on before the research commenced.

e) Forming recommendations

Categories and sub-categories identified in Phase One of this study informed the questions

for the Policy Delphi questionnaire in Phase Two. The results of Phase One were

integrated with the results of the Phase Two and the literature to form recommendations.

f) Writing the guideline

The guideline is written in such a way as to make the development process transparent and

accessible to the reader/user. The reader/user will be able to easily find the information

(Bowker, et al., 2008).

g) Diffusion and dissemination

The guideline will be disseminated through publication in peer reviewed journals and

conference presentations (Bowker et al., 2008). The dissemination of the guideline will be

through a guideline development document (technical report) which will include a "key

recommendations" document that will be given to each participating university

(Lakhanpaul, 2008). The guideline development document will report how the guideline

was developed, the research process, data collection, analysis and how the key

recommendations emerged from the results and the integration of appropriate literature

into the results.

3.8 Rigour

Rigour in research attests to the validity and reliability of the research. Ryan-Nicholls and Will (2009) are of the opinion that rigour is part of the repetitive, self-rectifying nature of research.

 3.8.1 Qualitative rigour

Morse, Barrett, Mayan, Olson & Spiers (2002) argue that the traditional methods of ensuring rigour in qualitative research have shifted the responsibility from the researcher to the reader or consumer of the research. They maintain that the strategies proposed, such as the Lincoln and Guba trustworthiness framework, for the verification of rigour all apply post-hoc and therefore do not enable the researcher to ensure validity during the research process and the self-correction of any deviation (Morse et al., 2002). Morse et al (2002) suggested that the plethora of terminology to describe validity and reliability in qualitative research is confusing and therefore propose the use of validity and reliability in order not to marginalize qualitative research from "mainstream science and scientific legitimacy (p. 8)." In this study the researcher has maintained the use of the words validity and reliability with respect to both the qualitative and quantitative phases of the study.

John Lewis (2009) identified five paradigms or what he terms "moments" through which qualitative research has come over time and how in each the issue of validity and reliability assumed different faces and that each time qualitative researchers have to justify the validity and reliability of their research. This has made the issue of validity and reliability messy (Lewis, 2009; Morse et al., 2002) in qualitative research and why Morse et al. (2002) suggest that the qualitative researcher needs to take back control of the verification strategies used in their research to those that are integral to the research and

enable self-rectification. Ryan-Nicholls and Will (2009) and Miyata and Kai (2009) suggest that many writers have endorsed the notion that validity and reliability criteria can be applied to both qualitative and quantitative research but that some of the criticism levelled at the notion of assigning validity and reliability to qualitative research has been that not enough attention is paid to the epistemological (Rolfe, 2006) differences between qualitative and quantitative research. Rolfe (2006) does not support the notion of using quantitative terminology such as validity and reliability in qualitative research. A number of writers have suggested that the two research traditions need to have their own criteria for validation. However the researcher does not think that those who advocate for the use of the terminology validity and reliability as applied to qualitative research are suggesting that the criteria for verification are the same for both traditions. They are using common terminology but within the various traditions there are different approaches for assessing validity and reliability.

In this study verification occurred incrementally, throughout the qualitative phase of the study to ensure validity and reliability. The process of verification included checking, confirming, making sure and being certain that no errors had crept into the research process and this checking was integrated throughout the study by identifying and correcting any methodological errors before they became part of the conclusions. The qualitative research was iterative and therefore the researcher moved back and forth between design and implementation in order to ensure that congruence between research questions, chosen methods, sampling, data collection and analysis and relevant literature was achieved. This process of the researcher constantly checking congruence between the research question, the design, recruiting participants, and the review of the literature, data collection and analysis and confirming adequacy between these stages allowed the

researcher to make decisions about continuing, stopping or modifying the research process in order that validity and reliability could be shown.

This process of verification required the researcher to be responsive to the developing study, to be responsive to the analysis of data and use the emerging codes to inform further data collection. The researcher was able to explore some of the emerging codes with participants following the analysis of the initial interviews. The findings which emerged from the on-going analysis guided further sampling, further data collection and so on. This process of checking and confirming that there was methodological congruence allowed the researcher to ascertain that the qualitative phase of this study was valid and reliable – the tenets of qualitative research were observed at all times. The sample size was small and the data was collected and analysed concurrently Morse, et al., (2002) believe that the greatest threat to validity in qualitative studies is the lack of responsiveness on the part of the researcher.

This research utilized Morse et al. (2002) verification in qualitative research strategies.

3.8.1.1 *Verification strategies.*

Verification strategies used in this study included:

- ensuring methodological congruence

- sampling sufficiency

- showing a dynamic relationship between sampling, data collection and analysis and

- Thinking theoretically (Morse et al., 2002).

Methodological congruence was observed through one-on-one interviews with key informants who had expert knowledge and experience of issues in access to health sciences

education in universities in South Africa, who could answer the research questions and supplemented with the analysis of various documents dealing with access to higher education and access to health sciences in the universities sampled. The data analysis procedures were congruent with qualitative content analysis.

In this study, purposive sampling occurred amongst those university employees perceived to be at the rock face of access to health sciences education in the identified universities, coupled with the use of snowball sampling, to sample participants who were identified as having knowledge and experience in the area of access to health sciences education. The sampling continued while new ideas were forthcoming and these were explored in the interviews which followed to elicit differing opinions. Further purposive sampling of participants across eight universities offering health sciences was conducted in the second phase of the study (quantitative phase). This was to ensure that a broad range of opinions of those who play a role in access to higher education were captured.

A dynamic relationship between sampling, data collection and analysis was reached through the mixed methods design of this study. Sampling was determined by the research questions but as analysis of the data occurred other participants were identified and approached to participate in the study. Data was collected and analysed, documents studied and literature reviewed concurrently. This process enabled the researcher to explore new codes, which emerged from the data analysis, in subsequent interviews. This iteration allowed for a deeper understanding of the emergent codes which were then coded into sub-categories and categories. Phase 2 of the study allowed for the development of a questionnaire and the verification of the importance of the eight categories to access to

health sciences in universities in South Africa, which had emerged in the first phase of the study.

As new ideas emerged in the analysis these were explored in subsequent interviews by posing questions regarding the new idea to the participant and by reviewing the idea in the literature. Morse et al. (2002) refers to this as *thinking theoretically* (p. 13). This allowed for the construction of categories describing access to health sciences education in universities in South Africa

3.8.2 Quantitative rigour

Validity of the Policy Delphi results can be assessed through the development of the questionnaire, the defining of consensus and disagreement, which was set at 75% and 20% respectively, selection of the "expert" panel, the sample size and the data analysis (De Villiers et al., 2005) all of which are reported in detail in this final report.

In the development of the Policy Delphi questionnaire construct validity and content validity were conducted and are reported in detail in the results chapter. The reliability alpha has also been reported.

3.8.3. Rigour in mixed methods

Tashakkori and Teddlie (2008) have proposed an integrative model of inference quality in mixed methods research. Their proposed model was premised on a robust and proper design that has been implemented with rigor in order to make a strong inference (Tashakkori & Teddlie, 2008). Based on the quality of design and quality of interpretations

they suggested that design quality and interpretive rigor be used to evaluate the quality of judgements (Tashakkori & Teddlie, 2008).

3.8.3.1   Design Quality

Design quality refers to the inputs to the process:

1. Design suitability

2. Design fidelity (adequacy)

3. Within design consistency

4. Analytic adequacy (Teddlie & Tashakkori, 2009).

a. Design suitability

The exploratory sequential mixed methods design was an appropriate design for the current study. The research questions required the researcher to explore, describe and analyse the factors related to access to health sciences education in universities in South Africa and the implications of existing practice on student demographics and throughput rates. The researcher needed to use the qualitative data to develop an instrument to collect data from a larger sample of participants. The quantitative phase of the study was necessary to clarify the categories which emerged out of the qualitative data. Both the first phase and the second phase of the current study addressed the same research questions. The reason for this was because the first phase was used to identify and describe the factors related to access to health sciences education in universities in South Africa so that a questionnaire could be developed for the second phase which was to explore the factors in a larger sample and analyse the implications of the identified factors on the student demographic in South Africa and the throughput rates.

b. Design Fidelity

Both the qualitative and quantitative phases of the study paid homage to the methods appropriate for those designs and were implemented with rigor. All aspects of the study for

example qualitative traditions of sampling, data collection and analysis were used for the qualitative phase. The data analysis procedures were appropriate and adequate for the types of data collected – qualitative content analysis for the qualitative data and descriptive statistics for the quantitative data. The data was displayed in tables.

c. Within-design consistency

Within design consistency was observed across all aspects of this exploratory sequential study. Phase 1 moved seamlessly into the second phase. Qualitative data was collected and analysed and once the categories had been identified the second phase began with developing a Policy Delphi questionnaire which was tested for content and construct validity. Once the first round of that was done the quantitative data collection was started. Each phase of the study followed each other in a logical manner.

d. Analytic adequacy

The researcher believes that the analysis procedures chosen for the current study were appropriate and adequate. Content analysis was chosen for the qualitative phase and the Policy Delphi was analysed using descriptive statistics and content analysis for the qualitative data on the Delphi questionnaires. The qualitative data was *quantitized* and all the data was integrated in the final outputs.

3.8.3.2 Interpretive Rigour

Interpretive rigour is the extent to which reliable explanations have been made based on the data obtained (Tashakkori & Teddlie, 2003). There are five criteria or standards which need to be met in order that rigour can be assessed and the quality of the inferences improved (Tashakkori & Teddlie, 2008).

a. Interpretive consistency

In this study the findings and inferences are consistent with the data – inferences from the qualitative data have been illustrated with examples of actual participant words from the transcripts. The quantitative analysis has used appropriate descriptive statistics. The small sample size meant inferential statistics could not be computed.

b. Theoretical consistency

This refers to the consistency between inferences from the data and current theories in the academic or empirical literature (Tashakkori & Teddlie, 2008). The discussion chapter of this research report links what is known in the field to the findings of this current research.

c. Interpretive agreement

Interpretive agreement suggests that others would reach the same conclusions as the researcher making those conclusions (Tashakkori & Teddlie, 2008). The qualitative data which was used to develop the Policy Delphi questionnaire was distributed amongst participants who were judged to be experts in the area of access to health sciences education in universities. A consensus level was decided on and has been reported in the final research report, indicating interpretive agreement.

d. Interpretive distinctiveness

 This criterion is based on making the most acceptable conclusions from the results of the study (Tashakkori & Teddlie, 2008). Testing the emergent categories through the Policy Delphi questionnaire ensured that the conclusions drawn by the researcher were subjected to verification in a larger sample.

e. Integrative efficacy

Integrative efficacy relates to the meta-inferences drawn from the integration of the findings, conclusions and policy guidelines gleaned from both the qualitative and quantitative phases (Tashakkori & Teddlie, 2008). All the findings from the current

research were integrated into one. The final report, guidelines and policy briefs are testament to the achievement of integrative efficacy.

3.9 Ethical Considerations.

The ethical principles of autonomy, beneficence, non-maleficence and justice were observed throughout this study. The research proposal was submitted to the Human and Social Sciences Research Ethics Committee, University of KwaZulu Natal for review. Permission was sought and approval was obtained from relevant University office(r)s to interview Deans of Health Science Faculties, Deans of students, Admissions Officers, Recruitment/Schools Liaison Officers, Heads` of Departments/Schools within Health Science Faculties, Financial Aid Officers, and any other participants who were identified in the course of the research.

Potential participants were given a study information sheet which explained the purpose of the study and detailed the terms of the participants consent. Participants on agreement to be interviewed were asked to sign the study consent form. Consent was also obtained for all voice recording of interviews. Consent for the questionnaires varied according to whether the questionnaire was delivered face to face or not. For the face to face questionnaires participants signed a consent form. For those who returned the questionnaire via the postal service and those who completed the questionnaire online their consent was deemed to have been given by virtue of the fact that they returned the questionnaire.

Confidentiality of all data collected was assured. Interview transcripts and questionnaires did not identify individuals by name. No names were used in the research reports and identifying details were not linked in any way to data in the report.

Participants in the study did not derive any direct benefits from participation but it is hoped that the guidelines for access to health science education in universities in South Africa will be useful to them in facilitating access to marginalised people and assist in the transformation of health science faculties. Participants did not receive any financial reward for participation.

Data collected through the interviews was voice recorded with the permission of participants, transferred from the voice recorder to the personal computer of the researcher after which the voice recording was deleted. The audio file on the researcher`s personal computer is password protected. This file will be kept for five (5) years on the researcher`s personal computer, after which it will be deleted by the researcher. The completed Policy Delphi paper based questionnaires will be kept by the researcher under lock and key for a period of five (5) years before being personally destroyed by her and those electronic will be kept in a password protected file for 5 years before being destroyed.

Confidentiality was maintained and no names were used in the interviews or on the questionnaires, and it was not able to trace the data back to any participants. Every effort was made to ensure anonymity however this cannot be guaranteed in view of the small numbers of specific occupation categories that were interviewed. Interview transcripts do not identify the University.

Consent to participation in the study was voluntary. The decision not to participate in the study or to withdraw at any time did not result in any adverse effects for the individual. Every effort was taken to ensure that no harm was caused to their employment relationship with their employing university through confidentiality and the right to refuse to answer any question which they felt placed them at a disadvantage.

CHAPTER 4

RESULTS

4.1 Introduction

Phase 1 consisted of document analysis and qualitative interviews with key higher education leadership in health sciences. A sequential exploratory design was used (Creswell & Plano Clark, 2007) which involved collecting quantitative and qualitative data in order to develop an instrument and corroborate the categories which emerged from the qualitative data in a more representative sample in Phase 2 (Figure 4.1).

Qualitative Data Collection & Analysis	Building to	Quantitative Data Collection & Analysis		Interpretation (Based on both results)
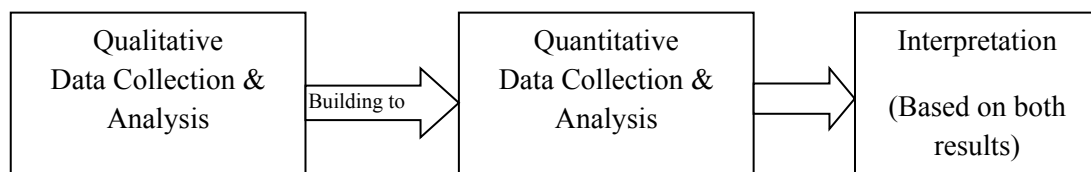
Figure 4.1   **Sequential exploratory mixed methods design** (Creswell, Plano Clarke & Garrett, 2008)

In this chapter the results are reported sequentially – qualitative results followed by the quantitative results using the Policy Delphi method (Creswell, Plano Clarke & Garrett, 2008).

4.2   Qualitative method

The qualitative results will be reported first in keeping with the sequence of Phase 1 being the qualitative Phase and Phase 2 consisting of the quantitative Phase.

4.2.1 Document review

As described in the prior chapter, university documents and official government policies were reviewed. This review led to the development of the nine guide questions (appendix 2) which were used to interview the health science programme leadership.

4.2.2 Interviews

Qualitative data were collected with in-depth one-on-one interviews with Deans, Deputy Deans of Health Sciences and a Senior Administrator in Health Sciences (N=6) at four universities in South Africa with the purpose of identifying the factors related to access to health sciences education in universities in South Africa and the implications of this for health sciences education.

4.2.2.1 Description of the participants

All participants were sampled within the homogenous tradition (Onwuegbuzie & Leech 2007). One Dean was purposively sampled and three participants were snowball sampled on the recommendation of their Dean of Health Sciences and two participants were snowball sampled on the recommendation of previous interviewees giving a total of six interviews. Previous interviewees suggested these two participants based on their knowledge and expertise with regard to access to health sciences education.

This research commenced just after two, rather critical reviews, which were commissioned by the Department of Higher Education and Training into issues affecting higher

education in South Africa – the Review of the National Student Financial Aid Scheme (2010) and the review on Transformation and Social Cohesion and the Elimination of Discrimination in Public Higher Education Institutions (Higher Education South Africa, 2010) were published and this may have influenced decisions about participation in the current study.

Participants included two Deans of Health Sciences, three Deputy Deans of Health Sciences and one Senior Administrator in Health Sciences. All of the interviewees had a Doctoral qualification, four were female and 2 were male. These senior staff within health sciences at the four universities sampled included one Black, one Coloured (mixed race), one Indian and 3 Whites. This could be representative of the slow pace of transformation amongst the staff at universities in South Africa (Govinder, Makgoba & Zondo, 2013). The gender ratio might be indicative of the health sciences being predominantly female with two of the female interviewees being nurses, one a physiotherapist and one a pharmacist (Whittock & Leonard, 2003; Goldin & Katz, 2012).

4.2.3. Instrument and data collection procedure

Data was collected through individual in-depth interviews and document analysis. The interviews, which lasted between 30 and 40 minutes, were voice recorded with the permission of the participants and were transcribed verbatim. Deans of Health Sciences at eight universities offering health sciences were approached to participate in this study but recruitment was challenging in respect of both individuals agreeing to participate and in some cases accessing ethics permission from the respective universities. When approaching some Deans of Health Sciences the researcher detected a reluctance to

participate by their body language, folding their arms and in instances turning away from the researcher. On occasions they said that ethics from their university had to be sought first before they could agree to be interviewed. Difficulties were experienced in accessing the requirements needed to apply for ethics approval at various universities. Despite this applications for ethical clearance were submitted to three universities, besides the one that the researcher was registered as a student at, but approval was only granted by one university. When applying to the various universities for ethical approval nothing was forth coming, no engagement in whether anything was outstanding, whether the correct process had been followed and despite telephone calls and e-mail correspondence. Ethical approval was not granted by two universities to which application was made, with no correspondence as to why. The researcher did not initially think the study question was particularly sensitive but as time went on she realised that in a country with imperatives to transformation based on a past of inequality, it was a delicate issue and this is perhaps what accounted for, what she interpreted as reluctance to participate. At no time did any of the eligible participants voice unease; this was purely the researcher`s interpretation.

4.2.4   Data analysis

The voice recorded interviews were listened to repeatedly and transcribed verbatim by the researcher, read and re-read so the researcher became immersed in the data and got a sense of the whole. Data gathered from the interviews and documents were analysed using content analysis. Graneheim and Lundman (2004, 105-107) provided the framework on which the content analysis was done. Each interview and document was considered a unit of analysis. The raw data was condensed into meaning units close to the text. Meaning units consisted of words, sentences and paragraphs which contained aspects which were

related to each other. This example of text from a transcript would be considered a meaning unit to be condensed:

> *you know for our students they raised the bar now and that is due to the poor matric results and you know the fact that they adapt the results and therefore the Rector decided that initially it was an M count of 28 then he said no now 30 for the rest of the university but for the medical students it is 36, 36 that is the lowest …*

Condensation refers to the shortening of the text but without losing the meaning and in the above example could be condensed to *matric scores increased to a minimum of 30 and 36 points*. The condensed meaning units were interpreted to get an understanding of the underlying meaning (Graneheim & Lundman 2004, 106-107). The condensed meaning units were abstracted and labelled with a code. The context of access to health sciences education in universities in South Africa in the context of social redress was considered when assigning codes to condensed meaning units. The abstraction of the condensed text was done to allow for both a description and interpretation of the text and enabled the researcher to assign a code. The codes were compared for differences and similarities and sorted into nine sub-categories and eight categories and one theme which are shown in Table 4.1. The theme in this research was the researchers` interpretation of the underlying meaning which emerged from the condensed meaning units, codes, sub-categories and categories (Granheim & Lundman, 2004) (see Table 4.1).

The following overarching theme emerged out of the eight categories and nine sub-categories:

Achieving equity of access for success is multi-factorial and has diverse & complex challenges.

The theme emerged following the reading and re-reading of the transcribed interviews, the codes, sub-categories and categories, going back to review the literature and back to the interviews – to and fro in a cyclical iterative fashion (Sammons, 2010).

Table 4.1   *The codes, sub-categories, categories and the theme extracted from the qualitative data*

Theme	Achieving equity of access for success is multi-factorial and has diverse & complex challenges						
Categories	Promotion of health science disciplines		Challenges to transformation		Competitiveness	Health sciences sets the "bar"	
Sub-category	Lack of information	Marketing strategies	Poverty	Poor schooling		Quotas	Matric scores & other criteria
Codes	• Target rural schools • Quintile 1 & 2 schools are unable to access open days at the universities as they do not have the means. • Work experience while at school • Scholars and particularly rural children do not have enough knowledge of the health science disciplines • No exposure to other health sciences besides nurses, doctors, and perhaps pharmacists • Schools are not giving adequate information and teachers are not capable of giving the information	• Open days at the universities • Community radio • Websites • Interactive video inserts • Promotional videos – integration of disciplines • Take the open day to the rural communities • Advertising of the disciplines	• Hunger • VERY poor families • Postpone acceptance because of no money • Health sciences are expensive courses	• Schooling is very deficient • Teachers are not competent to deliver a very good biology curriculum • Language difficulties - cannot express themselves in English • Poor in maths and physical science	• Hugely cutthroat • Most health science disciplines are over-subscribed – 1000's of applicants for a couple of hundred places. • Not enough universities for the need. • Not enough students coming from poor rural schools • More and more from designated groups but still not enough from poor rural schools.	• Based on language – 50% English and 50% Afrikaans no race involved • 80% rural quota • 75% Black South African 0.5% from SADAC 0.5% White and Coloured 15% Indian • All previously disadvantaged Black African who had met the minimum criteria. • Various cohorts: a. Matric/NSC previous disadvantage & minimum criteria others on merit highest to lowest. b. Cohort from the BSc – one or more years at university – proof of success • We work very strictly on quotas	• Matric or NSC scores – highest to lowest • "Cream of the crop" • 50% consideration on matric score and 50% on the NBT scores • 50% on academic results and 50% on interview – attitude, understanding of the programme, what going to do/what to expect & understanding of the disease profile/working with particular conditions

Theme	Achieving equity of access for success is multi-factorial and has diverse & complex challenges						
Category	Promotion of health science disciplines		Challenges to transformation		Competitiveness		Health sciences sets the "bar"	
Sub-category	Lack of information	Marketing strategies	Poverty	Poor schooling		Quotas	Matric scores & other criteria
Codes					• Designated group applicants coming from privileged schools. • Students design strategies, innovative ways to advantage themselves in this level of competition. • Airy fairy type of subjects • Take best of 6 subjects	• African students prioritized, provided passed at first sitting plus >60% average mark. A certain percentage will be taken from access programmes.	

Theme	Achieving equity of access for success is multi-factorial and has diverse & complex challenges					
Categories	Alternative access	Reason for choosing a health science profession	Innovation in teaching and learning	Retention and throughput rates		
Sub-categories				Student support	Completion in minimum time	Retention rates
Codes	• BSc programme complete 1 year and get >60% at first sitting • Completed another programme especially a health science programme e.g. nursing to medicine, physiotherapy to medicine, radiography to nursing. • University career programme – 1 year primarily focussed on sociology, psychology, computer literacy. • Science foundation programmes which do not consider Matric or NSC results, look at science foundation marks only, highest to lowest, Black African only, other race groups are not in the science foundation programmes. • RPL to science foundation, show proficiency to matric and then mainstream	• Family tradition especially for medicine • This only seems to be an issue for those studying medicine • Prestige/status • Financially lucrative • For health science disciplines it is because they are accommodated • "Good to have a Doctor in the family" • Not passionate about the profession • 33% finish medicine but do not practice it.	• Problem based learning • Cased based education • Interdisciplinary training with medicine • Teaching platforms away from the campuses • Identify teaching platforms in rural areas • Set up the university in the rural area • Curricula well developed • Student centred • Not an issue with students all they want to do is get into the course they have chosen, they don't care how it is offered. • Only once they are in do they start to wonder about other universities programmes and how they are aligned. • Innovation in offerings is hampered by the role players who are not able to agree • Resources – human, physical and financial are a hindrance to innovation	• Mentoring programmes • Learning contracts • Monitoring of the individuals` academic profile. • Letter to parents before exams • Students very well coached • Group support through teaching strategies • Early identification of "at risk students" • Student unrest = high failure rate so remove students during unrest to other teaching venues. • Alternative access and language group 2 need support • Type of students coming in need extra support	• This is a problem • Do not finish in minimum time • Challenging because funding is based on completion in minimum time • Type of students coming in need extra time • HEI has responsibility to make sure they can teach the sort of student entering	• Minimal due to high competition to get in • Usually screen themselves in the first 2 years • Throughput rates good in years 3 to 6 in medicine and 3 to 4 in nursing • Throughput good in medicine due to the selection and coaching, they do not drop-out

4.2.5   Findings of Phase 1

The results of phase 1 are presented according to the categories that emerged out of the qualitative data analysis.

4.2.5.1.   Category 1: Promotion of health science disciplines

The category promotion of health science disciplines had two sub-categories: lack of information and marketing strategies.

a) Sub-category: Lack of information

There was general consensus that some of the health science professions are not well known, particularly in rural children who do not have opportunities to learn of health science disciplines other than nursing, medicine, and perhaps physiotherapy. More is needed to be done to profile the "Cinderella" health science professions. This participant reflected on the fact that many of the health science professions do not adequately promote themselves:

> *… like optometry and those kinds of disciplines, I don't think they get the exposure and I don't think they get the support to promote themselves …*

It was felt that scholars and again particularly those from rural areas did not have enough information about health sciences disciplines and had few opportunities for exposure to the variety of health science disciplines or even the terminology. One participant shared:

> *… which I think is our downfall it is of course even worse in the rural because in the rural setting you are not even exposed to somebody doing something interesting that you don't even have a name for and those kind of things, type of things…*

Schools are not giving adequate information and it was felt that teachers were not able to give the necessary information. One of the participants shared the following:

I think one of our biggest barriers is information… you would expect that kind of information will come down from the teachers because the parents are not always… to give that, but I doubt whether the teachers are always literate enough to do that and that is one of the biggest barriers.

b) Sub-category: Marketing strategies

Health science courses at universities are hugely oversubscribed, however, when interviewing participants marketing strategies emerged as a factor related to access to health sciences education. The participants agreed that strategies to market the health science programmes needed to be relevant to the type of students that the university was trying to attract and the health science professions they were hoping to attract students into. Use of visual media was critical – a participant said:

… so we are now making an integrated video where we are starting with a success story in the community and bring it back where it started when the patient got a spinal injury and we hope that will tell children what it is about, take them through the various steps of rehabilitation …

One of the participants spoke about the fact that the potential students are from the Y Generation and therefore different marketing tools are needed to attract their attention, to encourage them to participate in health sciences education and particularly in the lesser known health science professions. This participant, a nurse by profession, explained:

…we have to do quite a lot more, you know, in advertising our profession and we have to look at our websites and put on video inserts, stuff that they can really see

what it is all about, you know, I think we have to do much more… they would like

to see, experience not just a boring pamphlet of what is nursing all about …

There was a feeling amongst those who`s universities made transformation explicit in their vision and mission that they were not doing enough to target rural schools. It was felt that the universities needed to go out to areas where potential students were as some of these schools could not afford to attend the open days at the university. One of the participants shared:

… the problem we`ve come to realise even though we do that we still don't target the

quintile 1 and 2 schools because the schools that come here, we invite everybody, but

the real quintile 1 and 2 schools may not have the funds and the means to say OK I am

going to that open day… they don't really come here and the students there never

reach us so we have in principle … decided that as from next year we are going to

move out to different areas, we want to move to the rural areas…

The researcher felt that those universities which made transformation explicit were trying to move to the next level of transformation, socio-economic transformation, they had largely addressed the issue of race but were actively wanting to target students from poor rural communities but that those who were less explicit in their transformation agenda felt they were doing enough because the complexion of the student body was changing and so the researcher suspects that marketing has not been a priority – faculties don't need to market they have enough prospective students knocking at their doors.

4.2.5.2.   Category 2: Challenges to transformation

Challenges to transformation consisted of two sub-categories: poverty and poor schooling.

a) Sub-category: Poverty

Critical to transformation in higher education is socio-economic class, race and gender. Participants in the qualitative interviews agreed that poverty was a concern in access to health sciences education in universities. One of the participants shared:

> *Another challenge is funding, those students come from **VERY** poor families and we would have loved that all students get a bursary but it is not… and we find students who are struggling financially but are good academically.*

Another said:

> *…the next thing will be poverty… we have never showed away a student who says "listen I do not have money for food or accommodation"…*

Despite not having money for food or accommodation the university would make an arrangement to help the student and not exclude them from studying.

One of the participants shared that on many occasions students were accepted for admission but that they asked to defer their opportunity while they sought funds, the university would put the place on hold for a year.

> *… there are students who after interviews, letters are sent to say they have been accepted and come back to say can`t you postpone it for next year because I don't have money.*

Another shared that he did not think access per say was affected by poverty, students applied and were accepted but it was taking advantage of the opportunity and actually being admitted which was affected by poverty:

> *… access is not dependent on funding; taking the opportunity is dependent on funding. I think when you are in Grade 11 when you apply and things like that you*

just want to go, then you are offered and nowhere is there a question can you

afford it.

b) Sub-category: Poor schooling

There was general consensus amongst all those interviewed that school preparation for
health sciences in higher education was poor. One participant said:

…very badly prepared… you know the schools in the rural areas in our country

are… that's a problem really bad and I can`t see there`s a solution for that

problem in the near future.

Another concurred:

*…the language, because we are rural from very poor schools, **very** poor schools,*

some of the students cannot express themselves in English, they are poor in

physical science, they are poor in … maths …

One of the participant`s felt that the school curriculum was very good but that it is not
being delivered, that teachers are not capable of delivering the curriculum, that many of
them are not trained and qualified to deliver the curriculum:

I can tell you, in my personal opinion, we have good curriculums (sic) I've looked

at the school curriculums (sic) at a stage I worked through the whole biology

curriculum, it is excellent. I don't think they really do it, `because the teachers are

not qualified and the teachers are not trained to really bring out this curriculum

and say this is what I want you to do.

4.2.5.3.   Category 3: Competitiveness

Most of the health sciences are over-subscribed with thousands of applicants for only
hundreds of places.

> *... with the competition in health sciences as I`ve said it is just this tremendous over supply, we can fill all our positions like I said ten times…*

Most of the designated group (previously disadvantaged) applicants are coming from privileged private and "Model C" schools:

> *...when they say we`ve got 50% Black students in our class it doesn't mean that we`ve got 50% Black students that is really representative of the community it means that we`ve got 50% Black students and of those 50% probably 90% is coming from very good private schools, from affluent households…*

Another participant shared very similar sentiments:

> *...but the vast majority of the previously disadvantaged come from Model C schools and private schools. There are people who came from none of those and there are people coming from the rural areas but they are in the minority.*

There are just not enough places in the universities to accommodate all the students who would like to study a health science profession and not enough universities in South Africa to meet the demand for higher education. One participant expressed the following:

> *...as we stand at the moment in South Africa I think we do not have enough universities and we should have much more universities …*

It is very competitive to get into health science courses at university. There are too few post-school opportunities and with increasing numbers of prospective students getting a university pass at matriculation there is a very high demand for university places.

4.2.5.4. **Category 4: Health sciences sets the bar**

Two sub-categories emerged from this category: quotas and matric scores and other

criteria that were factors in implementing access policy for health sciences. Competition

for places in health science courses at universities are at a premium, with demand

exceeding supply. Selection is based on predetermined criteria stipulated by each

university and because the demand for places exceeds the availability universities are able

to set stringent criteria for selection in order to attract the top students. However this does

not always address the need for transformation and social redress as envisaged by the

White paper on the transformation of higher education (Department of Education, 1997).

a) Sub-category: Quotas

Universities had different quota criteria. Some had racial quotas which were representative

of the country`s racial profile and included a small allocation for students from the

Southern African Development Community (SADC), one university had language quotas

and did not consider race and still another was starting to allocate places to rural students.

No universities were paying attention to socio-economic status when considering

applicants for admission. They were all using race as a proxy for disadvantage.

> *…it will be for MBChB students… we went through this year`s exercise using the*
>
> *normal quota system… something like 69% is Black …in terms of 69% for Blacks*
>
> *sounds like a noble gesture but when you look at the list we started realizing that*
>
> *we are not really covering rural as much as we can…*

Another shared the following:

> *… all previously disadvantaged candidates meeting the minimum admissions*
>
> *criteria will be taken in whereas all the others would be based on merit so you*
>
> *have x number of places, x minus the number of African candidates who make the*

selection criteria the rest is handed out amongst the merit students highest to

lowest…

Still another revealed their practice:

… to ensure we maintain that 80% or thereabouts around 80% we have got some

quotas, we have different quotas, we have got South Africans 75% and those South

Africans are only Blacks so when we say South Africans outside our catchment area

we have allocated 0.5% the reason being that we have got very few Whites in the

area and also few Coloureds so we decided to give them a smaller percentage but

we are not rigid in the sense that if we get more Whites than the 0.5% or more

Coloureds than the 0.5% we change this quota and then we have got 15% Indians

that's a group that's always far more than what we require so that is basically

what we do. Now from this 75% which are South Africans we… allocate a bigger

percentage to rural students.

b) Sub-category: Matric scores and other criteria

The universities had different methods for selection and admission. Some universities
took the highest academically prepared students and other universities stratified
admissions using a quota system to enable "previously disadvantaged" students
admission. The standardized examinations such as the National Benchmark Tests were
employed and some used matriculation results together with interviews in order to
facilitate admission as reflected in this statement:

…we are very strict in our selection because 50% of the selection process is in the

form of an interview and 50% in the certificate. A person can have a good

certificate but the attitude, the understanding of the programme that she wants or

what he thinks he is going to achieve from the programme…

One participant shared their criteria:

… they focus on the best if you look at the selection criteria – it is the cream of the

crop, that is what they select …

Yet another said:

… vast majority being taken in from the matric or NSC cohort and … all previously

disadvantaged candidates meeting the minimum admissions criteria will be taken

in whereas all the others would be based on merit… highest to lowest...

There was some suggestion in the data that students might be manipulating the

matriculation system to strengthen their application and enable selection. It was suggested

that school students when selecting subjects knowing that they need Maths, Science and

English but then in order to earn high grades in those subjects, they take "softer" subjects

which will ensure they have a higher aggregate score which results in a stronger overall

application and a greater likelihood for selection. It was suggested:

…they`ve also now discovered that you must do airy fairy type of subjects because

if you look at the system…the system says that we take the best of six subjects and

then you are placed in a list and the list is hierarchical… so the students are also

in that mode of I need the Science, I need the English, I need the Maths and then I

need subjects that will increase my average and so it becomes an artificial system

that we are working with…

This idea was controversial with one participant disputing this and giving feedback on an

exercise he did where they looked at student`s matric subjects. They took out the "arts

subjects" from the results but these subjects had a minimal effect on the student`s points - he suggested this was:

> *... Very artificial and it`s an easy escape to sort of grasp on that and say yes they`ve used a softer option to get in here. We`ve actually calculated at a stage there was a query on some of these things and I`ve asked some of my staff to take out these things like music and you know the artistic you know we are in a science field just include science subjects it makes very little effect in the end so I don't think it really plays a role.*

The competition for health sciences means that health science faculties can easily fill all their positions.

4.2.5.5. Category 5: Alternative access

Advancing redress for past inequalities was a goal of the White Paper on transformation of higher education (1997). All the universities bar one offered some means of alternative access to health science courses. Extended curricula and foundation programmes were two strategies employed. The Council on Higher Education (2013) has just released a document calling for a flexible curriculum structure for South African universities to address the issues related to inequality of education and opportunity and making the case for extending the degree period by one year. If adopted, this will standardize the many varieties of "extended" and alternative access programmes offered by universities in an effort to give previously disadvantaged students opportunities.

One participant explained their foundation programme:

> *... a sort of bridging programme especially for students who initially did not qualify to enter the university so there is this programme, a year programme and*

then they primarily focus on sociology, psychology, computer literacy and modules like that…

This participant shared:

We also have science foundation programmes so we allocate a certain number of seats to the science foundation programme, we don't take into consideration matric points or NSC points but we look at their science foundation results only and we rate them highest to lowest…

Despite a general feeling that these students did not perform as well as mainstream students some interviewees said the evidence was contrary:

…we don't have foundation programmes and what we find is students come in from the BSc programme who were not initially selected, they do better, ja so they get into natural sciences, they prepare a year and then we select in different categories…

This participant also had a positive experience of students in alternative access programmes:

…they showed us the results of those students that the average percentage of those students is higher than the average percentage of those students who came through the normal route … even from that programme there was 8 medical students.

4.2.5.6. Category 6: Reasons for choosing a health science profession

Students chose the health profession for reasons other than a passion to help sick people. Medicine rates highly in our social milieu and so students choose it because they think they will be "rich" one day, they will have elevated status in the community or because their family want them to do it, it is good to have a doctor in the house! However these

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reasons are often not enough to keep students focused on the end when the going gets tough. This in turn affects university throughput rates or worse a student completes his medicine degree and then leaves the profession to do other work.

Selecting students who know what the professions entail and know they want to be there is in the end important for retention and throughput rates, a factor related to the implementation of access policy in health sciences in universities.

The participants explained that many students are making their choice of a health science profession based on extraneous factors such as accommodation and housing. This is particularly so for poor students. A participant said:

> *...another issue that we have is accommodation although the accommodation for students they really struggle, but health science students are given a preference.*

Another factor is the family tradition, predominantly in medicine. One of the participant`s shared the following:

> *...you know this brilliant student is coming from matric with 8 distinctions and now they can`t pass their first year at university... you know and if you listen to them then they will tell you "but my father was a medical doctor, my grandfather was a medical doctor" it is a family issue ...*

Many of the students who are selected do not have the passion for the profession as highlighted by a participant:

> *I think one thing we neglect is we look at academic results we don't look at the passion for the profession to become a Nurse or a Doctor and I think there are so many students who are excluded from nursing and medicine – they've got passion to do it but they are not allowed to do it because they focus on throughput rates, they focus on academic performance and that is a pity...*

A disturbing statistic was shared by one of the participants who said that 1/3rd of those who complete their medicine degree do not practice medicine.

> *The sad thing is some of them do complete the degree … and they actually interviewed some of these students afterwards and then find that about a third of those who completed studies in the end said that is not what I really wanted to do I was pushed into this direction by my family you know Mum and Dad wanted me to do that, the family said it would be good if we have a doctor in the family or something like that…*

4.2.5.7.　　Category 7: Innovation in teaching and learning

This was an interesting factor identified by the participants as relating to access to health sciences education. Some of the participants felt that the curriculum design at their university was an attraction for prospective students, for example problem based learning and community based education. This was controversial though with certain participants disagreeing.

One shared the following:

> *It is the method that we use in the Health Sciences programme, the offering, we use problem-based, community based and that is what attracts students, they like that approach.*

However others felt that the academics might think that but challenged anyone to find a student who thought that. It was felt that students just want to get into a medical programme, for example, and really don`t care if the pedagogy is delivered via a

traditional educational model or a progressive strategy such as problem-based learning (PBL).

> *I think that's a myth, that's nonsense I think students want to become a doctor whether they use PBL or not they just want to become a doctor, they come to the university and whatever system the university uses they are happy, they will just abide. I can`t think of one student who will go to a university because of the curriculum and the way how the content is offered (sic)…*

Another thought students would only consider the curriculum after they were already in the programme and would then wonder what the other universities were doing:

> *…that student`s because of the demand just want to get in. I think once they are in the system they sit back and they think I wonder what is happening at Cape Town and what`s happening in Pretoria and what`s happening at Wits…it is high competition to get into health sciences and that is all health sciences but once they are in I think they start to think am I really well aligned … I honestly think that the drive initially is to get into a health sciences place specifically.*

Mention was made of "common teaching platforms" where a multidisciplinary approach was adopted and which academics thought might attract potential students to health sciences.

A participant said:

> *We are doing interdisciplinary training with family medicine and just being exposed at the clinics and various platforms gets interest…*

Another suggested that:

> *We have got outside teaching platforms not only at the university…. We have a*
> *teaching platform which consists of district hospitals and students get enough*
> *experience because they are taken to those hospitals and so to them it is what*
> *really makes it attractive…*

4.2.5.8. Category 8: Retention and throughput rates

This category consisted on three sub-categories: student support, completion in minimum time and retention rates. Most participants reported good throughput rates in health sciences with high levels of student support as it is important for the South African funding model that students pass in the minimum time allocated to them, otherwise the university does not receive the full government subsidy.

a) Sub-category: Student support

In the context of poorly prepared student`s academic support becomes critical to enhancing throughput rates in South African universities. The transformation of higher education in South Africa has meant that there is a student entering who very likely has no experience of higher education, their parents do not have higher education, many times they have moved from the rural area to the city, they come from a disadvantaged educational background all of which put the student at high risk of dropping out without additional support. One participant shared some her experience of students who were admitted to the health sciences courses via the alternative access route and were second language English speakers and found they required additional support:

> *… the level of performance differs and it is lower in the alternative access and*
> *language 2 groups, so they do have, they do require additional support*

A variety of support measures were adopted by the Faculties of Health Sciences with the most popular being mentorship by older students as reflected in the following:

> *One measure at first and second year it is compulsory that a student must have a mentor and mentors are senior students and secondly because we use problem based approach it is a group so that group supporting each other in a group and thirdly we also use what is called learning contracts it really supports them…*

Another participant said:

> *… all the first years are allocated either a second year or third year student and they look after them and then the next year they look after the first years*

One participant shared:

> *No definitely there is quite a lot of support for students, no at our university there is lots of support and even in the … our faculty a division that is only paying attention to those students and the university monitors the academic profile of each student – sends letters to the parents, inform them of their results before exams, no there`s quite a lot…*

b) Sub-category: Completion in minimum time

Participants felt that completion in minimum or what is also called regulation time was a problem because of the "type" of students they get into the courses need extra time and support. One participant also felt that the issue of minimum time was *unfair* in the context:

> *…we want students to complete it in minimum time and I don`t think that is fair because you want to look at these remedial steps and things like that and most universities that have these little extended learning programmes usually speak highly of the effect that it has of bringing up those backlogs and things like that and so the*

way how we interpret throughputs I think is a little inappropriate for our set of

circumstances…

The funding model which rewards completion in minimum/regulation time may be at cross purposes with transformation as illustrated by the following comment:

> *…in a way equity and redress is at cross purposes with the funding formula because your teaching input grants depend on your full time FTE, one full FTE will give you your full teaching input grant and your teaching output grant comes up when your students graduate so you really want to make sure that you take in students that are going to finish in the minimum amount of time and graduate because you need to ensure that that amount of funding to ensure that you will be able to run your programmes.*

c) Sub-category: Retention rates

Retention rates are one of the parameters of efficiency that has become a focus area of the Department of Higher Education and Training as well as the universities. Participants reported that drop-out rates from health science courses are minimal due to the highly competitive selection and admission as well as the coaching. One participant shared that at their university students usually screen themselves in the first 2 years and so throughput is good:

> *…and our throughputs… 3,4,5,6 in medicine are usually very good and 3 and 4 in nursing they are usually very good because they have screened themselves in the first two years, and those who want to drop out, drop out.*

Another participant shared:

> *… in terms of performance and all that it is largely language and alternative access that would be excluded, it is language 2 students that drop out and will take more than the minimum time*

Socio-economic factors affect drop out as well as highlighted by the following:

…funding … I think it is a very important factor in determining throughput rates – if you've got these kinds of non-academic burdens on your shoulders it does impact on your studies and focus on your academic life it impacts negatively on progress that is true.

Retention and throughput is a focus of universities included in the sample and the participants identified student support, completion in minimum time and dropout rates as important to understanding retention and throughput rates. What was evident from the interviews was that in order to minimise dropout from the courses and assist students to complete their courses in minimum time then students required a lot of support. The participants alluded to relatively good throughput rates with lower dropout than the university norm but this was because of the strict screening for selection and admission as well as the strong student support mechanisms in place in faculties of health sciences.

These results suggest that each of the sampled universities have different strategies to enable equity of access to their particular health science courses and that the tension lies with enabling increased access to address past injustice and retention and throughput rates on which the universities attract their funding.

4.3   Transformation of the qualitative data through *"quantitizing"*

The transformation of data is one of the unique characteristics of mixed methods designs and analysis (Teddlie & Tashakkori, 2009). *Quantitizing* is the alteration of qualitative data into numerical data (Tashakkori & Teddlie, 1998; Miles & Huberman, 1994) and has become fundamental to mixed methods research (Sandelowski et al. 2009). The

transformation of data in this study was an aspect used to illustrate the mixing of the methods.

An inter-responder matrix (see Table 4.2) was developed using each participant and the sub-categories which made up the sub-categories, the categories and the overarching theme. For each participant, a score of "1" was allocated if the sub-category or category was assigned to them, or "0" if the sub-category or category could not be assigned to them, this was the inter-responder matrix (see Table 4.2) (Sandelowski, Barroso & Voils, 2007; Onwuegbuzie & Teddlie, 2003; Onwuegbuzie, 2003). The frequency effect sizes or prevalence of the sub-categories or categories was computed on this *quantitized* data. The effect size is a descriptive statistic which indicates substantive significance, not statistical significance, and a simple way of quantifying the difference between two groups. The *quantitized* data enabled the researcher to understand which participant contributed to most of the sub-categories or categories that had emerged and to understand which sub-categories or categories were the most common amongst the participants – what was common to participants.

The transformation of the data allowed the qualitative data to be compared with the quantitative data in the final report. For example if participants in Phase 2 thought something was not important the *quantitized* data from Phase 1 could be compared with the results of the quantitative data in Phase 2 to corroborate the finding or not.

Table 4.2 *Inter-responder Matrix*

Sub-categories &/or categories	Participants						Total score	Frequency Effect size
	1	2	3	4	5	6		
Lack of information	1	1	1	1	1	1	6/6	100%
Marketing strategies	0	1	0	1	0	1	3/6	50%
Poverty	0	1	1	0	1	0	3/6	50%
Poor schooling	0	0	1	1	1	1	4/6	67%
Competitiveness	1	1	1	1	1	1	6/6	100%
Quotas	1	1	1	1	1	1	6/6	100%
Matric score and other criteria	1	1	1	1	1	1	6/6	100%
Alternative access	1	1	0	1	1	1	5/6	83%
Reason for choosing the health science profession	0	0	0	1	1	1	3/6	50%
Innovation in teaching and learning	1	0	1	1	1	1	5/6	83%
Student support	1	1	1	1	0	0	4/6	67%
Completion in minimum time	1	0	1	1	1	1	5/6	83%
Drop-out rates	1	1	1	0	0	1	4/6	67%
Total number & percent of findings for the interview	9/13 69%	9/13 69%	10/13 77%	11/13 85%	10/13 77%	11/13 85%		

Participant 4 & 6 provided 85% of the comments that contributed to the most sub-categories and /or categories and participant 1 & 2 contributed the least at 69%. The sub-categories and/or categories of *lack of information, competitiveness, quotas and matric scores and other criteria were the most* endorsed sub-categories and/or categories with all participants endorsing these and three sub-categories and/or categories scoring 50% participant endorsement – *marketing strategies, poverty,* and the *reason for choosing a health science profession*. None of the sub-categories and/or categories had a manifest (frequency) effect size (MES) below 50% - the MES ranged from 3 (50%) to 6 (100%).

The manifest (frequency) effect size for the categories (see Table 4.3) was computed and is illustrated below:

Table 4.3 *Manifest (frequency) effect size for categories*

Category #	Category	Manifest effect size
1	Promotion of the disciplines	75%
2	Challenges to transforming	59%
3	Competitiveness	100%
4	Health Sciences sets the "bar"	100%
5	Alternative access	83%
6	Reasons for choosing a health science profession	50%
7	Innovation in teaching and learning	67%
8	Retention and throughput rates	72%

What is evident from this data is that the categories *competitiveness* and *health sciences sets the bar* are the most dominant categories, significant to all those who participated in the qualitative phase of the study with *reasons for choosing* a health science profession the least dominant category, only 50% of those interviewed contributed to this category. The calculation of the manifest effect size of the categories enabled the researcher to quantify the frequency of the categories across all participants and describe the categories using numbers (Onweugbuzie, 2003).

4.4   Phase 2: Quantitative methods

Data derived from the qualitative phase was used to create a 24-item questionnaire which was subjected to two rounds of content validation. The qualitative text which had been

condensed into meaning units and the sub-categories were used to develop items – 3 items

per category. The participant`s words which had been condensed into meaning units,

further abstracted into codes and sub-categories were considered in the creation of the

items. The researcher considered the participants words and used them to formulate the

items which were presented as statements.

In this study construct validity and content validity was assessed because the researcher

wanted to ensure that the items which had been developed represented the categories

identified in the qualitative data analysis and was reflective of the construct:

implementation of policy for access to higher education for health sciences education

(DeVellis, 2012; Streiner & Norman, 1995).

4.4.1   Instrument Development

Using the 8 categories that emerged from the qualitative one on one in-depth interview`s, 3

items were developed from the condensed meaning unit, for each category resulting in a

24-item instrument. The category and the items are illustrated in table 4.4.

Table 4.4 *The category and items on the instrument*

Category	Items
Promotion of the health science disciplines	1. Different professions within health care such as nursing, physiotherapy, and medicine are marketed equally. 2. Rural settings need to be targeted in order to ensure that all qualified students learn about the career opportunities in health sciences. 3. Current marketing strategies use all available media such as newspapers, radio, television, and popular social networking technologies such as Facebook and twitter.
Reason for choosing a health science profession	4 Potential students are well informed when they make their choice of the health sciences profession. 5 Housing / student accommodation is a major motivating factor when students choose health science programmes. 6 Students are passionate about their choice of the health sciences field.
Competitiveness	7 There are adequate seats for all students that meet the admissions criteria in the health science programmes. 8 There are adequate numbers of students coming from rural areas. 9 Many students take easier matric subjects just to strengthen their application for admission.
Health sciences sets the bar	10 Some students receive priority admission status based on history of being disadvantaged. 11 Results from standardized exams are the main factor in determining whether a student is admitted. 12 The school/discipline/department sets the "bar" for admission and students who don`t meet these minimum criteria are not admitted.
Challenges to transformation	13 Economic constraints do not impact on whether a qualified student is admitted. 14 Secondary school education prepares all qualified students for higher education in health-care fields. 15 Students, whose primary language at home is not English, are adequately prepared for university study.
Alternative access	16 Students who are not prepared for health sciences university study can take preparation courses to better equip them for academic success. 17 Students are given the opportunity to take longer than the usual number of years of study in order to be successful. 18 Students who complete alternative access programs perform equally well to mainstream students
Innovation in teaching and learning	19 Learner focused curricula improve student success. 20 Students choose different universities because of their strategies of teaching. 21 Innovative team-based teaching strategies improve student outcomes
Retention and throughput rates	22 Early identification and intervention for at-risk students improves retention. 23 Many at-risk students drop out early in their program of study. 24 Our throughput and graduation rates are within national norms/benchmarks.

4.4.1.1 First Cycle of Determining Content Validity for the Instrument

Content validity, is closely related to face validity and refers to the extent to which a

specific set of items is relevant or important to a content domain (DeVellis, 2012; Streiner

& Norman, 1995). Content validity is the opinion of experts who are used to evaluate the items chosen to represent the construct being measured (Streiner & Norman, 1995). The qualitative interviews defined the construct *access to health sciences education in universities in South Africa* and a number of items, from the universe of items, were selected to represent the construct domains (DeVellis, 2012).

In order to compute an Index of Content Validity for each of the 24-items, a table was created and participants were asked to rate overall instructions and each item for relevance and clarity of wording using a 4 point scale (4= highly relevant to 1 = not relevant) and (4= absolutely clear to 1 = not clear). On 3rd July 2012, the 24-item instrument was distributed at the annual conference of the South African Committee of Health Science Deans on *Training competent healthcare professionals for the 21st Century: Challenges and Solutions* which was attended by Deans of Health Sciences from universities in South Africa and other academic staff from Faculties of Health Sciences. Informed consent was given and instruments were completed by 55% (n=6) in a teaching role in health sciences, 36% (n=4) were heads of health science schools, departments or programmes and 9% (n=1) was a Dean of Health Sciences.

Twenty instruments were distributed, 12 were completed, and one survey was discarded because 28% of the data were missing resulting in a total of 11 instruments. For each item, the item Content Validity Index (I-CVI) was computed as the number of experts who gave a rating of 3 (quite relevant) or 4 (highly relevant) divided by the 11 experts (Steiner & Norman, 1995). An I-CVI of 0.80 is considered acceptable (Steiner & Norman, 1995).

Table 4.5 *Items and the scoring on relevance and clarity of wording – 1ˢᵗ Cycle of I-CVI*

	Relevance	% of relevance	Clarity of wording	% of clarity of wording
Item				
1. Different professions within health care such as nursing, physiotherapy, and medicine are marketed equally.	10/11	90	9/11	82
2. Rural settings need to be targeted in order to ensure that all qualified students learn about the career opportunities in health sciences.	9/11	82	11/11	100
3. Current marketing strategies use all available media such as newspapers, radio, television, and popular social networking technologies such as Facebook and twitter.	11/11	100	8/11	<u>72</u>
4. Potential students are well informed when they make their choice of the health sciences profession.	11/11	100	9/11	82
5. Housing / student accommodation is a major motivating factor when students choose health science programmes.	10/11	90	9/11	82
6. Students are passionate about their choice of the health sciences field.	9/10	90	10/10	100
7. There are adequate seats for all students that meet the admissions criteria in the health science programmes.	9/10	90	10/10	100
8. There are adequate numbers of students coming from rural areas.	10/10	100	10/10	100
9. Many students take easier matric subjects just to strengthen their application for admission.	7/10	<u>70</u>	9/10	90
10. Some students receive priority admission status based on history of being disadvantaged.	10/11	90	9/11	82
11. Results from standardized exams are the main factor in determining whether a student is admitted.	9/11	82	7/9	<u>77</u>
12. The school/discipline/department sets the "bar" for admission and students who don`t meet these minimum criteria are not admitted.	10/11	90	9/11	82
13. Economic constraints do not impact on whether a qualified student is admitted.	10/11	90	9/11	82
14. Secondary school education prepares all qualified students for higher education in health-care fields.	10/11	90	10/11	90
15. Students, whose primary language at home is not English, are adequately prepared for university study.	11/11	100	9/11	82
16. Students who are not prepared for health sciences university study can take preparation courses to better equip them for academic success.	9/11	82	8/11	<u>72</u>
17. Students are given the opportunity to take longer than the usual number of years of study in order to be successful.	8/11	<u>72</u>	9/11	82
18. Students who complete alternative access programs perform equally well to mainstream students.	10/11	90	10/11	90
19. Learner focused curricula improve student success.	10/11	90	10/11	90
20. Students choose different universities because of their strategies of teaching.	6/11	<u>54</u>	10/11	90
21. Innovative team-based teaching strategies improve student outcomes.	10/11	90	11/11	100
22. Early identification and intervention for at-risk students improves retention.	10/11	90	9/11	82
23. Many at-risk students drop out early in their program of study.	11/11	100	10/11	90
24. Our throughput and graduation rates are within national norms/benchmarks.	9/11	82	10/11	90

Three (3) items did not meet the I-CVI value of 0.80 for relevance.

These 3 items were:

Item 9   Many students take easier matric subjects just to strengthen their application for admission.

Item 17   Students are given the opportunity to take longer than the usual number of years of study in order to be successful.

Item 20   Students choose different universities because of their strategies of teaching.

These items were reconsidered by the researcher and a decision was made to leave them in (DeVellis, 2012; Steiner & Norman, 1995) since the one-on-one interviews had indicated that these were relevant topics and emerged from different categories. The items were part of categories which indicated in the *quantitized* data had manifest sizes above 50% which indicated that more than half the participants had talked about the factor:

Item 9 (category 3)   manifest effect size 100% for the category

Item 17 (category 5)   manifest effect size 83% for the category and

Item 20 (category 7)   manifest effect size 67% for the category.

This was the first cycle of item validation. The researcher would reconsider her decision after the second cycle of item validation.

Three (3) items scored below the 0.80 value for clarity of wording. These items were:

Item 3   Current marketing strategies use all available media such as newspapers, radio, television, and popular social networking technologies such as Facebook and Twitter.

Item 11 Results from standardized exams are the main factor in determining

      whether a student is admitted.

Item 16 Students who are not prepared for health sciences university study can take

      preparation courses to better equip them for academic success.

These three items were changed using the suggestions of the experts.

Item 3   Current marketing strategies use all available media including print,

      electronic and social media.

Item 11 Results from standardized exams, such as the National Benchmark Tests

      (NBT), are the main factor in determining whether a student is admitted.

Item 16 Students who are not prepared for health sciences university study can take

      foundation courses to better equip them for academic success.

An additional change was made to Item 15 based on the feedback of the experts and is

more representative of the South African context.

Item 15 Students, whose primary language at home is not English, are adequately

      prepared for university study.

Change made:

Item 15 Students, whose home language is not English, are adequately prepared for

      university study.

Using Microsoft Word, the total instrument (24 items) was scored for readability and

found that the FLESCH Reading Ease score was 41.2 and the FLESCH-Kincaid grade

level was 11.2. Reading ease scores are on a 100 point scale and the higher the value, the

easier it is to read (Polit and Beck, 2012). The readability formula was computed using the

facility within Microsoft Word to ensure that the instrument had an appropriate readability level. The ease level and Grade level gave the researcher an idea that the instrument was fairly easy to read and should be understood by anyone who had a reading ability of someone who had a Grade 11 education. The instrument in this study would be completed by participants who had at least this level of education but could in the future be used in another population, for example a high school population and so ease of readability and grade level would be important to know.

Based on participant feedback, one item was added to category 5: Alternative access which then had 4 items (items16, 17, 18, & 25) resulting in a 25-item scale.

In summary, the first cycle of I-CVI indicated that only 3 items out of 24 were considered not relevant and 3 items of the 24 which needed word changes to make them more clear to the reader. One item was added to the instrument to make it a 25 item instrument. The first cycle of the content validation was an important step in developing a valid instrument which was relevant and clear and was essential towards the verification of results of Phase Two at the end of the study.

4.5   2nd Round Policy Delphi

 The 25 item questionnaire was distributed via e mail using SurveyMonkey ™ in March 2013 to twenty five (25) Deans and Deputy Deans of Health Sciences at the eight universities offering health sciences. Reminders were sent on two occasions in May 2013 requesting recipients participate. Their return of the questionnaire was deemed to show their willingness to participate. Sixteen questionnaires (64%) were returned.

The questionnaire consisted of 25 questions and ranked five (5) response categories on an ordinal Likert Scale – 1 = very important, 2 = important, 3 = somewhat important, 4 = of little importance and 5 = unimportant.

Only 3 questions were deemed to be of little importance to unimportant by more than 20% of participants – question 9, 10 and question 20.

During the first cycle with the 24-item instrument, three questions did not meet the I-CVI value of 0.80 for relevance but were left in the questionnaire and tested in the Delphi (DeVellis, 2012).

Item 9   Many students take easier matric subjects just to strengthen their
              application for admission.

This question was assessed to be of little importance to unimportant by 25% (n=4) of participants in Round 2 of the Delphi.

Item 17   Students are given the opportunity to take longer than the usual number of
              years of study in order to be successful.

Question 17 was assessed as being important by 94% (n=13) of participants in the 2nd round of Delphi.

Item 20   Students choose different universities because of their strategies of
              teaching.

Question 20 was also judged by 31% (n=5) of the expert panel in Round 2 of the Delphi to be of little importance to unimportant.

These questions were left in for Round 3 of the Delphi questionnaire as the Policy Delphi was not looking for consensus and the researcher would report all positions in the final report.

In summary, Round 2 of the Policy Delphi highlighted that Item 9 and Item 20 were deemed to be of little importance in access to health sciences education in universities in South Africa and were carefully considered during the development of the guidelines following Round 3 of the Policy Delphi.

4.6   3rd Round Policy Delphi

The 3rd Round of the Delphi was sent via e mail using Survey Monkey to 87 administrative staff at the 8 universities offering health sciences. These administrators ranged from Registrars, Deans of Students, Admissions Officers, Recruitment Officers, Financial Aid Officers and other categories of administrative staff who have responsibility for access to university. Five (5) were returned as undeliverable as the recipient had left the university and so a sample of N= 82 was realised. The request for participation was sent 3 times at intervals of 10 days and a 9.75% (n=8) response rate was achieved. Eight (8) questionnaires were available for analysis. The items on the Delphi questionnaire were not changed as there was general consensus across the items except for those mentioned above but it was decided to see if the administrators held the same views as the Deans and Deputy Deans of Health Sciences.

The administrators who returned the questionnaire included a Dean (n=1), a Deputy Registrar Enrolment (n=1), an Admissions Consultant (n=1), a Director (n=1), Administration Officers (n=2), Registrar (n=1) and a Deputy Director (n=1).

Four questions were rated by more than 20% of participants as being of little importance to unimportant (see Table 4.6).

Table 4.6 *The questions rated of little importance to unimportant by 20% or more of participant`s*

Question number	Question	n	%
9	Many students take easier matric subjects just to strengthen their application for admission.	2	28.5
18	Students who complete alternative access programs perform equally well to mainstream students.	2	25
20	Students choose different universities because of their strategies of teaching.	2	28.6
25	A qualified student, who is denied admission due to limited spaces, will have a better chance of admission the following year if s/he is successful in relevant generic university-level courses.	2	28.6

Questions 9, 20 & 25 were only answered by 7 participants.

There was little difference between the Deans and Deputy Deans of Health Sciences and the Administrators when rating the questions in this 3rd Round of the Policy Delphi. Nine questions scored 100% by both groups of participants as being very important to somewhat important (see Table 4.7).

Table 4.7 *A comparison of Administrators and Deans and Deputy Deans of Health Sciences rating of questions on 2ⁿᵈ and 3ʳᵈ round of Policy Delphi.*

Question number	Questions which were rated very important, important or somewhat important	Percentage	
		Administrators	Deans & Deputies of HS
1	Different professions within health care such as nursing, physiotherapy, and medicine are marketed equally.	88	100
2	Rural settings need to be targeted in order to ensure that all qualified students learn about the career opportunities in health sciences.	100	100
3	Current marketing strategies use all available media including print, electronic and social media.	100	100
4	Potential students are well informed when they make their choice of the health sciences profession.	100	100
5	Housing / student accommodation is a major motivating factor when students choose health science programmes.	100	81
6	Students are passionate about their choice of the health sciences field.	100	100
7	There are adequate places for all students that meet the admissions criteria in the health science programmes.	86	100
8	There are adequate numbers of students coming from rural areas.	88	88
9	Many students take easier matric subjects just to strengthen their application for admission.	72	75
10	Some students receive priority admission status based on history of being disadvantaged.	88	69
11	Results from standardized exams, such as the National Benchmark Tests (NBT`s) are the main factor in determining whether a student is admitted.	88	88
12	The school/discipline/department sets the "bar" for admission and students who don`t meet these minimum criteria are not admitted.	100	100
13	Economic constraints do not impact on whether a qualified student is admitted.	100	93
14	Secondary school education prepares all qualified students for higher education in health-care fields.	100	100
15	Students, whose home language is not English, are adequately prepared for university study.	100	81
16	Students who are not prepared for health sciences university study can take foundation courses to better equip them for academic success.	86	94
17	Students are given the opportunity to take longer than the usual number of years of study in order to be successful.	88	81
18	Students who complete alternative access programs perform equally well to mainstream students.	75	81
19	Learner focused curricula improve student success.	100	94
20	Students choose different universities because of their strategies of teaching.	72	69
21	Innovative team-based teaching strategies improve student outcomes.	100	100

Question number	Questions which were rated very important, important or somewhat important	Percentage	
		Administrators	Deans & Deputies of HS
22	Early identification and intervention for at-risk students improves retention.	100	100
23	Many at-risk students drop out early in their program of study.	100	94
24	Our throughput and graduation rates are within national norms/benchmarks.	100	100
25	A qualified student, who is denied admission due to limited spaces, will have a better chance of admission the following year if s/he is successful in relevant generic university-level courses.	72	94

4.7   2nd Cycle of Item Content Validity Index (I-CVI) for 25-item instrument

Five questionnaires of the eighteen which were sent out, were returned and one did not respond to any items and was discarded therefore a response rate of 22% was achieved. In order to improve the response rate a further eighteen questionnaires were posted. Nine (50%) questionnaires were received back following this second attempt giving a total of 13 useable questionnaires for I-CVI. 12 (92%) participants were heads of schools or departments in health sciences and 1 (8%) participant described themselves as an academic leader in Health Sciences.

Table 4.8 *Items and the scoring clarity of wording – 2ⁿᵈ Cycle of I-CVI*

Item	Clarity of wording	% of clarity of wording
1. Different professions within health care such as nursing, physiotherapy, and medicine are marketed equally.	9/13	69%
2. Rural settings need to be targeted in order to ensure that all qualified students learn about the career opportunities in health sciences.	8/13	62%
3. Current marketing strategies use all available media including print, electronic and social media.	9/13	69%
4. Potential students are well informed when they make their choice of the health sciences profession.	12/13	92%
5. Housing / student accommodation is a major motivating factor when students choose health science programmes.	11/13	85%
6. Students are passionate about their choice of the health sciences field.	9/13	69%
7. There are adequate seats for all students that meet the admissions criteria in the health science programmes.	8/13	62%
8. There are adequate numbers of students coming from rural areas.	10/13	77%
9. Many students take easier matric subjects just to strengthen their application for admission.	10/13	77%
10. Some students receive priority admission status based on history of being disadvantaged.	12/13	92%
11. Results from standardized exams, such as National Benchmark Tests (NBT`s), are the main factor in determining whether a student is admitted.	13/13	100%
12. The school/discipline/department sets the "bar" for admission and students who don`t meet these minimum criteria are not admitted.	11/13	85%
13. Economic constraints do not impact on whether a qualified student is admitted.	12/13	92%
14. Secondary school education prepares all qualified students for higher education in health-care fields.	10/13	77%
15. Students, whose home language is not English, are adequately prepared for university study.	12/13	92%
16. Students who are not prepared for health sciences university study can take foundation courses to better equip them for academic success.	12/13	92%
17. Students are given the opportunity to take longer than the usual number of years of study in order to be successful.	11/13	85%
18. Students who complete alternative access programs perform equally well to mainstream students.	12/13	92%
19. Learner focused curricula improve student success.	10/13	77%
20. Students choose different universities because of their strategies of teaching.	9/13	69%
21. Innovative team-based teaching strategies improve student outcomes.	9/13	69%
22. Early identification and intervention for at-risk students improves retention.	12/13	92%
23. Many at-risk students drop out early in their program of study.	12/13	92%
24. Our throughput and graduation rates are within national norms/benchmarks.	10/13	77%
25. A qualified student, who is denied admission due to limited spaces, will have a better chance of admission the following year if s/he is successful in relevant generic university-level courses.	10/13	77%

Thirteen (13) items scored below the 0.80 value for clarity of wording. These items were:

Category 1   Item 1   Different professions within health care such as nursing, physiotherapy, and medicine are marketed equally.

Category 1   Item 2   Rural settings need to be targeted in order to ensure that all qualified students learn about the career opportunities in health sciences.

Category 1   Item 3   Current marketing strategies use all available media including print, electronic and social media.

Category 6   Item 6   Students are passionate about their choice of the health sciences field.

Category 3   Item 7   There are adequate seats for all students that meet the admissions criteria in the health science programmes.

Category 3   Item 8   There are adequate numbers of students coming from rural areas.

Category 3   Item 9   Many students take easier matric subjects just to strengthen their application for admission.

Category 2   Item 14   Secondary school education prepares all qualified students for higher education in health-care fields.

Category 7   Item 19   Learner focused curricula improve student success.

Category 7   Item 20   Students choose different universities because of their strategies of teaching.

Category 7   Item 21   Innovative team-based teaching strategies improve student

                                outcomes.

Category 8   Item 24   Our throughput and graduation rates are within national

                                norms/benchmarks.

Category 5   Item 25   A qualified student who is denied admission due to limited

                                space will have a better chance of admission the following year if s/he is

                                successful in relevant generic university-level courses.

Participants were asked to suggest any changes to the wording to improve clarity but no

suggestions from the participants were forthcoming as to how these items which lacked

clarity could be improved. If this instrument was to be used in the future the researcher

suggests that another round of item validity is conducted in an appropriate population to

assess relevance and clarity of wording in the targeted population.

4.8   Results of the 17 item Policy Delphi instrument

Based on the 2nd cycle of content validity, the instrument was reduced from a 25-item

instrument to 12 items that were identified as clear by the participants. The 12-item

instrument eliminated categories 1, 3, & 7 so it was decided to keep at least one item from

each of the 8 categories identified during Phase one, the qualitative phase and so, for those

5 items that did not reach the 0.80 criteria, the one that was the most clear was retained

resulting in a 17-item scale.

Category 1 – two items are at 69% so kept both.

Category 3 – two are at 77% so kept both

Category 7: item 19 kept.

It was too early in the instrument development process and a relatively small sample to eliminate all the items that did not meet the criteria of 0.80 for clarity. The instrument development could be ongoing.

The total mean score on the 17-item instrument was 63.66 (SD 6.92) with a range of 23.00 and the total Cronbach Alpha was computed as .767; see Table 4.9 for the responses and means for each item. The guidelines and policy briefs were developed using these 17 items as an organizing framework.

Table 4.9   *17 item instrument responses and means for each item*

Item	Unimportant	Of little importance	Somewhat important	Important	Very important
1 Different professions within healthcare such as nursing, physiotherapy and medicine are marketed equally	0	0	1 (4%)	9 (39%)	13 (57%)
3 Current marketing strategies use all available media including print, electronic and social media.	0	0	1 (4%)	7 (30%)	15 (65%)
4 Potential students are well informed when they make their choice of the health sciences profession	0	0	1 (4%)	3 (13%)	19 (83%)
5 Housing/student accommodation is a major motivating factor when students choose health science programmes	0	3 (13%)	5 (22%)	9 (39%)	5 (22%)
8 There are adequate numbers of students coming from rural areas	0	3 (13%)	2 (9%)	9 (39%)	9 (39%)
9 Many students take easier matric subjects just to strengthen their application for admission	4 (17%)	2 (9%)	9 (39%)	4 (17%)	4 (17%)
10 Some students receive priority admission status based on a history of being disadvantaged	5 (22%)	1 (4%)	2 (9%)	12 (52%)	3 (13%)
11 Results from standardized exams such as NBT`s are the factor in determining whether a student is admitted	1 (4%)	2 (9%)	6 (26%)	13 (57%)	1 (4%)
12 The school/discipline/department sets the "bar" for admission and students who don`t meet these minimum criteria are not admitted	0	0	5 (22%)	8 (35%)	10 (44%)
13 Economic constraints do not impact on whether a qualified student is admitted	0	1 (4%)	3 (13%)	9 (39%)	9 (39%)
15 Students whose home language is not English are adequately prepared for university study	0	3 (13%)	2 (9%)	9 (39%)	7 (30%)
16 Students who are not prepared for health sciences university study can take foundation courses to better equip them for academic success	0	2 (9%)	4 (17%)	10 (44%)	6 (26%)
17 Students are given the opportunity to take longer than the usual number of years of study in order to be successful	0	4 (17%)	6 (26%)	10 (44%)	3 (13%)
18 Students who complete alternative access programmes perform equally well to mainstream students	3 (13%)	2 (9%)	7 (30%)	10 (44%)	1 (4%)
19 Learner focused curricula improve student success	1 (4%)	0	3 (13%)	8 (35%)	11 (48%)
22 Early identification and intervention for at-risk students improves retention	0	0	0	7 (30%)	16 (70%)
23 Many at-risk students drop out early in their programme of study	0	1 (4%)	4 (17%)	10 (44%)	7 (30%)

The data from the n= 23 questionnaires available for analysis shows a high level of consensus across nearly all questions –15 of 17 items. Items 10 and 18 met the value of 20% for positions deemed unimportant in the Delphi. Item 17, which had performed poorly in the I-CVI but was left in the Delphi questionnaire, *students are given the opportunity to take longer than the usual number of years of study in order to be successful*, was above the consensus rate of 75% so was adjudged to be very important to

somewhat important and therefore useful when considering the guidelines and policy brief.

During Phase 2 of the study the Policy Delphi questionnaire asked participants to add any additional comments they would like to. In Round 3 of the Policy Delphi many of the participants wrote in additional comments, see table 4.10. The additional comments were coded by the researcher and attached to the sub-categories and/or categories which had emerged in Phase 1. These additional comments were important in the final analysis as they reinforced the 8 categories which had been identified in the qualitative phase of the study.

Table 4.10 *Additional comments offered by participants during the Delphi*

Theme	Achieving equity of access for success is multi-factorial and has diverse and complex challenges					
Categories	Promotion of the health science disciplines	Challenges to transformation		Competitiveness	Health sciences sets the "bar"	
Sub-categories	Lack of information	Poverty	Poor schooling	Applications	Quotas	Matric scores and other criteria
Coded from the participants voices	• The medical profession is always the most important for governments – what a shame – they obviously don't know that health systems are actually nurse driven. • I believe these should be marketed equally. Despite the pressing need for certain categories of health care professionals the system cannot function adequately without all members of the team. There must be a realisation that not everyone can study medicine, but that medical care and outcomes can only be improved with sufficient numbers of nurses, physiotherapists, occupational therapists etc.	• No it does not – but it should because many of these students drop out because they cannot meet the financial requirements. • They also don't meet the grade because they have to do other jobs to get enough money to go to university – and then they think THEY are failures – which does not do them as people well at all – just demotivates them.	• Bright rural students with bad or no science and maths are falling through the cracks as they cannot compete for entry with Model C and private school leavers. • No it should prepare them for higher education not for health care fields. It should set a minimum of good education and then let the student make up their minds. The students are NOT prepared at the moment. The universities have to do the work that the schools should have done.	• There are various models to increase the output of health professionals such as private providers, public-private partnerships, split-site training, inter-governmental agreements etc. • … if they have what it takes to be a nurse (integrity, compassion, commitment etc.) or can they adapt to what society needs (people that can work hard and have integrity (honesty)). • The education is so bad anyway – it does not matter what subjects they do…	• This is imperative in the context of equity and redress but should move from race-based criteria to current socio-economic circumstances.	• Absolutely – we should be taking the best of the best • That the NBT`s must be considered in light of the subject choices available at certain schools. • This is done to ensure retention and success but admittedly may preclude the admission of students with potential. …

Theme	Achieving equity of access for success is multi-factorial and has diverse and complex challenges					
Categories	**Promotion of the health science disciplines**	**Challenges to transformation**		**Competitiveness**	**Health sciences sets the "bar"**	
Sub-categories	**Lack of information**	**Poverty**	**Poor schooling**	**Applications**	**Quotas**	**Matric scores and other criteria**
Coded from the **participants voices**		• Economic help should be available to ALL – not only the Black students or the students from so called disadvantaged backgrounds • Health professional training is well funded in terms of bursaries & scholarships from the public and private sectors	• Differentially resourced secondary school system results in different levels of preparedness requiring strong student support programmes. • I do not think there is a need to connect preparedness to English. There are other more significant issues that affect the extent to which students are ready for university. • Sorry, many other factors are involved. • All students need to be adequately prepared; many (not only 2nd language speakers of English) are not.	• The compulsory subjects make this less easy to do.		

Theme	Achieving equity of access for success is multi-factorial and has diverse and complex challenges					
Categories	**Promotion of the health science disciplines**	**Challenges to transformation**		**Competitiveness**	**Health sciences sets the "bar"**	
Sub-categories	**Lack of information**	**Poverty**	**Poor schooling**	**Applications**	**Quotas**	**Matric scores and other criteria**
Coded from the participants voices			• Not in all cases because you will find students whose home language is not English performing more than the one who`s (sic) English is their home language. • Multi-linguilism and bi-lingualism advocated by the National Department of Higher Education advances this aspect	• Matric subjects are set within admissions criteria. • Places available are too limited. It is difficult for students to be selected in the health sciences especially for medicine and dentistry. • There should be more resources available as the demand grows each year. • Government (Education Department) needs to provide for more funding to universities so that more students can be taken into HS degrees.		• that the NBT`s must be considered in light of the subject choices available at certain schools. • This is done to ensure retention and success but admittedly may preclude the admission of students with potential.

Theme	Achieving equity of access for success is multi-factorial and has diverse & complex challenges					
Categories	Alternative access	Reason for choosing a health science profession	Innovation in teaching and learning	Retention and throughput rates		
Sub-categories				Student support	Completion in minimum time	Retention rates
Coded from the participants voices	• imperative in the context of equity and redress. • Yes – but it should be a pre-entrance requirement – not the universities responsibility – it costs too much and these students waste valuable resources – they should also pay towards these studies so that they don't just sit in the courses and do nothing. • This may result in better success. However the courses must be appropriately designed. • This is imperative in the context of equity and redress. • Extended B Cur very useful at our institution. Articulation opportunity from mid-level to professional as important… • If we do not accept this as real, there will be fewer persons completing degrees in the health sciences.	• very often it is because of their career choice – they enter for the wrong reason. • …there is a need to ensure that once embarking on studies in health sciences you are entering a professional domain that requires a different mind-set in order to cope and be successful. • The nature of training and the professions require a vocational commitment. • Clinical training requirements make it imperative that students are housed on campus to facilitate travel to clinical training sites. • It is not a factor when choosing but it is a necessary condition for success for those who are admitted.	• This is just a theoretical statement – which is nonsensical anyway. All curricula are learner focussed today. If you educate you are learner focussed. If a student is motivated, is not determined to study and complete or has the means and opportunities to do so – curricula mean nothing! • It cannot only be learner focussed. • Real-life problems/cases or problems/cases that students identify with produce better learning outcomes as evidenced in the literature. • … applicants have little knowledge of these teaching strategies.	• The universities have to do the work that the schools should have done. • requiring strong student support programmes. • Student monitoring and support programmes are imperative for retention & success	• This is done to ensure retention and success but admittedly may preclude the admission of students with potential. • These should exceed national benchmarks as health sciences faculties recruit academically proficient students. • There are no useful norms or benchmarks.	• is in the best interest of students to establish early that they are not in the right field. • At risk can be attributed to degree choice as much as socio-economic and other factors. • Yes they do and it is better that way – for themselves and the community at large… • Throughputs are less important than quality!!!

Theme	Achieving equity of access for success is multi-factorial and has diverse & complex challenges					
Categories	**Alternative access**	**Reason for choosing a health science profession**	**Innovation in teaching and learning**	**Retention and throughput rates**		
Sub-categories				**Student support**	**Completion in minimum time**	**Retention rates**
Coded from the participants voices	• There are always circumstances that necessitate some people to take longer – that is understandable but if there was a loan system – students would work harder because the numbers would just go up and up and up. They would have to make a decision – either I pass or I get out of the programme. That way people that should be studying will continue and the others that can do the more practical work will get on with it. • Yes they do because the foundation courses gave them all the basics they require. • Yes and NO – some do and some don't. An enormous amount of extra money is spent on the extended programmes – and I don't think it always justifies it.		• Rubbish – they have NO idea what is going on in a university before they get there. They also have no idea about what a strategy is and what the difference in result is. What they do is listen to others that tell them – Oh that course is easier at the one university than the other – so let`s take that one!!!...			• Once again national and institutional need to encourage this!

4.9 Conclusion

The purpose of this study was to analyse access to health sciences education in universities in South Africa and the implications of that for health sciences education in the context of social redress and transformation. The results of this study indicated that achieving equity of access is multi-factorial and has diverse and complex challenges. Some of these challenges are ingrained in South Africa`s apartheid history, some are rooted in the process of access and some in the mind-set of the actors involved in access. The research identified the factors related to access to health sciences education in universities in South Africa. These results have been used to develop the Guidelines for the Implementation of Access Policy in Health Sciences Education and the Access for Success in Health Sciences Education in Universities Policy brief`s which are presented in chapter 6.

CHAPTER 5

DISCUSSION OF THE FINDINGS OF THE STUDY

5.1   Introduction

Access to health science education in universities in South Africa is steeped in both political and technical processes – the political will and capacity as well as expertise in educational policies. This is made all the more challenging by affordability and sustainability constraints (Sales, Kieny, Krech & Etienne, 2013) and particularly in a developing country like South Africa which has many competing demands. The conveners of the Third Global Forum on Human Resources for Health (HRH) which was held from the 10th to the 13th November 2013, encouraged the support of all stakeholders in an "ambitious and transformative agenda that places citizens` rights to health at the heart of development policies and that treats progress in the area of HRH as a key driver of broader health system development (Sales, Kieny, Krech & Etienne, 2013, p. 798)." Health sciences education is at the forefront of this transformation and coupled with South Africa`s policy on transforming higher education, access to the health sciences needs to be facilitated for those who have not had the opportunity but who are well placed to contribute to the Department of Health`s vision to improve access to universal health care and health outcomes (Department of Health, 2011).   This discussion chapter brings together the results of this study together with the relevant literature available and highlights that equity of access equals equity of success – a holistic approach to access to health sciences education in universities.

There were two research questions asked in this study:

1) What are the factors related to access to health sciences education in universities in South Africa in the context of social redress?

2) What are the implications of these challenges and facilitators on access to health sciences education in universities in South Africa?

The first research question is answered in sections 5.2 and the second question is answered in 5.3.

5.2 The factors related to access to health sciences education in universities

As described on Table 4.1, the overall theme that emerged was that *achieving equity of access for success is multi-factorial and has diverse & complex challenges*. The eight categories that were identified were: 1) Promotion of health science disciplines; 2) Challenges to transformation; 3) It is very competitive; 4) Health sciences sets the "bar"; 5) Alternative access; 6) Reason for choosing a health science profession; 7) Innovation in teaching and learning; and 8) Retention and throughput rates.

5.2.1 Promotion of the health science disciplines

Participants in this current study felt that the various health science professions were not marketed equally and that both this and the marketing of health sciences to targeted populations, such as rural-origin scholars, were important. The ability of universities to attract the quality of students which they would like can be linked to their marketing strategies. Marketing strategies need to be interactive, to make use of multi-media including social media platforms, "new look, funky, "myth-busting" materials (Stewart, 2008, p.4)" which is critical to attracting intelligent, young, dynamic students. In South

Africa where broadband connectivity is not well developed outside the urban areas this could mount a challenge however cellular phone coverage is very well developed throughout South Africa. Smart phones could allow the rural student to have access to interactive, social media platforms. The different health science professions need to market themselves more widely and so introduce educationally disadvantaged rural scholars to the diversity of opportunity in health sciences beyond nursing and medicine. The marketing of health sciences needs to move away from the higher education institutions to the areas from where higher education wants to recruit students, for example, the rural areas. The increased use of distance learning technologies in education could also promote the creation of satellite campuses in underserved rural areas.

Health sciences have no shortage of applicants, for example in 2012 the eight universities offering medicine had 28 092 applications (Parker & Van Staden, 2013). It was recently reported that the universities in KwaZulu Natal had ten times the number of applicants for first year places, nursing and medicine being amongst the most popular (Sapa, 2013). Recruitment of health science students in the context of the competing priorities of transformation, limited spaces and the financial funding formula is complex. Beneke (2011, 412) suggests the recruitment of students needs to be a strategic function of the higher educational institutions organisational policy in an effort to recruit students` who will further the objectives of these universities. A marketing strategy that he proposes is relationship marketing as opposed to mass marketing (Beneke 2011). Relationship marketing practices include in-school presentations, careers evenings at schools, career exhibitions for Grade 11 and 12 scholars, open days at the university (Beneke 2011, Devlin 2004), partnerships with "designated" schools, mentoring or student ambassador programmes, and role-model visits to schools to mention a few. Many of these strategies are being employed by Health Science Faculties but perhaps they could be more focused

towards scholars who have traditionally been excluded from higher education and those who the university should be targeting with a view to transformation and addressing past inequities, for example rural scholars from low socio-economic backgrounds. The Australian research points to value in extending the university outreach programmes into disadvantaged schools within the university`s catchment area (Stewart, 2008). As the initiative matures it moves from school-based to community-based events at numerous sites which will build community trust and mutually benefit all stakeholders (Stewart, 2008). These initiatives will develop long term sustainability with increased numbers of students from designated group`s accessing higher education (Stewart, 2008). Beneke (2011) advocated for extending the relationship with students and developing the concept of the "student for life." The student for life is seen as having a relationship with the student from "cradle to grave" (Stewart, 2008; Oblinger, 2007). This relationship starts with the high school scholar when he is seen as a prospect through his recruitment as a student and onto the alumnus stage (Beneke, 2011). BearingPoint (2003, p. 2) argued that:

> *By creating effective student-for-life relationships, colleges and universities can position themselves to build value with each of these interactions.*

The current research has suggested that prospective students, especially those in rural areas, do not have enough information about the range of health science professions and so tend to opt for the commonly known ones – nursing, medicine and physiotherapy or pharmacy. Ninety-six percent of participants, in the current study, felt this was an important to very important factor in access to health sciences education in universities. A report on Reforms in the Hong Kong Education System found that 84% of senior school graduates rated the well-timed delivery of information from organizations via schools as useful to very useful, 80% reported information delivered by organizations directly to students as useful to very useful and 74% suggested that single or group advice and

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counselling provided by teachers as useful to very useful forms of support for further studies and career choices (Curriculum Development Council, 2013). A study done by Wilks and Wilson (2012) amongst Australians of low socio-economic backgrounds found that the need for early intervention programmes at schools was important in retaining young people`s interest in accessing higher education and helping them to achieve their academic aspirations. By the time students reach Grade 10 and above, it is almost too late, initiatives need to be introduced earlier. Professor Gavin Brown previous Vice Chancellor of Sydney University was of the opinion that early involvement was necessary to improve the representation of students from low socio-economic groups and he felt that universities could and should help with opportunities to promote higher education to these students "but mere tinkering with entry requirements is fool`s gold (The Australian, Wednesday 25 June 2008 as cited in Stewart, 2008, p. 5)."

The findings of the current study supported similar findings by Gale et al. (2010), Stewart (2008) and James (2001) who found targeted school outreach programmes directed at increasing aspirations, access, participation and awareness of higher education amongst school children in the higher grades from lower socio-economic backgrounds increased participation. An international study, *International Research on the Effectiveness of Widening Participation,* key recommendations included, amongst others:

- A more co-ordinated approach to information, advice and guidance across the student life cycle and
- A more collaborative and "joined up" approach to work in schools, colleges and higher education institutions, "to raise not just aspiration, but increase attainment and promote progression to higher education (Bowes, Thomas, Peck & Nathwani, 2013, p.6)"

5.2.2   Challenges to transformation

In the current study two sub-categories emerged out of this category, namely, poverty and poor schooling.

5.2.2.1 Poverty

Seventy-eight percent of participants in this study felt that economic constraints were either important or very important factors in access to health sciences education. In universities whose student catchment is in poor rural areas participants reported that students often request to postpone their acceptance to study because of economic problems. South Africa has one of the most unequal societies in the world with millions of South Africans living in dire poverty (Frye, Farred & Nojekwa, n.d). Prospective students from middle to low socio-economic groups, irrespective of race, have enormous economic constraints in accessing higher education because of the costs of higher education, the insufficient funds available for bursaries, loans and scholarships coupled with the enormous poverty burden most South African citizens experience. These findings are supported in a number of studies which find that poverty is a barrier to accessing higher education in many countries in the world (Altbach, Reisberg & Rumbley, 2009; Morley & Lugg, 2009; Astin & Oseguera, 2004; Leathwood & O`Connell, 2003). Poverty is predominantly amongst Africans in rural areas with race and gender as cross cutting drivers of inequality (Frye, Farred & Nojekwa, n.d). The South African higher education system is still to all intents and purposes an elite system it is only the complexion of the student body which has changed (Cloete, 2007). The demand for financial assistance far outstrips the resources available (Wangenge-Ouma, 2013).

The South African National Student Financial Aid Scheme (NSFAS) is available for indigent students however it can only be accessed once the student has been granted and

retained in an academic place at a public higher education institution (DoHET, 2010) and the money is currently paid to the University for disbursement to the student although this is changing in 2014. The allocation of NSFAS funding to universities is determined on the number of disadvantaged students and the actual cost of study (DoHET, 2010). Race is used as a proxy for poverty in the formula with White students not being weighted and Black students assumed to be disadvantaged (DoHET, 2010) and so attracting maximum weighting irrespective of actual poverty. Allocation to students is based on the degree of financial need of their family and a means test is used to determine eligibility (DoHET, 2010). The NSFAS funding despite enormous gains over the years continues to be underfunded for the number of students who require financial assistance and as a result many universities are taking the NSFAS funds and spreading them amongst all those who need funds and as a result needy students are not getting all they need and end up with a shortfall – this is known as "top slicing." Cloete (2007) suggested that there is anecdotal evidence to indicate that students from lower middle class families are unable to afford higher education but do not qualify for financial aid as their parents income was just above the threshold for NSFAS. This has been supported in a report of the Ministerial Committee on the Review of the National Student Financial Aid Scheme which found that the income threshold for aid excludes a large cohort of students whose family`s income level falls outside the threshold but cannot afford to fund their studies (DoHET, 2010). The authors of an international study on the effectiveness of widening participation suggest that more consideration should be given to financial aid schemes which contribute to widening access and facilitating retention, completion and success (Bowes, Thomas, Peck & Nathwani, 2013).

Wangenge-Ouma (2013) reports that the impact of the National Student Financial Aid Scheme (NSFAS) in South Africa is inconclusive – on the one hand de Villiers (2012) has suggested that the NSFAS has contributed not only to poor students accessing higher education but that NSFAS has improved retention and performance with NSFAS students passing 74.3% of all courses they had registered for. However a Ministerial review of the NSFAS (2010) reported that of all the students funded over the years 33% were still studying and 67% were not in higher education any longer and of those who were no longer studying only 28% had graduated, 72% had dropped out or not completed their studies (DoHET, 2010). Care should be exercised when comparing these two reports as one reports on courses passed while the other refers to graduation rates (Wangenge-Ouma, 2013). NSFAS has contributed to many disadvantaged students accessing university education but attention needs to be focussed on students who can contribute to the scarce skills professions of which there are many in health sciences.

5.2.2.2 Poor schooling

Poor quality schooling, particularly in disadvantaged areas is a problem in South Africa (CHE, 2013: van den Berg, 2008). In the current study the majority of the participants discussed poor schooling as a feature of access to health sciences education in universities. Debate rages about whether students are prepared for higher education when they leave school and unfortunately many schools in the South African schooling system are not preparing students to cope with the demands of higher education (Wangenge-Ouma, 2013; CHE, 2013; Jenvey 2013; McMillan & Barrie, 2012; Wilson-Strydom, 2012). It could be argued that the poor schooling particularly affects students from the designated groups, which universities need to admit in order to transform higher education, meet the needs of the people in the health system and improve the lives of the previously disadvantaged who were excluded from opportunities under colonial and apartheid rule.

Both rural-origin students and those (particularly Black and Coloured) from low socio-economic groups attend under-resourced schools in terms of both human resources and infrastructural resources (Jones, Coetzee, Bailey & Wickham, 2008). Many of the teachers are inadequately prepared to teach high school students, are often not specialists in the subjects they teach and are not able to deliver the curriculum expected of them (Mouton, Louw & Strydom, 2013; Molefe, 2013; Frick, 2008) . The schools lack infrastructure such as science laboratories, computer laboratories and even libraries. As a result these students are not academically well prepared for higher education. Coupled with this, those of rural-origin, often mean they have not had any exposure to the various opportunities that health science professions offer and tend to only think of nursing, medicine and perhaps pharmacy. This makes it very difficult for scholars from rural schools to compete with scholars from advantaged schools (Diab, Flack, Mabuza & Reid, 2012).

Jenvey (2013) reporting on a paper presented at a Teaching and Learning conference held at the University of KwaZulu Natal in September 2013, that school-leaving results were a poor indicator of first year university performance and many students entering higher education did not have the knowledge and skills competencies outlined in the Basic Education`s policy documents. McMillan & Barrie (2012) reported that rural students felt inadequately prepared for the academic challenges of university and in the words of one participant in McMillan & Barrie`s study, which support the assumptions of a participant in the current research

> *The level of education that I had from my schooling was not that high. Now I see*
> *that many things that was supposed to be done at school, they didn't cover that. I*

feel like I missed out a lot. Things that we were supposed to do in Life Science, we

didn't cover that (p.4)

English is the predominant academic language of this generation, much like Latin and German have been in the past (Altbach, 2010). Most health science courses require a minimum of 50% in English in the National Senior Certificate (NSC) examinations which lends itself to an expectation of a certain proficiency in the language however command of English language was cited by participants as a challenge for many students admitted to health sciences courses. Diab, Flack, Mabuza & Reid (2012) found that students of rural-origin found English, as the language of instruction, further aggravated their academic challenges. One of their participants had this to say about English language:

The biggest challenge I had was a language problem because where I was coming

from you were taught English in Zulu… (Diab, Flack, Mabuza & Reid, 2012, p.6).

Participants in the current study felt that English, as a second language, was an important factor in access to health sciences education. Pilot testing during the development of the National Benchmark Tests, showed 47% of the students were proficient in English, the dominant language of higher education, 46% were in the "intermediate" category and 7% had basic academic literacy (MacGregor, 2009). These difficulties with the language of instruction contribute to the poor performance of university students and impact on success and throughput rates. Salamonson, Everett, Koch, Andrew & Davidson (2008) reported on a study in Australia which found that second language English speaking nursing students performed less well than English speaking students and required extra support which corroborates the understanding of participants in the current study. English as a second language poses a plethora of problems for students accessing university education and is

becoming a particular problem with the globalisation and massification of higher education (Briguglio & Watson, 2014; Murray, 2010; Bretag, 2007). The majority of students in South African health sciences education in universities are English second or third language speakers. Much of the South African basic education system is failing students in higher education and contributing to the difficulties they experience. If the basic education in the subjects necessary for health sciences, mathematics, English and science, was better students would have less challenges in higher education.

5.2.3   It is very competitive to get into health sciences

Competition for places in health science courses at South African universities was identified as an important consideration. Competition for places in health science courses at universities are at a premium, with demand exceeding supply. It was recently reported in the press that the University of KwaZulu-Natal had had 8000 applicants for 200 places to study medicine in 2014 (SAPA, 2013). Selection is based on predetermined criteria stipulated by each university and because the demand for places exceeds the availability universities are able to set stringent criteria for selection in order to attract the top students. However this does not always pay homage to the need for transformation and social justice as envisaged by the White paper 3 (Department of Education, 1997). The researcher believes that this opens up the potential for manipulation of admissions if someone in charge of admissions is not committed to transformation, they could hide behind the enormous numbers of applicants and only chose the best.

The South African higher education landscape has too few universities offering programmes in rural areas and too few places for students in light of the massive demand for admission. Higher Education South Africa (HESA), the leadership body that represents

the 25 universities and led by the Vice Chancellors made the announcement in January 2012 that there were too few places in universities for all eligible applicants (Higher Education South Africa, 2012). HESA (2012) reported, following a tragedy at the University of Johannesburg in 2011 where a prospective student`s Mother was killed in a stampede, that due to the limited post-school educational opportunities South Africa has too many eligible students for the available university places. Without increasing the places at universities the South African higher education landscape will not improve participation rates of the Black and Coloured 18 to 24 year old cohort without compromising the participation rate of White students which has fallen dramatically over the last 20 years. The participation rates in 1993 for Black youth in the cohort 18 to 24 years was 9%, for Coloured it was 13% and Whites 70%. The 2011 data reports participation rates of – Black cohort 14%, Coloured youth 14% and White`s 57% with an overall participation rate in 2010 of 18% (CHE, 2013). The South African government has issued a White Paper for Post-School Education and Training (2013) which will attempt to increase the participation of the cohort 18 to 24 year olds` in a more diversified post school education (DoHET, 2013). The DoHET has plans to develop a new health sciences university (incorporating MEDUNSA campus) and a new medical school in Limpopo as well as a number of academic hospitals (Parker & Van Staden, 2013).

5.2.4   Health sciences sets the "bar"

As a result of the competitive admission to health sciences education in South Africa, Faculties of Health Sciences are able to set the admission standards to admit the highest qualified students irrespective of considerations of disadvantage. This is enshrined in the law where the Higher Education Act 101 of 1997 allows for the higher education institution to determine the admissions criteria in consultation with the institutions Senate.

The Act does make reference to appropriate measures for redress of past inequalities and that no institution may unfairly discriminate against anyone. In the current study, one subcategory emerged out of this category, namely, matriculation scores and other criteria.

5.2.4.1 Matriculation scores and other criteria

Participants in this current study reported a variety of admission criteria which included matriculation scores (National Senior Certificate (NSC) and the previous Senior Certificate (SC)) together with interviews and National Benchmark Tests (NBT`s). It has been shown that high matriculation scores is one factor associated with academic success and in some research has been shown to be the most influential factor (Naidoo, Motala & Joubert, 2013; Mills, Heyworth, Rosenwax, Carr & Rosenberg, 2009). However in the South African context of varied school experience and the need to address inequities of the past matriculation (NSC and SC) scores alone are inadequate (Naidoo, Flack, Naidoo & Essack, 2012). These authors do suggest that matriculation subject results are a valuable tool in the selection and admission of first year health science students (Naidoo, Flack, Naidoo & Essack, 2012). All the universities, with the exception of one which used 5 academic subjects, use National Senior Certificate (NSC) results of six subjects which includes some compulsory subjects such as mathematics, life sciences, English, which they translate into points and then a variety of other criteria are used with these results, in-person interviews and standardized tests such as the National Benchmark Tests (NBT`s) amongst others. Three of the universities who participated in this study reported using a quota system of admissions in order to give priority admission to designated groups of students, for example, Black students and those from Quintile 1 & 2 schools, language (50% English speaking and 50% Afrikaans speaking irrespective of race), and an allocation for students from Southern African Development Countries. Quintile ranking of schools is a South African Department of Basic Education ranking which categorises

schools from 1 to 5 depending on their poverty ranking. The poorest schools are included in quintile 1 and the more affluent in quintile 5. The universities which made efforts to enable educationally disadvantaged students to access health science education were also those who had made transformation explicit in their mission statements.

Reid & Cakwe (2011) in a study done on the contribution of South African curricula to prepare health professionals for working in rural or under-served areas in South Africa reported that only two Faculties of Health Sciences explicitly mentioned, in their mission statements, the training of previously disadvantaged students. Medical schools have been criticised for targeting the academically brightest students rather than those who have potential and the government then sends deserving students to Cuba to study – this suggests that the values and practices of some medical schools is at odds with the principles of transformation. The initiative of the South African government to send Black South African students to study medicine overseas is in response to the dire shortage of medical doctors in the country and the limited number of opportunities to train doctors at local universities (Hammett, 2007). The effectiveness of this strategy has not been evaluated. The money spent on sending these students overseas might be better spent in capacitating the local universities so they are able to increase student numbers.

Standardized testing such as the National benchmark tests (NBT`s) are used to supplement NSC scores by many faculties of health sciences and were reported to be important to very important in access by 61% of those who participated in this study. The National Benchmark Tests are a South African battery of tests used by higher education institutions to assess academic readiness of prospective first year university students as an adjunct to the NSC scores. An Australian study which looked at the predictive validity of the undergraduate medicine and health sciences admission test (UMAT) for medical student`s academic performance found that the UMAT did not have useful validity in predicting

academic performance at university (Wilkinson, Zhang & Parker, 2011). These authors thought it could be because the students selected into medicine were highly selected and high performing and so perform very well on the UMAT (Wilkinson, Zhang & Parker, 2011). NBT`s are useful when making decisions about whether students should be placed in extended programmes and what additional support is needed, just one of the initiatives in an arsenal of student support services. In the context of poor schooling there might be more students who need extra curricula support that those who don't and so higher education needs to develop other strategies to deal with the large numbers of under prepared students. Reid & Cakwe (2011) described the use of the Health Science Placement Test which they say is used by most faculties and is aimed at identifying potential rather than absolute ability however in the current research no participant mentioned the use of these tests.

5.2.5 Alternative access

The facilitation of educationally disadvantaged students who perhaps have the talent but not the academic marks to access health science courses is about redress for the inequities of the colonial and apartheid legacy in South Africa. This research highlighted the alternative access routes that some of the universities facilitate in an effort to address transformation of the university as required by the White Paper 3 (Department of Education, 1997) and as articulated in some of the universities mission statements. It was reported that 65% of participants felt that priority admission based on a history of disadvantage was an important factor in access to health sciences education in the context of social redress. The issue of facilitating educationally disadvantaged students who meet the minimum admission criteria and are selected over those who more than meet the

admission criteria is one that is fraught with controversy in South Africa (Nkosi, 2013; Price, 2013; Johnson, 2013; Ncayiyana, 2012). Black students who have been selected into courses wonder if they have been selected on merit or on skin colour and other race groups consider the priority selection of Black students who just meet the minimum criteria (Ncayiyana, 2012) as "apartheid in reverse". This is made worse by the very limited places available for students to study the health science courses which they choose to. Coupled with this is a feeling amongst certain sectors of society that the standards are dropping (SAPA, 2014). The researcher feels that universities must guard against the trait of colour coding – they claim to be transforming but actually the Black students who are accessing their courses are not disadvantaged Black students but those who have had a good education and do not "deserve" the assisted places (Wangenge-Ouma, 2010; DoHET, 2010; Wangenge-Ouma & Cloete, 2008).

Historically White universities deliberately seek to recruit Black students and make alternative routes available for selection such as assessing potential rather than actual achievement (Ncayiyana, 2012; Boughey, 2012) in an effort to meet their transformation objectives. Alternative routes to access health science courses highlighted in this research included students successfully completing a general science degree or at least passing the first year of a science degree with a minimum mark of, for example, 60%, completing a university foundation programme of 1 year and agreeing to be placed in an extended curriculum course which means completing a 3 year degree in 4 years and a 4 year degree in 5 years, additional foundation courses are included in the whole qualification.

Faculties of Health Sciences, from a social redress perspective, need to continue to be creative in facilitating access to students, from underserved communities, who have the potential and meet the minimum entrance requirements in order that they have the opportunity of realising their potential as envisaged in the White Paper 3 (Department of Education, 1997). One suggestion which came out of a review of Australian higher education is to stipulate an enrolment target of students from designated groups (Bradley, Noonan, Nugent & Scales, 2008). The review suggested that by 2020, 20% of higher education enrolments at undergraduate level should be people from low socio-economic status backgrounds (Bradley, Noonan, Nugent & Scales, 2008). Articulation between the Further Education and Training (FET) sector and the higher education (HE) sector should be easy (Bradley, Noonan, Nugent & Scales, 2008) which is a principle advocated by the South African White Paper for Post-School Education and Training (DoHET, 2013). The National Qualification Framework has been developed and amongst other things, enables all qualifications to be placed at a level from 1 to 10 and so allow different pathways to access higher education i.e. if you have a qualification at an appropriate FET level it could give you access to a programme in higher education. Bradley et al (2008) suggested that these articulation possibilities would allow FET and HE providers to collaborate more closely and affect an increase in the number of students transitioning between FET and HE. Higher education qualifications, for example, Bachelor of Nursing degree, are on the Higher Education Qualification Sub-Framework (HEQSF) which is a sub-framework of the NQF and includes all qualifications from Level 5 to 10 – Level 5 being a higher certificate and Level 10 being a doctoral degree (South African Qualifications Framework (SAQA), 2012). The Australian experience shows that although the differentiated pathways to access from FET to HE had been successful in expanding participation this was amongst those who were already well represented in HE but it did not make a

significant impact on access for those who are under-served (Bradley, Noonan, Nugent & Scales, 2012). South African HE should be cognizant that some strategies might increase participation but not necessarily participation of the targeted groups, specifically Black students from lower socio-economic groups and those from rural areas. During the interviews participants mentioned that they had anecdotal evidence that students who had come through the alternative access route had greater success than those who accessed mainstream programmes straight from school. The Review of Australian higher education (2008) reported success amongst those who accessed HE from the Vocational Education and Training (VET) sector (Bradley, Noonan, Nugent & Scales, 2008) which makes a case for the articulation between FET and HE for students who have deficits in their basic school education. Flexible admission requirements are an important strategy to increase participation of designated students from under-served populations such as Black, rural students from low socio-economic backgrounds.

5.2.6   Reason for choosing a health science profession

This research identified that university leaders perceive that students are often choosing a health science profession for the wrong reasons – particularly with regard to medicine. Students chose the profession for reasons other than a passion to help sick people. Medicine rates highly in our social milieu and so students choose it because they think they will be "rich" one day, they will have elevated status in the community or because their family want them to do it, or it is good to have a doctor in the house. A recent study in Denmark found that young people`s decisions as to what to study was very much influenced by their parents profession and whether they came from a working class family or a professional family (Munk, Thomsen, Hansen & Eiberq-Madsen, 2013)

However these reasons are often not enough to keep students focused on the end when the going gets tough. Diab, Flack, Mabuza and Reid (2012) found, amongst health science students of rural origin, that their choice of health science courses was often a pragmatic choice of what was available to them and reflective of the limited choices available to these rural students. These authors reported that for many of these rural origin students the choice was informed by their own or that of a family member`s bad experience of access to healthcare (Diab, Flack, Mabuza & Reid, 2012). In contrast to the decision by some students to study medicine a study of Swedish undergraduate student nurses found that three quarters (75%) of those surveyed chose nursing because they "wanted to care for and help others (p.1618) and the least suggested motives for going nursing were "chance" (6 to 10%), "recommendations from family and friends" (8%) and "not being able to get into any other educational programme" (1.8%) (Jirwe & Rudman, 2012). These results are consistent with previous research which reports a variety of motivating factors for choosing nursing, including but not limited to, work related motives such as financial reasons (McLaughlin, Moutray & Moore, 2010), job security (Miers, Rickaby & Pollard, 2007; Rognstad, Aasland & Granum, 2004), diversity in the job and being part of a team (McLaughlin et al., 2010) some of which might motivate students choice of nursing as a career in South Africa where students often make choices on availability of opportunities and not necessarily first choice of career. Jirwe and Rudman (2012) identified three motives for wanting to pursue a career in nursing: "genuine interest", "practical reasons" and "default choice" –the last being the least autonomous of all the reasons and those falling into this bracket are most at risk of "dropping out" and not completing their course. In South Africa potential students make at least three programme choices when applying to enter the university but they are not always facilitated in their first choice and this can have implications for their motivation to pursue the course they have secured place in. The

reasons for choosing certain careers, be they intrinsic or extrinsic motivators, can have a bearing on the educational outcomes of students and students should be encouraged to pursue those career goals which are personally important and interesting (high in autonomy) and not those that they feel forced or pressured to pursue (Sheldon, Ryan, Deci & Kasser, 2004). This highlights the importance of the reasons for choosing a health sciences career to retention and throughput rates of students with 96% of participants reporting that "potential students are well informed when they make their choice of health science profession" as important to very important in the implementation of access policy in higher education.

5.2.7 Innovation in teaching and learning

South African higher education is characterised by low participation and high attrition (CHE, 2013), amongst the many reasons for this are learning-related problems (CHE, 2013). In the initial phase of this study the issue of whether the teaching methodology at a university attracted students to study at a particular university was contentious with some participants thinking it was an attraction but others feeling this was not so. However in the context of success, eighty three percent of the participants thought that learner focused curricula improved student success which was an important to very important factor in access to health sciences education in universities in South Africa. The progressive education strategies adopted by many Faculties of Health sciences have constructivism as an underlying philosophy which views students as active learners and constructors of their own knowledge (Vanderstraeten & Biesta, 1998) and are embraced in an effort to improve retention and success of students.

The Department of Education (1997) implored higher education programmes to generate new curricula with flexible models of teaching and learning in order to accommodate the varied student population. Learner centred curricula was supported as important to very important in the implementation of access to higher education by 83% of participants in the current study. There are many models of student centred teaching and learning which have been implemented in health sciences at universities. The University of Cape Town (UCT), Faculty of Health Sciences, as one example, has adopted a socially responsive approach to teaching and learning with innovative methodologies used in order to address the diversity of educational preparedness evident in their students (Hartman, et al, 2012). Some of the innovative approaches adopted by the University of Cape Town (UCT) include "primary level exposure, community based learning experiences and inter-sectorial practice placements (Hartman et al. 2012, 477)." Problem based learning (PBL) and case based education (CBE) are the teaching methodologies infused through all programmes in health sciences (Hartman et al. 2012) and has been shown to improve retention rates and academic performance (Burch, Sikakana, Yeld, Seggie & Schmidt, 2007). Problem-based learning was a factor in retention rates in a cohort of students at UCT where it was found that academically at-risk students performed significantly better than the worst performance depicted in the academic development programme for all students and they progressed at the minimum expected rate (Burch, Sikakana, Yeld, Seggie & Schmidt, 2007). Interim results from UCT imply that PBL may reduce drop-out rates and improve academic performance of educationally disadvantaged students (Burch, Sikakana, Yeld, Seggie & Schmidt, 2007). Frenk et al., (2010) encourages health science faculties to adopt innovative curricula and places for clinical teaching.

Frenk et al (2010) have suggested a competency-based approach to curriculum and team-based learning. A competency-based approach allows for an adaptable curriculum which is responsive to the needs of the communities in which the universities find themselves, this is important in producing health professionals who are socially, linguistically and ethnically aligned to the populations they serve (Gruppen, Mangrulkar & Kolars, 2012; Frank et al., 2010; Frenk et al., 2010). Competency-based education allows for an individualized learning process (Gruppen, Mangrulkar & Kolars, 2012) which is useful in light of the differently prepared students accessing health science education in universities. It enhances the learner-centeredness of health science training and allows individual students to reach the outcomes at different times (Frank et al, 2010) and aligns with the proposal from the CHE for a flexible curriculum in undergraduate education in South Africa (CHE, 2013). The idea behind the flexible curriculum is that students of varying abilities can progress to qualification at different rates through extending the standard duration of programmes – extending a traditional 3 year degree to a 4 year degree but enabling those who have the ability to graduate in 3 years to do so (CHE, 2013).

Participants in this study alluded to the benefit of a variety of teaching platforms – making clinical experience available away from the academic hospital, in the communities served by the university. The Human Resources for Health South Africa, strategic priority 4: upscale and revitalise education, training and research, objective 4.2, activity 4.2.3 compels higher education institutions to detail plans for rural campuses and peri-urban training sites in areas of health need (Department of Health, 2011, p.100). Numerous studies have shown that in order to attract more health care professionals to rural and remote areas one needs to recruit rural students to the health science programmes and expose students to rural clinical placements (Diab, Flack, Mabuza & Reid, 2012; Kotha et

al., 2012; Walker, DeWitt, Pallant & Cunningham, 2012; Reid & Cakwe, 2011; Couper & Worley, 2010; Tumbo, Couper & Hugo, 2009). Therefore in order that students have rural exposure it is important that Faculties of Health Sciences make rural clinical settings part of their clinical offerings. Frenk et al (2010) proposed that universities looked at locating themselves close to under-served communities however this is not without problems in respect of resources – human, infrastructural and financial. Multiple clinical sites are expensive and need human resources for support and if the intended experience is not well managed could have the opposite of what is desired (Reid & Cakwe, 2011; Marais, de Villiers, Kruger, Conradie, Jenkins & Reuter, 2007; Nemutandani, Maluleke & Rudolph, 2006). In South Africa the support for students in provincial department of health clinical settings is, generally, not efficient despite written agreements (Reid & Cakwe, 2011). In order to make this experience a positive one it needs to be well managed by all stakeholders. One of the participants in this research shared the positive experiences the health science students reported when they were placed in rural and remote clinical settings – students felt that it was worthwhile, that they had contributed to the work setting and had done valuable work, thus reinforcing their experience and this strategy is something that could be strengthened. This result was reinforced by results of a study undertaken by Diab, Flack, Mabuza & Reid (2012) and another in Australia (Couper & Worley, 2010). There are many opportunities for innovative, multidisciplinary clinical teaching but it is imperative that the various stakeholders (education and health, universities and provincial health services) work together.

5.2.8   Retention and throughput rates

Retention and throughput rates in South African universities are very poor and have been identified by the majority of participants in this research as important to very important in understanding access to health sciences education in universities in South Africa – access is also about success. Retention and throughput rates are important indicators of the university`s efficiency and are receiving a lot of focus at the moment because South African higher education is inefficient with high drop-out rates (DoHET, 2013). Retention and throughput rates, which in the context of educationally disadvantaged students and a need to address inequality, add a dimension to access which might be considered uniquely South African. In other countries where it might resonate the disadvantaged students will be minority populations whereas in South Africa the educationally disadvantaged students are in the majority. There are three subcategories, namely retention rates; completion in minimum time and student support.

5.2.8.1.   Retention rates

Retention and throughput rates in health sciences are what both students and staff aspire to as well as being a priority for the South African government – it is in everyone`s interest. The funding model of higher education in South Africa rewards universities with government subsidies for students who complete their course in the minimum time required – minimum time full subsidy, minimum time plus one year, minimum plus two years – each year that the student takes longer than minimum time the subsidy reduces. A number of strategies are used to facilitate retention and throughput such as mentoring by senior students, a variety of teaching strategies, screening of students for selection, early identification of at "risk students" to mention a few strategies. These strategies have

helped to ensure that those students who get through the first half of the course tend to finish.

South African higher education has a very high drop-out rate with almost 50% dropping out before finishing their qualifications (Wangenge-Ouma, 2013; Cloete, 2007). This high drop-out is also affected by race (DoHET, 2012; Cloete, 2007). "Early identification and intervention for at-risk students improves retention" was considered, by all of the participants in this research, to be important to very important in access to health sciences education in universities in South Africa. First year attrition is an indicator of the effectiveness of higher education – an indicator of whether or not the sector is able to meet the needs of first time entering students (CHE, 2013). First year attrition is 21% amongst a 2006 first time entering 4 year degree cohort and also shows racial differences (CHE, 2013). In this same cohort the attrition rates by race were: African students 22%, Indian students 27%, Coloured (mixed race) students 23% and White students 19% (CHE, 2013). Reported total attrition by the end of regulation time over the 4 year degrees was 39% (CHE, 2013). Most professional degrees including many health sciences degrees are 4 years. The participants in this study suggested that retention was generally good in health sciences because of the competitive access but that it could be improved. Another factor which might be fuelling the perceived lower attrition rate in health sciences is the issue of gender. Health Sciences have a very much larger number of female students than males, 2011 statistics show 11.9% females compared with 4.1% males in health sciences (Statistics South Africa, 2012) and Bhorat, Mayet & Visser (2010) report that males are more likely to drop-out of university. There are a variety of reasons why students drop-out amongst which are the following: Lack of adequate funding (NSFAS top slicing), inadequate academic support and underprepared students (foundation provisioning), poor career advice and choices, poor quality of student accommodation and nutrition, lack of

supervisory capacity and mentoring, student discipline and responsibility – lack of student leadership and an entitlement culture (Parker & Van Staden, 2013).

First year attrition is a feature of the articulation gap between secondary school and higher education. Students who meet the minimum statutory requirements for degree study (a "Bachelor`s" pass at NSC) expect a place in higher education and to gain a qualification but the under-preparedness of these students in many instances results in drop-outs (Fisher & Scott, 2011). This is a feature of a higher education system which is expanding from an elite to a more representative system (Aduol, Cheboi, Johnstone, Marcucci, Pillay & Wainaina, 2010) where a new type of student has access to the university and probably needs additional support (Wangenge-Ouma, 2013). The articulation gap between secondary school and higher education needs to be addressed otherwise any gains in access for disadvantaged students will be negated by poor success (Wangenge-Ouma, 2013; Mouton, Louw & Strydom, 2013). In order to continue to grow the higher education sector many of these under-prepared students will be admitted and therefore the universities need to address the shortfall in preparation and it is to this that the CHE (2013) has proposed undergraduate curriculum reform making the case for a flexible curriculum which will increase degree time by one year, for example, 4 year health science degrees will increase to 5 years.

5.2.8.2 Completion in minimum time

The higher education systems graduate output is low in relation to enrolments (CHE, 2013; Bunting, 2008). The South African funding formula for higher education rewards the graduation of students in "minimum time." The Department of Higher Education and Training sets benchmarks by which the universities head count enrolment in a given

academic year is expected to graduate (DoHET, 2009). This means that the student

graduates in the recommended time for the degree be it 3 or 4 years. The researcher argues

that this funding formula is at cross purposes with transformation. Universities are required

to prioritise the admission of Black students, these students more often come from

educationally disadvantaged backgrounds and require additional support to achieve

success and as a result do not graduate in "minimum time" which affects the funding the

university attracts from the government. The professional 4 year degrees do display

consistently better completion rates than the other degrees and the CHE reports a 68%

graduation rate within 5 years in the 2006 health sciences cohort (CHE, 2013). This

represents the best graduation rates of all the 4 year degrees and is probably because the

admission criteria tend to be more stringent and therefore the students are the "cream of

the crop", but still reflects 3 students for every 10 in health sciences do not complete in

regulation time (CHE, 2013). The poor graduation rates can lower morale for unsuccessful

students and may lead to decreased applications into some higher education settings by

targeted groups. There is also a loss of financial resources and the shortage of health care

professionals has a marked impact on the provision of health care for South Africa`s

citizens. The ratio of White to Black completion rates is 1:3 again a reflection of the

challenges that Black students face in higher education and why ongoing, evidence-based

best practices support systems to improve success are critical. The continued skewing of

participation and success in higher education mean that the advantages of higher education

continue to be unevenly spread (CHE, 2013). It is essential that higher education improves

the graduation rates of Black students who, despite constituting 79% of enrolments in

higher education, only 20 % are successful compared with White students who have a 44%

success rate (CHE, 2013). If student success is not improved the advances made in access

will be ineffective and highly inefficient (Fisher & Scott, 2011). Improving success rates at

universities is a strategic objective of the Department of Higher Education and Training (2013).

5.2.8.3 Student support

Academic support programmes in their many guises were introduced into South African universities a decade prior to the dismantling of apartheid, to assist disadvantaged students (Kloot, Case & Marshall, 2008). The academic support was initially started to *support* educationally disadvantaged Black students who were accessing historically White, English speaking universities and consisted of bridging programmes (Kloot, Case & Marshall, 2008). They were not without controversy (Kloot, Case & Marshall, 2008) and it was suggested as early as 1986 by Scott that these programmes were inhibiting transformation of the universities by preventing pressure for essential transformation. However these programmes have developed over the decades to academic development programmes and are now more commonly known as extended curriculum programmes (CHE, 2013). Extended curriculum programmes have been central to the South African government policy on higher education and are articulated in the 1997 White Paper 3 (Department of Education, 1997), the National Plan for Higher Education in 2001 (Department of Education, 2001), in the Ministerial statement on Higher education funding 2009/10 to 2011/12, which includes amongst other grants, the teaching development grant, which is targeted to increase retention and throughput (DoHET, 2009) and the White Paper for Post-School Education and Training (2013). Extended curriculum programmes have generally been successful in terms of widening access and improving student performance (CHE, 2013).

Almost all the universities have some sort of extended curriculum programme to assist talented students who are from an educationally disadvantaged background. At the

University of Cape Town (UCT), they have the Intervention Programme (Hartman et al 2012), and the University of the Free State (UFS) has the University Preparation Programme (Wilson-Strydom 2012), to mention just two. At UCT it has been found that the Intervention Programme together with Problem Based Learning (PBL), early exclusion of students and improved retention of those who remain in the programme bodes well for graduation (Hartman 2012). Ross (2007) found that rural students who were admitted on a scholarship scheme to study various health science courses needed extra time to complete their degree if they accessed university straight after matriculating. At the UFS prospective students are admitted to the university based on their NSC scores and are placed into compulsory support modules based on their NBT results. They are placed in one of three streams – mainstream, access via extended programme including an extra year or access to a one year bridging programme called the University Preparation Programme (Wilson-Strydom, 2012).

Peer mentoring has been found to be a valuable support mechanism for vulnerable students (Huybrecht, Loeckx, Quaeyhaegens, De Tobel & Mistiaen, 2011; Harris, 2007; Terrion & Leonard, 2007). A number of the universities, in the current study, referred to mentorship programmes that they have, where senior students mentor the incoming ones. Mentorship at South African universities is a legacy of a funded programme, Medical Education for South African Blacks (MESAB), which was the first mentoring programme for Black students in South African universities from 1985 to 2007 (Sikakaka, 2013). Numerous authors have written about the benefits of peer mentoring (Wilks & Wilson, 2012; Diab, Flack, Mabuza & Reid, 2012; Couper & Worley, 2010; Ross, 2007). There was some discussion in the literature about the benefits of rural students being mentored by people who were also from the rural areas as they could identify with them and understand them

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better than someone from the city (Diab, Flack, Mabuza & Reid, 2012; Ross, 2007). Ross (2007) reported that that the predominant reason students gave for their success was the high level of support given rural students who were on scholarships. Couper and Worley (2010) reporting on an alternative model for clinical education found students developed relationships with general practitioners they worked with and the mentoring, guidance and coaching they received gave them opportunities for personal and professional growth.

5.3   Implications of challenges and facilitators on access to health sciences education in universities in South Africa

The participants in this research were of the opinion that the demographic profile of their student body had changed significantly in most areas although there were some health sciences, such as the allied health science professions, which needed to pay more attention to the transformation of their student body. However none of the universities were using low socio-economic status as criteria for preferential admission. Race has been used as a proxy for disadvantage in admissions to higher education in South Africa however the idea that education can help get citizens out of poverty is not being assisted by the notion of race equalling disadvantage when anecdotal evidence points to advantaged Black citizens from well-resourced schools predominantly accessing health sciences education in higher education. Erasmus (2010) argues for the continued use of race as a proxy for disadvantage in the meantime as abandoning it for either class or merit alone would set back the gains made towards redress.

The General Household Survey 2011 shows that the percentage of individuals aged 18 to 29 years who attended university was still skewed in favour of Whites, with 20% of this eligible population attending compared with 3.5% of the eligible Black population, 3.8% of the Coloured population and 14.9% of the qualified Indian/Asian population (Statistics South Africa 2012, p.11). These figures lend support to the conclusion that Hall (2006 as cited in Erasmus 2010) drew of White South Africans continuing to enjoy advantage in accessing higher education and that this will continue while the schooling system remains inequitable, if race is not used, in the meantime, as a proxy for disadvantage. Contrary to the argument to continue with a race based approach are those in the USA who suggest that "class-based affirmative action" will not only address the deep economic inequalities of American society but will also support racial diversity because of the large overlap between race and low socio-economic status (Gaertner & Hart, 2013). In the USA, opponents to this feel that if a purely class based approach is adopted then racial diversity on campus will nose-dive however in South Africa there is a strong correlation between poverty and race. In 2008, Black Africans were 38 times more likely to be poor than Whites (Gradin, 2011) and therefore it should not affect the admission of Black students. Some of the reasons put forward by Gradin (2011) for this poverty differential are access to and quality of education, geographical location and demographic characteristics. Gaertner & Hart (2013) suggests that admission policy does not need to be an either or proposition but by considering race and class jointly universities can open up access to those students who have traditionally been excluded from higher education for economic, social and institutional reasons. Research (Baum, Ma & Payea, 2013) has found that having a higher education improves, amongst others, economic benefits, health, civic activities, better outcomes for children and improved quality of life in general and so strengthens the argument to address socio-economic based admissions to health science

education and particularly for those from rural areas. Wangenge-Ouma (2013) reported that historically Black and previously disadvantaged schools make up 80% of secondary schools in South Africa but they only produce 20% of students who qualify for university. The discourse around race as a proxy for disadvantage is growing in South Africa with more and more suggestion that 20 years into democracy other criteria for disadvantage need to be adopted (Oppenheimer & Ansara, 2013; Ncayiyana, 2012). Apartheid policies on higher education in South African spanned over a 50 year period; perhaps remediation for those policies needs to also span 50 years.

The current research indicated that attention on recruitment and selection of potential students has not focussed on scholars in rural areas. There was some indication from one university that this was the next effort towards transformation and they would focus a lot of attention on rural areas in terms of marketing and recruitment. Health professionals for rural health are a priority of many countries with a large rural population, including South Africa. The ability to attract health care professionals to rural areas to work is challenging for a number of reasons, not least being, perceptions of isolation, career advancement opportunities and lack of facilities, equipment and supplies, security, schooling and career opportunities for a spouse (Diab, Flack, Mabuza & Reid, 2012; Walker, DeWitt, Pallant & Cunningham, 2012; Tumbo, Couper & Hugo, 2009; Couper, Hugo, Conradie & Mfenyana, 2007). It has been shown through numerous research studies (Kotha et al., 2012; Walker, DeWitt, Pallant & Cunningham, 2012; Couper, Hugo, Conradie & Mfenyana, 2007) that students from rural areas are more likely to go back and work in these areas once they have completed their education. This research suggests that there were not enough students coming from rural areas, a finding which supports that which was found in a South African study by Tumbo, Couper and Hugo (2009) who reported the average proportion of rural-

origin health science students over a 4 year period was 26% in a country with a rural population of 46%. Another study which considered dentistry students from rural areas in South Africa reported that only 7% of the cohort studied had come from a rural area (McMillan & Barrie, 2012). It is suggested by participants in this research that this might be due to those from the rural areas not having adequate information about the various health science professions, what and how these professions work and how to access health sciences education in higher education. Health Sciences are challenging academically and students need to have demonstrated an above average academic ability in order to access health science courses. Seventy eight percent of participants were of the opinion that "there are adequate numbers of students coming from rural areas" as an important to very important factor in access to health sciences education in universities in South Africa.

Race as a proxy for disadvantage and poverty should be reconsidered. The universities have transformed their student bodies in respect of race but the concern now should move to students from low socio-economic backgrounds. There is acknowledgement that in the South African context these overlap but the gap between the haves and have not`s widens and participation of students from low socio-economic students in higher education is not known. Most of the very poor students are unable to access higher education. Males need to be targeted in health sciences as most of the professions are dominated by women.

5.4   Conclusion

This study of the analysis of factors related to access to health sciences education in universities in South Africa has shown that there are a number of initiatives going on at the

universities in an effort to address the past injustice in higher education access, however the issue of enabling access for those who are socio-economically disadvantaged is very much more complex and challenging to address so in the meantime race is used as a proxy for disadvantage. I would argue that this does not address the spirit of either the White Paper 3 (1997) or the White Paper on Post School Education and Training (2013) which requires the post-school education system to address barriers to advancement based on "class, race, gender, geographical location, age disability and HIV/AIDS status (South Africa, 2013, p.4).

There are not enough students coming from rural areas and with the poor distribution of health professionals in those areas and research showing that people of rural origin are more likely to choose to work in rural areas, it is imperative that Faculties of Health Sciences target students from rural areas. Throughput rates have not been adversely affected by access policies and are generally good in health sciences which may be ascribed to stringent selection and admission criteria and a more qualified student who is admitted with very good marks.

Chapter 6 presents guidelines for transformation implementation of higher education for health sciences education which have not been identified in government policies and are based on the findings from this research. In addition, a policy brief is presented in the following chapter. Both of these documents are offered to generate discussion and will be shared with key informants.

CHAPTER SIX

SUMMARY OF THE STUDY, DEVELOPMENT OF THE GUIDELINE, POLICY BRIEF, REFLECTIONS, RECOMMENDATIONS, LIMITATIONS AND CONCLUSION

6.1   Summary of the study

The factors identified in this research could be related to the four aspects of Walt and Gilson`s (Walt, 1994) Policy Analysis Triangle – context, actors, content and process.

6.1.1. The context

The context for access to health sciences education in universities in South Africa is embedded in challenges to transformation and redress. South Africa emerged out of a long history of inequality with a mandate to transform her unequal society and redress the ills of the past but in an environment free of discrimination. Higher education was not to escape the juggernaut of change but the question remains how? Redress for past inequalities is not under dispute in higher education and alternative access is one way to address transformation. Alternative access enables educationally disadvantaged students to access higher education for health sciences (Amosun, Hartman, Janse van Rensburg, Duncan & Badenhorst, 2012). Enabling access however should not be at the expense of quality and standards. The South African population deserves competent, skilled and knowledgeable health care professionals. In a country which can lay claim to being one of the most unequal on earth access needs to be facilitated for those who come from low socio-economic backgrounds irrespective of race (Waetjen, 2006). Poverty and educational disadvantage are challenging aspects for prospective students from low socio-economic families (Letseka & Breier, 2008; Waetjen, 2006). Poverty is an overriding challenge for many students who because of this cannot even aspire to higher education. These factors

are often outside the control of academic staff in universities and need to be addressed at a high government level in order that universities can implement the transformation agenda in higher education. The Department of Health should be encouraged to fund these students and innovative ways should be found to do this. Public private partnerships in local communities should be explored and these communities assisted in establishing a fund to sponsor deserving and needy students from that community – there are examples of good practice in South Africa which could be replicated by university health science faculties.

6.1.2 The actors

Tens of thousands of school leavers aspire to a university education and South African society needs them, no less health science professionals. However prospective students do not always have enough information about health science careers and come into the professions for the wrong reasons – reasons of status, perceived wealth if you qualify as a doctor, family pressure (Ozdemir & Hacifazlioglu, 2008) and in some cases housing and transport while at university if you study a health science course. Again the issue of poverty is wrapped up in many of these decisions. The educational disadvantage plays out in the student`s aspirations of a health science career but the student does not have the requisite subjects or marks to access a health science course. Teachers in disadvantaged schools may not giving learners` adequate guidance or preparation with regard to their careers and are most often not in a position to give this information.

6.1.3 The content

The factors which allude to content in the Policy Analysis Triangle regarding access to health sciences education in universities are admission and selection criteria and the competitive nature of health science admissions. Health science courses attract upwards of

ten times the number of applicants to places available. This very competitive nature of health science courses means that the "street wise" students are predominantly accessing health science courses to the detriment of rural and poor students who are less savvy and less able to negotiate the applications process. The overwhelming demand for health science courses is a feature of most of the health science professions but especially for medicine. Faculties of health sciences should partner with the Provincial Departments of Health in developing their enrolment plans so that the supply of and demand for health professionals can dovetailed. Enrolment can be divided into quotas and a percentage of places reserved for students from low socio-economic families, this could also be done taking the needs of the provincial Department of Health into account, and for example, should the requirement be for increased numbers of rural placements the university can increase the quota of rural students that it recruits. This type of recruitment with flexibility needs to be well strategized because of the long lead time necessary to train health professionals. Faculties of Health sciences set their own selection and admission criteria which is quite stringent because health science courses are academically challenging and therefore require an above average student (Essack, Wedekind & Naidoo, 2012). Additional standardized testing of prospective students is necessary in the context of very poor schooling in South Africa and the manipulation of the NSC results (Mouton, Louw & Strydom, 2013), most often upwards. These tests are useful as an adjunct to NSC scores (Wilson-Strydom, 2011; Yeld, 2009) and are useful in determining the placement of students into mainstream or extended curriculum programmes however the researcher believes that a psychometric test should be developed to test for the inherent ability or talent and not use a test which tests knowledge. Interviews are valuable as a selection instrument in discerning students reasons for wanting to study the particular course, what they know about it and what they think it will do for them.

6.1.4 The process

The factors which indicate process are marketing, teaching and learning and retention and through put rates. The results of the current study imply that the marketing of health professions and the universities is a haphazard affair, as a result not much is known by prospective students, in many communities, about the variety of health science professions or what their contribution is to the health system. This means an enormous demand for well-known programmes such as medicine and pharmacy for very few places. Faculties of Health Sciences need to market the variety of health science professions to the students/learners they hope to attract. They need a marketing strategy much like businesses have. In the context of socio-economic transformation this marketing plan needs to target poor and rural origin communities where talent can be unearthed and by bringing these students into health science education one is able to start catering for the rural urban problems of health care staff. Faculties of Health Sciences should be encouraged to partner with communities to facilitate talented students who can be identified by communities and supported by these same communities.

Universities need to be responsive to the changing landscape of health and be flexible with regard to the training of health professionals. This can be done through interdisciplinary team teaching (Edwards, Jackson, Raines, Henderson & Edwards, 2011; Margalit, et al., 2009; Baldwin, DeWitt & Baldwin, 2007) which should move out of the home campus and away from the academic hospital. The professional silos that exist must be challenged (Kreindler, Dowd, Star & Gottschalk, 2012; Margalit, et al., 2009) and a levelling of the health science professional playing field can be helped – a flattening of the hierarchy which places medical professionals above all other health professionals. University

campuses should be decentralised with more teaching platforms away from the home campus and hospital. The Department of Health needs to partner with universities to enable service staff working in the clinics and other health facilities to be part of the teaching staff as preceptors, mentors and so on. Student centred teaching and learning needs to be strengthened in order to improve retention and throughput. Student support initiatives, such as peer and professional mentoring and rural health clubs, "foundational" courses in an extended curriculum is to be encouraged.

Retention and throughput is a priority of all universities and an important factor in access to health sciences education in universities. Throughput rates in health sciences are generally good but at risk students need to be identified and interventions put in place timeously. The interventions include support of extended programmes, mentoring and other initiatives. Health science students are thought to be chosen through a rigorous process and attrition is not too high, it would be pertinent not to rest on ones laurels and to work to continuous improvement. Health sciences need to adopt a business-like approach to factors related to access policy.

6.2 The Guidelines

The guidelines on access to health sciences education in universities in South Africa were developed out of the results of both, phase 1, the qualitative phase and phase 2, the quantitative phase of this study. They were developed in order to facilitate Faculties of Health Science management decisions about access to health science education in the context of social redress.

Guidelines for the implementation of access policy in health sciences education

Index of contents

Acronyms

CHE	Council on Higher education
DoHET	Department of Higher Education and Training
HEI	Higher education institution
HRH	Human resources for health
NSFAS	National Student Financial Aid Scheme

GLOSSARY OF TERMS

Extended programmes	Refers to regular diploma or degree programmes which extend their duration by one year to enable talented but underprepared students to achieve a comprehensive foundation for success in their chosen programme (Council on Higher Education [CHE], 2013)
Mainstream programmes	Refers to those health sciences degree programmes which are offered as described in the Higher Education Qualification Sub-Framework (HEQSF), for example, a Bachelor of Nursing degree
Historically disadvantaged individual (HDI):	"a South African citizen who, due to the apartheid policy that had been in place, had no franchise in national elections prior to the introduction of the Constitution of the Republic of South Africa, 1983 (Act 110 of 1983) or the Constitution of the Republic of South Africa, 1993 (Act 200 of 1993) (the Interim Constitution) and/or who is a female; and/or who has a disability; provided that a person who obtained South African citizenship on or after the coming to effect of the Interim Constitution, is deemed not to be an HDI (Department of Finance, 2000, n.p.) "

1. **Principles**

The principles on which this guideline is written are those identified in the Education White Paper 3: A Programme for the Transformation of the Higher Education System (1997) and the White Paper for Post-School Education and Training (2013) and Human Resources for Health South Africa (2011). These are: fairness, social justice, redress, diversity, merit, equal opportunity and institutional autonomy.

2. **Legal and policy framework**

a. The National Health Act, 2003 (Act No. 63 of 2003)

b. Human Resources for Health South Africa. HRH Strategy for the Health Sector: 2012/13 – 2016/17

c. The guideline three strategic priorities of the DoH HRH SA Strategy (2011):
   i. *Strategic priority 4: Upscale and revitalise education, training and research*
   ii. *Strategic priority 5: Academic training and service platform interfaces and*
   iii. *Strategic priority 8: Access in rural and remote areas*

d. Higher Education Act, 1997 (Act No. 101 of 1997)

e. Higher Education Amendment Act, 2008 (Act No. 39 of 2008)

f. National Qualifications Act, 2008 (Act No. 67 of 2008)

g. National Plan for Higher Education in South Africa (2001)

h. Education White Paper 3: A Programme for the Transformation of Higher Education. General Notice 1196 of 1997.

i. White Paper for Post-School Education and Training (2013)

j. Promotion of Equality and Prevention of Discrimination Act, 2000 (Act No. 4 of 2000)

3. Introduction

The South African National Department of Health seeks to improve access to health care for all the citizens and to improve the health outcomes in the short and medium term (Department of Health, 2011). In order to achieve this, the Department of Health (2011) has formulated a vision for human resources for health:

> *A workforce developed through innovative education and training strategies and fit for purpose to meet the needs of the re-engineered health system and measurably improve access to quality health care for all* (p.76).

In a country with large disparities in healthcare provision between rural and urban environments, between public and private offerings and between rich and poor citizen`s faculties of health sciences have a responsibility to South African society to enable access to health science education. The Department of Health has developed a human resources for health strategy in which they undertake, together with other stakeholders, to ensure an appropriate, trained and sustainable workforce (Department of Health, 2011). Faculties of Health Sciences are seen as important partners in this strategy.

It is important for the universities when considering their admission policy to understand their institutional purpose (Frenk et al., 2010) and balance their admissions policy to meet this purpose.

4. Purpose

The purpose, of this guideline, is to assist Faculties of Health Sciences to facilitate access to health sciences programmes in the context of social redress and transformation.

5. Scope and contents

These guidelines apply to all universities offering health sciences education in South Africa.

5.1 A flexible curriculum

There is a large articulation gap (CHE, 2013) between high school and university which is contributing to what are considered underprepared students for university education.

- Extended programmes are useful for talented but underprepared students. The extended programme could incorporate foundational courses which will prepare students for the rigor of a health science programme. These courses must augment or enhance the curriculum and not add additional discipline specific content.

- Faculties of health sciences should consider courses which will help students with conceptual development, academic language proficiency and approaches to learning (CHE, 2007).

- The CHE (2013) has proposed, that these courses need not be in the 1st year of the programme but could be at varying stages dependent on what is required for the next transition, for example from basic sciences to biomedical sciences, to clinical decision making and so on.

- Students whose home language is not English may require additional assistance with academic literacy. This assistance can be established within health science faculties, for example, writing centres and remedial education.

5.2 Funding

Economic constraints are a barrier to admission into health science courses and opportunities for funding deserving, talented student`s needs to be pursued.

- The funding needs to be available for the entire duration of the degree so as to prevent the student having to "drop out" of university due to financial reasons.

- Explore any opportunities to facilitate alternative means of funding such as partnering with the Provincial Departments of Health, helping to establish private funding streams in areas where students originate, trust funds and so on.

5.3 Career counselling and advice

Students reasons for choosing a health science career can have an impact on retention and throughput and is an important determinant in access to health sciences education at universities which can be used to develop appropriate recruitment strategies. This is of particular relevance to those health science careers which are not so well known and are finding it difficult to transform and for students from under represented communities.

- Potential students need to be orientated to what subjects are important for health sciences education and why. This information needs to be made available in Grade 9 when scholars choose their subjects for the National Senior Certificate (NSC). Teachers also need to be made aware of the subjects necessary.

- Determine the reason why the student has chosen the particular health science profession, they may need to be counselled regarding the reasons for choosing particular health science professions.

- Prospective students need to be well informed when making their choice of health science career. Open days at the university or in health care settings enable prospective students to experience the reality of the chosen profession.

5.4 Selection and admission criteria

Admission into health sciences is extremely competitive but in order to pay homage to the transformation agenda faculties of health sciences can use a quota system to stratify selection of students based on socio-economic status, rural residence, and racial classification, prioritising those who are from low socio-economic rural backgrounds.

- Universities can partner with rural schools which offer mathematics and science in order to target students who are talented and have the potential.

- Remedial support can be extended to high schools in order to enlarge the pool of eligible students from under-represented groups.

- National benchmark tests and other standardized tests can be useful as an adjunct to NSC results and high school reports in placing students in mainstream programmes or extended programmes.

- The admission criteria should be fair and equitable as well as feasible but all the while addressing the need for transformation and redress.

5.5 Marketing of the health science professions

The ability of universities to attract the quality of students which they would like can be linked to their marketing strategies.

- It is suggested that faculties of health develop marketing strategies in order to maximise their opportunities to market the various health science professions but also their institution.

- Marketing strategies need to be interactive, to make use of multi-media including social media platforms which is critical to attracting intelligent, young, dynamic students.

- Marketing materials need to be interactive. Video material showing the interdependence of the health science careers is useful and can be shown in areas where prospective students may not have access to the variety of health science professionals, for example, remote rural areas. A variety of technological devices can be used, for example, smart phones, tablets and computers.

- The variety of health science professions need to be marketed equally. It is important to highlight the relationship between the various health professions in the health care team.

- Prospective students need to be given information regarding the variety of health sciences professions and the admission requirements for each of them. Much of this information should be given to scholars before they choose their subjects in Grade 9. Teachers need to be made aware of the subjects which scholars need to pursue a health science career and be able to teach these subjects.

- Partner with local health care facilities to facilitate orientation to the variety of health professions and the interdependence of these professions.

- Move the marketing of the health science professions and courses out of the confines of the university. Marketing initiatives are taken to the potential students, for example, in rural areas.

5.6 Teaching and learning

Health sciences in higher education need to bring about general reforms within its teaching and learning system (CHE, 2013) if it is to improve graduate outcomes and nurture health professionals for the 21st Century who are relevant and effective.

- Undergraduate education needs to develop life-long learners.

- Teaching strategies in health sciences need to be appropriate for the nature and diversity of the students.

- Inter-professional education on a common education agenda should be encouraged.

- Team-based learning allows for collaboration between different health professionals and needs to go beyond the confines of the classroom.

- Active methods of learning such as problem-based learning and practice-based learning should be used to deliver the curriculum.

- Novel forms of learning outside of the classroom need to be sort in order to integrate theory and practice. It is suggested that faculties of health sciences partner with provincial departments of health regarding service personnel being part of the teaching team appointed as preceptors and mentors for example.

- Opportunities to partner with private health providers can be sought particularly in remote and rural areas where professional mentors could assist with students of rural-origin.

5.7 Holistic student support

Retention and throughput is a priority of the Department of Higher Education and Training and needs to be addressed in Faculties of Health Sciences.

- Systems for the early identification of at risk students should be available and remedial actions implemented to support the at risk student.
- Strategies, which can be funded through the Teaching Development Grant, can be used to facilitate retention and throughput, such as:
    - peer mentoring by senior students,
    - academic coaching
    - professional mentoring by qualified health professionals in the health service,
    - variety of teaching strategies,
    - screening of students for selection and
    - early identification of at "risk students"

6. Conclusion

Faculties of Health Sciences may use the guidelines in a variety of ways in order to achieve a level of transformation which is congruent with the university's vision and mission. Each university is uniquely positioned to use the guidelines as they apply to their particular situation. The categories identified as being important for access to health sciences education in universities are wide ranging and allow for institutional autonomy while still addressing transformation.

6.3 Policy Briefs

The research had identified and described the factors related to access to health sciences education in universities and analysed what the implications were of these factors on the demographic profile of the students accessing health sciences education and the retention and throughput rates in health science programmes and guidelines were developed from these findings. However the advent of the policy brief emerged during the study as an important advance following on from the development of the guidelines for access to health sciences education in universities in South Africa. It became apparent that the guidelines, which are not enforceable, needed to be, expanded into a policy brief for the South African Minister of Higher Education and Training and the universities Faculties of Health Sciences as important actors in the implementation of access for social redress imperative of the South African government.

Policy Brief

Department of Higher Education and Training

ACCESS FOR SUCCESS IN HEALTH SCIENCES EDUCATION IN UNIVERSITIES

Executive summary

It has been envisaged that redress for past inequality of opportunity in higher education will be addressed through the transformation of higher education in South Africa. Despite a number of policy documents outlining transformation, it has been slow and has prioritised racial transformation to the exclusion of socio-economic transformation and the transformation of geography usually that of rural-origin. This policy brief makes suggestions which support access for success in the context of the access policy articulated in the White Paper 3, A Programme for Higher Education Transformation (1997) and the White Paper on Post School Education and Training (2013). The recommendations include:

- A flexible curriculum
- Funding
- Selection and admission criteria

Background

South Africa, a country troubled with a quadruple burden of disease and glaring inequality in her society, needs a well-educated and skilled, competent health care professionals to improve health outcomes for all her people. Frenk et al., (2010) reported that there is an increasing incongruence between health care provider`s competence and the population they serve and therefore health science education needs to take cognizance of the education of health professionals. Inflexible curricula, professional silos, outdated pedagogy, an inability to adjust to changing health milieus and the elitist nature of certain health professions have meant that the education of health professionals has not been able to overcome the dysfunctional and unfair health systems (Frenk et al., 2010).

Higher education in South Africa, a country fractured by a colonial and apartheid past, places education as an important determinant in addressing poverty in her society. However the legacy of past injustice has left an indelible scar on the education of the majority of her citizens. The Ministry of Education in South Africa had a vision "of a transformed, democratic, non-racial, and non-sexist system of higher education" (Department of Education, 1997, p. 6). This vision for higher education included amongst other things to encourage equity of access with the proviso of a fair chance of success to all citizens who want to achieve their potential through higher education,

while eliminating any unfair discrimination but at the same time being cognizant of progressing redress for past inequalities (Department of Education, 1997).

Several of the South African government policies outline the imperative for transformation in higher education but despite these policies outlining a vision for a transformed higher education landscape, transformation has been occurring at a very slow pace and concentrating on racial transformation to the exclusion of other factors such as socio-economic transformation. This policy implementation vacuum was experienced, largely, as a result of the incremental implementation approach adopted within a broad transformation agenda without clear implementation and funding guidelines (Department of Education, 2001). The result of not having implementation guidelines meant a number of unintended consequences as a result of this one of which related to equity and redress (Department of Education, 2001).

Methodology

The findings and recommendations of this policy brief were drawn from a research study that sought to identify the factors related to access to health sciences education in universities in South Africa and the implications of these factors on the student demographic profile and retention and throughput rates. The opinions of relevant stakeholders, who included Deans and Deputy Deans of Health Science Faculties, Senior Administrators in Universities both in Health Sciences and outside Health Sciences, Heads of Schools and Programmes within Health Sciences and administrators both within and outside Health Sciences were canvassed. A review of admissions policies and procedures at eight of the universities offering health sciences was done. This was augmented with a thorough review of the literature pertaining to the transformation of higher education through selection and admissions regionally, nationally, and internationally.

Findings

Equity of access for success to health sciences education in South African universities is complex and challenging. The challenges to the

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implementation of the access policy to health sciences education included:

1. Marketing: inadequate knowledge of the variety of health science careers and their role in the health care system.
2. Poverty and disadvantaged schooling: these factors combined and were particularly relevant for Black students of rural-origin.
3. Competitiveness: there are very many applicants with too few places
4. Selection and admission criteria: health science courses require high admission points and this has made it difficult for educationally disadvantaged students to access health sciences particularly Black rural-origin students for whom English is a 2nd or 3rd language
5. Flexible curricula: within the context of poor schooling this offers support for educationally disadvantaged sections of South African society
6. Career counselling and advice: students were often choosing health science courses for the wrong reasons and career counselling and advice was critical to improved retention and throughput
7. Teaching and learning: it was identified that there is a need to adapt teaching and learning to the needs of the students as well as the shifting disease burden and the community needs
8. Retention and throughput: in the context of educational disadvantage a large number of students do not finish in regulation time but with increased levels of support throughput rates improve.

Policy recommendations

Flexible curriculum:

- That the Department of Higher Education and Training (DoHET) enforces the CHE recommended flexible curriculum in all Health Sciences programmes.

Selection and admission criteria:

- The DoHET supports the notion of low socio-economic priority in university selection and admission policies.

- The DoHET promotes the use of quotas to low socio-economic admissions for those who meet the minimum National Senior Certificate (NSC) admission scores and have the ability to succeed in higher education
- That DoHET advocates for the development and use of a psychometric test which tests inherent capability rather than knowledge and that it is used together with National Senior Certificate scores for selection.

Funding:

Poverty is a real challenge for many young people who have aspirations of attending higher education for health science education.

- The DoHET consider, together with the Department of Health, how best to fund these deserving students for the full duration of their studies.

References

1. Council on Higher Education. (2013). A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure. Pretoria: Council on Higher Education
2. Department of Education. (2001). Draft National Plan for Higher Education in South Africa. Pretoria: Department of Education Retrieved from http://www.education.gov.za/
3. Department of Education. (1997). Education White Paper 3 - A Programme for Higher Education Transformation. Pretoria: Government Printer Retrieved from http://www.education.gov.za/
4. Department of Higher Education and Training. (2013). White Paper for Post-School Education and Training [Electronic version]. Retrieved February 10, 2014, from www. http://www.dhet.gov.za/
5. Frenk, J., Chen, L., Bhutta, Z.A., Cohen, J., Crisp, N., Evans, T., Fineberg, H., Garcia, P., Ke, Y., Kelley, P., Kistnasamy, B., Meleis, A., Naylor, D., Pablos-Mendez, A., Reddy, S., Scrimshaw, S., Sepulveda, J., Serwadda, D. & Zurayk, H. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. The Lancet, 376, (9756), 1923-1958.

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Policy Brief

Deans of Faculties of Health Sciences

ACCESS FOR SUCCESS IN HEALTH SCIENCES EDUCATION IN UNIVERSITIES

Executive summary

It has been envisaged that redress for past inequality of opportunity in higher education will be addressed through the transformation of higher education in South Africa. Despite a number of policy documents outlining transformation, it has been slow and has prioritised racial transformation to the exclusion of socio-economic transformation and the transformation of geography usually those of rural-origin. This policy brief makes suggestions which support access for success in the context of the access policy articulated in the White Paper 3: A Programme for Higher Education Transformation (1997) and the White Paper on Post School Education and Training (2013). Equity of health care can be realised through the provision of health care by competent, skilled and knowledgeable health professionals who are accessible, available, and acceptable and of good quality. This means that in order to achieve these priorities in a country where 45% of the population is of rural-origin more students of rural-origin need to access health science education. The recommendations include:

- A flexible curriculum
- Selection and admission
- Holistic student support
- Teaching and learning

Background

South Africa, a country troubled with a quadruple burden of disease and glaring inequality in her society, needs a well-educated and skilled, competent health care professionals to improve health outcomes for all her people. Frenk et al., (2010) reported that there is an increasing incongruence between health care provider`s competence and the population they serve and therefore health science education needs to take cognizance of the education of health professionals. Inflexible curricula, professional silos, outdated pedagogy, an inability to adjust to changing health milieus and the elitist nature of certain health professions have meant that the education of health professionals has not been able to overcome the dysfunctional and unfair health systems (Frenk et al., 2010).

Higher education in South Africa, a country fractured by a colonial and apartheid past, places education as an important determinant in addressing poverty in her society. However the legacy of past injustice has left an indelible scar on the education of the majority of her citizens. The Ministry of Education in South Africa had a vision "of a transformed, democratic, non-racial, and non-sexist system of higher education" (Department of Education, 1997, p. 6).

This vision for higher education included amongst other things to encourage equity of access with the proviso of a fair chance of success to all citizens who want to achieve their potential through higher education, while eliminating any unfair discrimination but at the same time being cognizant of progressing redress for past inequalities (Department of Education, 1997). Several of the South African government policies outline the imperative for transformation in higher education but despite these policies outlining a vision for a transformed higher education landscape, transformation has been occurring at a very slow pace and concentrating on racial transformation to the detriment of socio-economic transformation. This policy implementation vacuum was experienced, largely, as a result of the incremental implementation approach adopted within a broad transformation agenda without clear implementation and funding guidelines (Department of Education, 2001). The result of not having implementation guidelines meant a number of unintended consequences as a result of this one of which related to equity and redress (Department of Education, 2001).

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The findings and recommendations of this policy brief were drawn from a research study that sought to identify the factors related to access to health science programmes in universities in South Africa and the implications of these factors on the student demographic profile and retention and throughput rates. The opinions of relevant stakeholders, who included Deans and Deputy Deans of Health Science Faculties, Senior Administrators in Universities both in Health Sciences and outside Health Sciences, Heads of Schools and Programmes within Health Sciences and administrators both within and outside Health Sciences were canvassed as well as a review of admissions policies and procedures at eight of the universities offering health sciences. This was augmented with a thorough review of the literature pertaining to the transformation of higher education through selection and admissions nationally, regionally and internationally.

Findings

Equity of access for success to health sciences education in South African universities is complex and challenging. The challenges to access to health sciences education include:

1. Marketing: inadequate knowledge of the variety of health science careers and their role in the health care system.

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2. Poverty and disadvantaged schooling: these factors combined and were particularly relevant for Black students of rural-origin.
3. Competitiveness: there are very many applicants with too few places.
4. Selection and admission criteria: health science courses require high admission points and this has made it difficult for educationally disadvantaged students to access health sciences particularly Black rural-origin students for whom English is a 2nd or 3rd language
5. Flexible curricula: within the context of poor schooling this offers support for educationally disadvantaged sections of South African society.
6. Career counselling and advice: students were often choosing health science courses for the wrong reasons and career counselling and advice was critical to improved retention and throughput.
7. Teaching and learning: it was identified that there is a need to adapt teaching and learning to the needs of the students as well as the shifting disease burden and the community needs.
8. Retention and throughput: in the context of educational disadvantage a large number of students do not finish in regulation time but with increased levels of support throughput rates improve.

Policy recommendations

- That Faculties of Health Sciences develop marketing strategic plans which encompass rural outreach and equally market all health science professionals.
- Currently the access policy does not effectively capture students who are from low socio-economic backgrounds. This policy brief suggests Faculties of Health Sciences apply quotas to low socio-economic admissions for those who meet the minimum National Senior Certificate (NSC) admission scores and have the ability to succeed in higher education.
- That Faculties of Health Sciences strengthen student support initiatives – e.g. mentoring both peer and professional, rural health clubs and flexible curriculum offerings.
- The Faculty of Health Sciences considers in the absence of any appropriate

Psycho-metric tests, other standardized tests such as the National Benchmark Tests together with NSC scores to select students into health sciences.

- Consider partnering with the Provincial Department of Health to develop enrolment plans so that there is synergy between supply and demand of health professionals.
- Develop a framework for cooperation between the Department of Health and Faculties of Health Sciences with respect to training facilities and service staff to be part of the teaching arrangements for example as clinical preceptors and/or mentors
- Innovative teaching and learning is a requirement to developing the sort of health professionals the South African health system needs. It is suggested that Faculties of Health Sciences explore alternative teaching platforms particularly for clinical teaching, they look to team teach multidisciplinary groups of students.
- That Faculties of Health Sciences partner with communities they serve in order to target talented students from low socio-economic backgrounds.
- Considers university staff obligated to work in communities where poverty abounds in an effort to uncover talent which can be nurtured to improve academic ability in these communities.

References

1. Council on Higher Education. (2013). A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure. Pretoria: Council on Higher Education
2. Department of Education. (2001). Draft National Plan for Higher Education in South Africa. Pretoria: Department of Education Retrieved from http://www.education.gov.za/
3. Department of Education. (1997). Education White Paper 3 - A Programme for Higher Education Transformation. Pretoria: Government Printer Retrieved from http://www.education.gov.za/
4. Department of Higher Education and Training. (2013). White Paper for Post-School Education and Training [Electronic version]. Retrieved February 10, 2014, from www. http://www.dhet.gov.za/
5. Frenk, J., Chen, L., Bhutta, Z.A., Cohen, J., Crisp, N., Evans, T., Fineberg, H., Garcia, P., Ke, Y., Kelley, P., Kistnasamy, B., Meleis, A., Naylor, D., Pablos-Mendez, A., Reddy, S., Scrimshaw, S., Sepulveda, J., Serwadda, D. & Zurayk, H. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. The Lancet, 376, (9756),

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6.4 Researcher`s reflections

Having spent a number of years engaged with this research on access to health sciences education in universities in South Africa I have had a chance to reflect on the process and what I might have done differently. I have grappled with the challenges of access to health sciences education in universities in South Africa and still do not have the answers although I have acquired a fairly good understanding of the concept and I have realised that this is just the start of my research endeavours. As a South African citizen of European descent I have not had to experience the overwhelming trials accessing higher education entails for previously disadvantaged people in South Africa and currently marginalised people. However I grew up in a rural environment in another African country and was very aware of poverty and disadvantage so, as much as I do not have a personal experience I am very aware of the difficulties that marginalised population`s experience. This understanding has been deepened through this study. Having conducted this study I have a deep sense of unfairness in the system but feel conflicted by enabling everyone to study what they would like to study and the resource constraints of our country coupled with the need to have competent health care workers. I have a profound sense that the people of South Africa have a right to excellent healthcare irrespective of their social standing –every child is precious to a Mother irrespective of their station in the world. Faculties of Health Sciences have the responsibility to deliver the best health workforce to the nation.

I think in the context of South Africa`s apartheid past, the rapidly changing social environment and an area of great contestation I would like to do further research in the area using critical social theory as a philosophical underpinning to get a deeper understanding of the nuances in access to university education, what it means to marginalised people in South Africa. The research was conceptualized as an analysis of the implementation of access policy in health sciences in universities in South Africa but as the writing up of the thesis progressed

it became clear that "implementation" was really just about access and what access meant to those who contributed to the study, it was if the need by those who participated was to describe access. I developed an opinion that unless those who had responsibility for access had a vision to facilitate the access of marginalised people it would not happen and the vulnerable would not have opportunities to study health sciences, it would be a case of just selecting the "cream of the crop." Facilitating access for poorly prepared students with enormous financial and other constraints is not easy and takes dedicated commitment – an ongoing struggle against bigots, a struggle to convince, a struggle to get resources… a struggle... one has to be steadfast.

The development of the instrument which was used in the Policy Delphi rounds of data collection requires many more iterations in order that a useful, valid and reliable instrument is developed which could be used to analyse access to university courses in other disciplines. The continuing development of this instrument will assist in my understanding and advance my skill in instrument development.

An interesting development during the writing of the guidelines was the realisation that the guideline was not enforceable and that shorter policy briefs for the Minister of Higher Education and Training and the Deans of Health Sciences would be practical –one way in which the findings and recommendations of the research could be disseminated in a user friendly and succinct way.

I became very aware during my reading that the literature in this area is dominated by literature related to medicine with a dearth of information on the other health science professions. I am tempted to think that this is because of medicines prominent position within health and that it perhaps attracts the most money for research. However if more effort was made to highlight the other health science professions and to get an understanding of the

difficulties accessing education for these professions more opportunities could be opened up for rural people of low socio-economic status. Health care for rural populations would be improved.

6.5 Recommendations

There are a few recommendations which have surfaced as a result of this research and can be categorized as relating to further research and to the practice of access for students who wish to study a health science course.

Further research:

- To study access to universities from the person who is attempting to enter higher educations` perspective – the scholars.
- To develop the instrument further so that access to university courses in other disciplines could be analysed with the view to improving transformation.
- To examine the feasibility of the flexible curriculum in health sciences
- Develop a model for inter-professional education for health science professions
- Develop a model for collaboration between the Department of Health and the Faculties of Health Sciences regarding student`s clinical placement.
- Development of a psychometric test to augment the NSC scores for admission.

For practice:

- Advocate for the adoption of the flexible curriculum as envisaged by the CHE (2013)
- Explore funding opportunities beyond the conventional sources

- Develop community collaboration regarding career preparation for high school scholars

- Develop a considered marketing strategy for the Faculties of Health Sciences and the health science professions which targets rural origin students

- Explore further opportunities for innovative teaching and learning in multidisciplinary teams and on a multitude of platforms

- Broaden the holistic student support in order to maximise the potential of every student.

6.6 Limitations

A few limitations to the study were identified and would need to be considered in any further research:

- The poor response to the request for participation in the qualitative phase of the study and the quantitative phase. The poor response could be related to the sensitivity of the research topic which also came just after two Ministerial inquiries in higher education which could have contributed to reluctance on behalf of many potential participants to take part. In any future research the scope of the project could be expanded

- The limited response to requests to participate in the content validity phase of the development of the instrument, it is suggested that further work on the instrument is broadened to other Faculties with in the universities.

6.7 Conclusion

This mixed methods study used a sequential exploratory design to explore and describe access to health sciences education in universities in South Africa using the Walt & Gilson policy analysis triangle to analyse the factors and the implications of these factors on the student demographic and the retention and throughput rates. Equity of access for success is multi-factorial and has diverse and complex challenges.

Access to health sciences education in South Africa is a challenging and contested area of higher education seeped in politics and history within a context of transformation. There are a large number of students wanting to study health science courses but there are limited places. This means that universities can chose the best if they want to and can fill their courses many times over, however this could be a threat to transformation. The research identified eight categories which were related to access to health sciences education in universities:

1. Promotion of health science disciplines

2. Challenges to transformation

3. It is very competitive

4. Health Sciences sets the bar

5. Alternative access

6. Reasons for choosing health science professions

7. Innovation in teaching and learning

8. Retention and throughput rates

The categories identified in Phase 1, the qualitative phase of the research, were used to develop an instrument to collect data in Phase 2, the quantitative phase. The study utilised mixed methods and so the data was mixed and used together to answer the research questions.

Phase 2 of the study reinforced the findings of the first phase. The results indicated that the student demographic has changed substantially in Health Science courses but more could be done. The area of great concern is that there are not enough students coming from rural areas and so Faculties of Health sciences need to implement some strategies to reach out to the deserving students in rural and remote areas. This is arguably good for transformation of both higher education and health. The retention and throughput rates in Health science courses is relatively good although this would be expected as the selection and admission criteria is generally higher than lots of courses at the universities. Health sciences training, is difficult and requires dedication and hard work to succeed. Students are selected very carefully in an effort to minimise dropout rates as every place in a health science course is a precious place. Health Sciences at many of the universities play homage to the imperative of transformation for social redress but there are others who are caught between facilitating transformation and overwhelming demand for their courses.

Guidelines were developed from the findings of the research and it was decided after developing the guidelines to also develop two policy briefs, one for the Minister of Higher Education and Training and one for the Deans of Health Sciences. Policy briefs are a useful way to disseminate the research findings which might influence policy, to a wider audience – they are short, succinct and easy to read.

Despite the strides that have been made in transforming health sciences education in universities in South Africa there is much still to be done. Transformation of health sciences education in universities is imperative for health services to be accessible, available, affordable and agreeable, something all South African`s deserve.

LIST OF REFERENCES

Aduol, F., Cheboi, B, Johnstone, B.D, Marcucci, P, Pillay, P, & Wainaina, G. (2010). *Financing university education in Kenya: A report to the Ministry of Higher Education, Science and Technology*. Unpublished.

African Union. (2005). *Second Decade of Education for Africa. Plan of action.* (EXT/AU/EXP/EDUC/2 (II)). Adidas Ababa: African Union Retrieved from http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Dakar/pdf/

Aiken, L.H, Clarke, S.P, Cheung, R.B, Sloane, D.M, & Silber, J.H. (2003). Educational levels of hospital nurses and surgical patient mortality. *Journal of American Medical Association, 290*(12), 1617 - 1623.

Allen, W.R. (2005). A Forward Glance in a Mirror: Diversity Challenged - access, equity and success in higher education. *Educational Researcher, 34*(7), 18 - 23.

Allen, W.R, Teranishi, R, Dinwiddie, G, & Gonzalez, G. (2002). Kocking at freedom's door: Race, equity and affirmative action in US higher education. *Journal of Public Health Policy, 23*(2), 440 - 452.

Altbach, P.G. (2010). Globalisation and the university: Myths and realities in an unequal world. *Tertiary Education and Management, 10*(1), 3 - 25.

Altbach, P.G., Reisberg, L., & Rumbley, L.E. (2009). Trends in Global Higher Education: Tracking an Academic Revolution. A report prepared for the UNESCO 2009 world Conference on Higher Education [Electronic version]. Paris: UNESCO.

Amosun, S.L., Hartman, N., van Rensburg, V. Janse, D., Eve M., & Badenhorst, E. (2012). Processes in widening access to undergraduate allied health sciences education in South Africa. *African Journal of Health Professions Education, 4*(1), 34-39. doi: 10.7196/AJHPE.138

Archer, L. (2007). Diversity, equality and higher education: a critical reflection on the ab/uses of equity discourse within widening participation. *Teaching in Higher education, 12*(5 - 6), 635 - 653.

Archer, L., Hutchings, M, Ross, A, Leathwood, C, Gilchrist, R, & Phillips, D. (2003). *Higher Education and Social Class. Issues of exclusion and inclusion*. London: RoutledgeFalmer.

Arnolds, C.A, Stofile, R.N, & Riyaadh, L. (2013). Assessing the outcomes of the higher education mergers in South Africa: Implications for strategic management. *Acta Commercii, 13*(1), 1- 11.

Asplund, R., Adbelkarim, OB, & Skalli, A. (2008). An equity perspective on access to, enrolment in and finance of tertiary education. *Education Economics, 16*(3), 261 - 274.

Astin, A.W. & Oseguera, L. (2004). The declining "equity" of American higher education. *Review of Higher Education, 27*, 321-341.

Atkinson, M. (2008). Developing local guidelines. In R. Bowker, M. Lakhanpaul, M. Atkinson, K. Armon, R. MacFaul & T. Stephenson (Eds.), *How to write a guideline from start to finish* (pp. 17 - 27). Philadelphia: Churchill Livingstone Elsevier.

Badley, G. (2003). The crisis in educational research: a pragmatic approach. European *Educational Research Journal, 2,* 296-308.

Baldwin Jr, DeWitt C., & Baldwin, M.A. (2007). Interdisciplinary education and health team training: A model for learning and service. *Journal of Interprofessional Care, 21*, 52-69.

Baum, S., Ma, J, & Payea, K. (2013). Education Pays 2013. The Benefits of Higher Education for Individuals and Society *Trends in Higher Education Series* (pp. 1 - 48): College Board.

Baumgartner, F, & Jones, B. (1993). *Agendas and Instability in American Politics*. Chicago: University of Chicago Press.

Bazeley, P. (2009). Editorial: Integrating data analyses in Mixed Methods research. J*ournal of Mixed Methods Research,* 2009 (3), 203-207.

BearingPoint. (2003). Creating long-term value with student-for-life relationships (White Paper). In BearingPoint (Ed.). Vancouver.

Beneke, J. (2011). Student recruitment and relationship marketing - convergence or contortion. South African Journal of Higher Education, 25(3), 412 - 424.

Bhorat, H., Mayet, N, & Visser, M. (2010). Student graduation, labour market destinations and employment earnings. In M. Letseka, M. Cosser, M. Breier & M. Visser (Eds.), *Student retention and graduate destination: Higher education & labour market access and success* (pp. 97 - 123). Cape Town: HSRC Press.

Bibbings, L.S. (2006). Widening participation and higher education. *Journal of Law and Society, 33*(1), 74 - 91.

Bitzer, E M. (2010). Some myths on equity and access in higher education. *South African Journal of Higher Education, 24*(2), 298 - 312.

Blaine, S. (2013, January 22 2013). SA "more unequal" than 20 years ago says Oxfam, *Business Bay*. Retrieved from http://www.bdlive.co.za/national/2013/01/22/sa-more-unequal-than-20-years-ago-says-oxfam

Bleiklie, I. (2004). *Organizing higher education in knowledge society*. Paper presented at the Second Scientific Committee Meeting for Europe and North America, Paris.

Bloch, G. (2009). *The toxic mix: What`s wrong with South African schools and how to fix it*. Cape Town: Tafelberg.

Bloom, D., Canning, D., & Chan, K. (2006). *Higher education and economic development in Africa.*

Bloomberg, L.D., & Volpe, M. (2008). *Completing your Qualitative Dissertation. A roadmap from beginning to end.* Thousand Oaks: Sage

Boughey, C. (2012). Social inclusion and exclusion in a changing higher education environment. *Multidisciplinary Journal of Educational Research, 2*(2), 133 - 151.

Bowden, M.P, & Doughney, J. (2009). Socio-economic status, cultural diversity and the aspirations of secondary students in the Western Suburbs of Melbourne, Australia. *Higher Education, 59*, 115 - 129.

Bowes, L., Thomas, L, Peck, L, & Nathwani, T. (2013). International Research on the Effectiveness of Widening Participation. Leicester: CFE Research.

Bowker, R, Lakhanpaul, M, Atkinson, M, Armon, K, MacFaul, R, & Stephenson, T. (2008). *How to write a guideline from start to finish. A handbook for healthcare professionals.* Philadelphia: Churchill Livingstone Elsevier.

Bowling, A. (2005). Mode of questionnaire administration can have serious effects on data quality. *Journal of Public Health, 27*(3), 281 - 291.

Bradley, D., Noonan, P, Nugent, H, & Scales, B. (2008). Review of Australian Higher Education: Final report. Canberra: Department of Education, Employment and Workplace Relations, Australian Commonwealth Government.

Bradshaw, D., Groenewald, P., Laubscher, R., Nannan, N., Nojilana, B., Norman, R, Pieterse, D, & Schneider, M. (2003). Initial burden of disease estimates for South Africa, 2000. *South African Medical Journal, 93,* 682 - 688.

Braun, D., & Guston, D.H. (2003). Principle-agent theory and research policy: an introduction. *Science and Public Policy, 30*(5), 302 - 308.

Bretag, T. (2007). The emperor's new clothes: Yes, there is a link between English Language competence and academic standards. *People and Place, 15* (1), 13–21.

Brewer, G.D, & deLeon, P. (1983). *The Foundations of Policy Analysis.* Monterey: Brooks/Cole.

Briguglio, C., & Watson, S. (2014). Embedding English language across the curriculum in higher education. *Australian Journal of Language and Literacy, 37*(1), 67 - 74.

Brodie, D.A., Andrews, G.J, Andrews, J.P, Thomas, G.B, Wong, J, & Rixon, L. (2004). Perceptions of nursing: confirmation, change and the student experience. *International Journal of Nursing Studies, 41*, 721 - 733.

Brown, D.L. (2013). A looming joblessness crisis for new pharmacy graduates and the implications it holds for the academy. *American Journal of Pharmaceutical Education, 77*(5), 90.

Browne, J. (2010). Securing a sustainable future for higher education. An independent review of higher education funding and student finance (pp. 64) [Electronic version]. Retrieved February 2, 2014, from www.independent.gov.uk

Bui, K.V.T. (2005). Middle school variables that predict college attendance for first generation students. *Education, 126*(2), 203 - 220.

Buissink-Smith, N. , Spronken-Smith, R., & Walker., R. (2010). You're doing what? Students' experiences of advice from a New Zealand university. *Higher Education Research and Development, 29*(4), 357 - 371.

Bunting I. (2008). Students. In: N. Cloete, P. Maassen, R. Fehnel, T. Moja, T. Gibbons & H. Herold (eds). *Transformation in higher education. Global pressures and local realities.* Netherlands: Springer

Bunting I. (2007). The Higher education Landscape under Apartheid. In: N. Cloete, P. Maassen, R. Fehnel, T. Moja, T. Gibbons & H. Herold (eds). *Transformation in higher education. Global pressures and local realities.* Netherlands: Springer

Burch, V.C, Sikakana, C.N.T, Yeld, N, Seggie, J.L, & Schmidt, H.G. (2007). Performance of academically at-risk medical students in a problem-based learning programme: A preliminary report. *Advances in Health Sciences Education, 2007*(12), 345 - 358.

Butcher, N., Wilson-Strydom, M., Hoosen, S., MacDonald, C., Moore, A., & Barnes, L. (2008). *A profile of higher education in the region Chapter 2* [Electronic version]. Retrieved March 18, 2009, from www.sarua.org

Cable, V. & Willetts, D. (2011). Guidance to the Director of Fair Access. http://www.bis.gov.uk/assets/biscore/higher-education/docs/g/11-728-guidance-to-director-fairaccess.

Campbell, S.M., Braspenning, J., Hutchinson, A., & Marshall, M.N. (2003). Research methods used in developing and applying quality indicators in primary care. *British Medical Journal (BMJ), 12*(326), 816 - 819.

Caracelli, V.J., & Greene, J.C. (1993). Data analysis strategies for mixed-methods evaluation designs. *Educational Evaluation and Policy Analysis*, 15 (2), 195-207[Electronic version]. Retrieved May, 20, 2010, from, http://wwwjstor.org/stable/1164421

Carneiro, J. (2013, August 28). Brazil's universities take affirmative action [Electronic version]. *BBC News business.* Retrieved September, 4, 2013, from http://www.bbc.co.uk/news/business

Centre for the Study of Higher Education (CHSE), University of Melbourne. (2008). Participation and equity. A review of the participation in higher education of people from low socioeconomic backgrounds and Indigenous people: Universities Australia.

Chan, K.W & Zhang, L. (1999). The Hukou System and Rural-Urban Migration in China: Processes and Changes. *The China Quarterly, 160*, 818 – 855

Chen, L.C. (2010). Striking the right balance: health workforce retention in remote and rural areas. *Bulletin of the World Health Organization 2010*(88). http://www.who.int/bulletin/volumes/88/5/10-078477/en/ doi:10.2471/BLT.10.078477

Cherryholmes, C.C. (1992). Notes on pragmatism and scientific realism. *Educational Researcher, 21*, 13 - 17.

Cho, S., Lee, S., Hudley, C., Barry, L., & Kelly, M. (2008). Role of gender, race and SES in the college choice process among first-generation and non-first-generation students. *Journal of Diversity in Higher education, 1*(2), 95 - 107.

Chou Chuing, P, & Wang, LT. (2012). Who benefits from the massification of higher education in Taiwan? *Chinese Education and Society, 45*(5-6), 8 - 20.

Chowdry, H., Crawford, C., Dearden, L., Goodman, A., & Vignoles, A. (2013). Widening participation in higher education: analysis using linked administrative data. *Journal of the Royal Statistical Society, 176*(2), 431 - 457.

Christie, P. (2008). *Opening the doors of learning. Changing schools in South Africa.* Johannesburg: Heinemann Publishers.

Clancy, P., & Goastellec, G. (2007). Exploring access and equity in higher education: Policy and performance in a comparative perspective. *Higher Education Quarterly, 61*(2), 136 - 154.

Cloete, N. (2007). New South African Realities. In N. Cloete, R. Fehnel, P. Maassen, T. Moja, H. Perold & T. Gibbon (Eds.), *Transformation in Higher Education. Global Pressures and Local Realities in South Africa.* Lansdowne: Juta and Company.

Cloete, N., Fehnel, R., Maassen, P., Moja, T., Perold, H & Gibbon, T. (Eds.), (2007). *Transformation in Higher Education. Global Pressures and Local Realities in South Africa.* Lansdowne: Juta and Company.

Commonwealth of Australia. (2008). Review of Australian Higher Education (E. a. W. R. Department of Education, Trans.). Canberra: Australian Government.

Cronley, D.T. (2007). Challenge of College readiness. *Educational Leadership* (April 2007), 23 - 29.

Conley, D.T., Aspengren, K., Stout, O., & Veach, D. (2006). College Board Advanced Placement best practices course study report. Eugene, OR: Educational Policy Improvement Center.

Connor, H., Dewson, S, Tyers, C, Eccles, J, Regan, J, & Aston, J. (2001). Social Class and Higher Education: Issues affecting decisions on participation by lower social class groups (Institute for Employment Studies) (pp. 1 - 140). Norwich: Institute for Employment Studies.

Corver, M. (2005). Young participation in higher education (pp. 267). United Kingdom: Higher Education Funding Council for England.

Coughlan, F. (2006). Access for success. *South African Journal of Higher Education, 20,* 209-218.

Council on Higher Education. (2013). A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure. Pretoria: Council on Higher Education.

Council on Higher Education. (2010). Access and throughput in South African Higher Education: three cases studies [Electronic version]. Retrieved May 20, 2010 from

Council on Higher Education. (2007). A case for improving teaching and learning in South African higher education. In I. Scott, N. Yeld & J. Hendry (Eds.), *HE Monitor No. 6.* Pretoria: Council on Higher Education. http://www.che.ac.za

Council on Higher Education. (2004). Improving teaching and learning resources. Pretoria: Council on Higher Education.

Council on Higher Education. (2001). Developing African higher education. Pretoria: Council on Higher Education.

Council on Higher Education. (2000). Towards a New Higher Education Landscape: Meeting the Equity, Quality and Social Development Imperatives of South Africa in the 21st Century (pp. 62). Pretoria: Council on Higher Education.

Couper, I.D., Hugo, J.F.M, Conradie, H, & Mfenyana, K. (2007). Influences on the choice of health professionals to practise in rural areas. *South African Journal of Medicine, 97*(11), 1082 - 1086.

Couper, I.D, & Worley, P.S. (2010). Meeting the challenges of training more medical students: lessons from Flinders University`s distributed medical education program. *Medical Journal of Australia, 193*(1), 34 - 36.

Crabtree, B.F, & Miller, W.L (Eds.). (1999). *Doing Qualitative Research* (2nd ed.). Thousand Oaks: Sage

Creswell, J.W., & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research.* Thousand Oaks: SAGE Publications.

Creswell, J.W, Plano Clark, V.L, & Garrett, A.L. (2008). Methodological Issues in Conducting Mixed Methods Research Designs. In M. Bergman (Ed.), *Advances in Mixed Methods Research* (pp. 1 - 192). London: SAGE Publications

Creswell, J.W. (2011). Controversies in mixed methods research. In N.K Denzin & Y.S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (4th ed.). Thousand Oaks, CA: SAGE Publications

Croft, A. C., Harrison, M. C., & Robinson, C. L. (2009). Recruitment and retention of students-an integrated and holistic vision of mathematics support. *International Journal of Mathematical Education in Science & Technology, 40*(1), 109-125.

Curriculum Development Council. (2013). Progress report on the new academic structure review. The New Senior Secondary Learning Journey - Moving forward to excel. Hong Kong: Curriculum Development Council.

David, M., Parry, G., Vignoles, A., Hayward, G., Williams, J., Crozier, G., Hockings, C. & Fuller, A. (2008). Widening participation in higher education. A commentary by the Teaching and Learning Research Programme (Economic and Social Research Council, Trans.) (pp. 28): Teaching and Learning Research Programme

de-Graft Aikins, A., Arhinful, D.K, Pitchforth, E, Ogedegbe, G, Allotey, P, & Agyemang, C. (2012). Establishing and sustaining research partnerships in Africa: a case study of the UK-Africa Academic Partnership on Chronic Disease. *Globalization and Health, 8*(29), 1 - 13.

de-Graf Aikins, A, Unwin, N, Agyemang, C, Allotey, P, Campbell, C, & Arhinful, D. (2010). Tackling Africa`s chronic disease burden: from the local to the global. *Globalization and Health, 6*(5), 1 - 7.

deLeon, P. & deLeon, L. (2001). What ever happened to policy implementation? An alternative approach. *Journal of Public Administration Research and Theory, 12,* 467-492.

Deller, F, & Oldford, S. (2011). Participation of low-income students in Ontario @ Issue Paper No. 11. Toronto: Higher Education Quality Council of Ontario.

Dellinger, A.B. & Leech, N.L. (2008). Toward a unified validation framework in Mixed Methods Research. *Journal of Mixed Methods Research, 1,* 309-332.

Deloitte. (2013). Healthcare skills shortage a global phenomenon.   Retrieved December 31 2013, from http://www.deloitte.com/view/en_ZA/za/insights/press-releases/7aea646828e02410VgnVCM3000003456f70aRCRD.htm

Dennis, C.R. & Murray, D.M. (2012). Success in first-year mathematics: School-leaving examinations and first-year performance. *South African Journal of Science, 108*(7/8), 1-3.

Department of Basic Education. (2011). Report on drop out and learner retention strategy to portfolio committee on education. Pretoria: Department of Basic Education.

Department of Business, Innovation and Skills. (2012). *Widening participation in higher education*. https://www.gov.uk/government/policies/widening-participation-in-higher-education--4: Retrieved from https://www.gov.uk/government/policies/widening-participation-in-higher-education--4.

Department of Education. (2005). *Strategic Plan for 2007/2008 – 2009/2010 for the Department of Education* [Electronic version]. Retrieved March, 20, 2009, from http://www.education.gov.za/dynamic/dynamic.aspx?pageid=329&catid=7&category=Publications&legtype=null

Department of Education. (2001). Draft National Plan for higher education in South Africa [Electronic version]. Retrieved March 22, 2009, from http://www.education.gov.za

Department of Education (1997). A Programme for the Transformation of Higher Education (Education Draft White Paper 3). [Electronic version]. Retrieved July 26, 2010, from http://www.info.gov.za/whitepapers/1997/education3.htm

Department of Health (2013). *The National Strategic Plan for Nurse Education, Training and Practice 2012/13 - 2016/17*. Pretoria: Government Printer Retrieved from www.doh.gov.za.

Department of Health. (2012). *Annual Report 2011/2012*. http://www.health.gov.za/docs/annual_reports/2012/annualreport.pdf

Department of Health. (2011). *Human Resources for Health South Africa. HRH Strategy for the Health Sector: 2012/13 - 2016/17*.

Department of Health. (2006). *National Human Resources Plan for Health*. Pretoria: Government Printer

Department of Health, (2006). A National Human Resources for Health Planning Framework (pp. 1 - 82). Pretoria: Department of Health.

Department of Health, (1997). White paper for the transformation of the health system in South Africa. http://www.doh.gov.za/docs/policy/white_paper/

Department of Higher Education and Training, South Africa. (2014). Report of the Ministerial Committee for the Review of the Funding of Universities (pp. 423). Pretoria: Department of Higher Education and Training.

Department of Higher Education and Training. (2013). *White Paper for Post-School Education and Training* [Electronic version]. Retrieved February 10, 2014, from www. http://www.dhet.gov.za/

Department of Higher Education and Training, South Africa. (2012). *Department of Higher Education and Training Revised Strategic Plan 2010/11-2014/15.* Pretoria: Government Printer.

Department of Higher Education and Training. (2010). Report of the Ministerial committee on the review of the National Student Financial Aid Scheme [Electronic version]. Retrieved April 10, 2010 from http://www.education.gov.za.

De Villiers, M.R, De Villiers, P.J.T & Kent, A.P. (2005). The Delphi technique in health sciences education research. *Medical Teacher*, *27*, 639-643.

de Villiers, P. (2012). Removing financial obstacles for access to tertiary education. Transformational audit: The youth divided.

De Vellis, R.F. (2012). *Scale Development. Theory and Applications* (3rd Edition ed.). Thousand Oaks: Sage

Devlin, Y. (2004). A review of the participation of students from low socio-economic background at the University of New South Wales. Sydney: Equity and Diversity Unit, Sydney University.

Diab, P.N, Flack, P.S, Mabuza, L.H, & Reid, S. (2012). Qualitative exploration of the career aspirations of rural origin health science students in South Africa. *Rural and Remote Health, 12*, 1 - 11. http://rrh.org.au

Ditlopo, P., Blaauw, D, Bidwell, P, & Thomas, S. (2011). Analyzing the implementation of the rural allowance in hospitals in North West Province, South Africa. *Journal of Public Health Policy, 32,* S80 - S93.

Douglass, J. (2007). *The conditions for admission: Access, equity and the social contract of public universities.* California: Stanford University Press.

Downs, C. (2010). Increasing equity and compensating historically academically disadvantaged students at a tertiary level: benefits of a Science Foundation Programme as a way of access. *Teaching in Higher Education, 15*(1), 97-107

Dunne, M., & Sayed, Y. (2002). Transformation and Equity: Women and higher education in Sub-Saharan Africa. *International Studies in Educational Administration, 30*(1), 50 - 65.

Du Plessis, E. & Human, S.P. (2007). The art of the Delphi Technique: highlighting it`s scientific merit. *Health SA Gesondheid*, *12*, 13-24.

Dye, T. R. (1987). *Understanding Public Policy (6th ed.).* Englewood Cliffs: Prentice Hall.

Eckert Baeta Neves, C., Raizer, L, & Fellini Fachinetto, R. (2007). Access, expansion and equity in Higher Education: new challenges for Brazilian education policy. *Sociologias, 3*(17), 100 - 105.

Edwards, Jr D.W., Jackson, V., Raines, G.M., Henderson, D.L., & Edwards, Y.V. (2011). Multidisciplinary Collaborative Teaching Approach in Health Sciences Programs at Historically Black Colleges and Universities. *Journal of Best Practices in Health Professions Diversity: Education, Research & Policy, 4*(1), 601-614.

Erasmus, Z. (2010). Confronting the categories: Equitable admissions without apartheid race classification. *South African Journal of Higher Education, 24*(2), 244 - 257.

Essack, S.Y., Wedekind, V., & Naidoo, I. (2012). Selection tools predictive of success in the health sciences - NATED vs. NSC students. *South African Journal of Higher Education, 26*(3), 472 - 486.

Fahmi, M. (2007). Equity on access of low SES group in the massification of higher education in Indonesia. (Department of Economics, Center for Economics and Development Studies) (pp. 1 - 20). Bandung: Padjadjaran University.

Fairall, L., Bachmann, M.O, Lombard, C., Timmerman, V., Uebel, K; Zwarenstein, Merrick, Boulle, A., Georgeu, D; Colvin, C.J. & Lewin, S. (2012). Task shifting of antiretroviral treatment from doctors to primary-care nurses in South Africa (STRETCH): a pragmatic, parallel, cluster-randomised trial. *Lancet, 380*(9845), 889 - 898.

Field, J., & Morgan-Klein, N. (2013). Reappraising the importance of class in higher education entry and persistence *Studies in the Education of Adults, 45*(2), 162 - 176.

Fisher, G., & Scott, I. (2011). Background paper 3: The role of higher education in closing the skills gap in South Africa (Human Development Group Africa Region, Trans.): The World Bank.

Forsyth, A., & Furlong, A. (2000). Socioeconomic disadvantage and access to higher education (pp. 1 - 58). Bristol: The Policy Press.

Fourie, M. (2001). Comments on the National Plan for Higher Education of the Ministry of Education. http://www.ifuw.org/southafrica/journal/comments.

Foxcroft, C.D. (2006). *Evaluating the school-leaving examination against measurement principles and methods.* Paper presented at the Marking Matric: Colloquium proceedings, Cape Town.

Francis, A. & Tannuri-Pianto, M. (2012). Using Brazil's Racial continuum to Examine the Short Term Effects of Affirmative Action in Higher Education. *Journal of Human Resources, 47*, 754 – 784.

Frank, J.R, Snell, L.S, Cate, O.T, Holmboe, E.S, Carraccio, C, Swing, S.R, . . . Harris, K.A. (2010). Competency-based medical education: theory to practice. *Medical Teacher, 32*, 638 - 645.

Franklin, K.K, & Hart, J.K. (2007). Idea generation and exploration: Benefits and limitations of the Policy Delphi research method. *Innovative Higher Education, 31*(4), 237 - 246.

Frantz, J. (2007). Challenges facing physiotherapy education in Africa. *The Internet Journal of Allied Health Sciences and Practice, 5*(4). http://ijahsp.nova.edu/articles/vol5num4/pdf/frantz.pdf

Fraser, W.J., & Killen, R. (2003). Factors influencing academic success or failure of first-year and senior university students: do education students and lecturers perceive things differently? *South African Journal Of Education, 23*(4), 254 - 260.

Frenk, J., Chen, L., Bhutta, Z.A., Cohen, J., Crisp, N., Evans, T., Fineberg, H., Garcia, P., Ke, Y., Kelley, P., Kistnasamy, B., Meleis, A., Naylor, D., Pablos-Mendez, A., Reddy, S., Scrimshaw, S., Sepulveda, J., Serwadda, D. & Zurayk, H. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *The Lancet, 376*, (9756), 1923-1958.

Frick, B.L. (2008). The profile of the Stellenbosch University first year student: Present and future trends. Preliminary Research Report Draft 4 (C. f. T. a. Learning, Trans.) (pp. 1 - 235): Stellenbosch University.

Frye, I., Farred, G., & Nojekwa, L. (n.d). Inequality in South Africa (pp. 256 - 320). Retrieved from http://www.osisa.org.

Gaertner, M.N, & Hart, M. (2013). Considering class: College Access and Diversity. *Harvard Law & Policy Review, 7*, 367 - 403.

Gale, T, Sellar, S, Parker, S, Hattam, R, Comber, B, Tranter, D, & Bills, D. (2010). Interventions early in school as a means to improve higher education outcomes for disadvantaged (particularly low SES) students. Canberra: Department of Education, , Employment and Workplace Relations

Garces, L. M. (2012). The impact of affirmative action bans in graduate education. The Civil Rights Project, University of California.

George, G., Quinlan, T, & Reardon, C. (2009). Human Resources for Health: A needs and gaps analysis of HRH in South Africa (HEARD, Trans.) (pp. 2 - 71). Durban: Health Economics and HIV and AIDS Research Division (HEARD).

Giacobbi , P.R. Jr., Poczwardowski, A, & Hager, P.F. (2005). A Pragmatic Research Philosophy for Applied Sport Psychology. *Kinesiology, Sport Studies and Physical Education Faculty Publications, Paper 80*, 16.

Gillies, D A. (1982). *Nursing Management: A Systems Approach*. Philadelphia: Saunders.

Global Health Workforce Alliance & World Health Organization. (2013). A Universal Truth: No health without a workforce (pp. 104). Geneva: WHO and Global Health Workforce Alliance.

Golden, D. (2006) *The Price of Admission: How America's ruling class buys its way into colleges — and who gets left outside the gates.* Virginia: University of Virginia Press.

Goldin, C., & L.F, Katz. (2012). The Most Egalitarian of All Professions: Pharmacy and the Evolution of a Family-Friendly Occupation. *NBER Working Paper* National Bureau of Economic Research.

Goodman, C.M. (1987). The Delphi Technique: a critique. *Journal of Advanced Nursing, 12*(6), 729 - 734.

Govinder, K., Makgoba, M, & Zondo, N. (2013). Equity index to measure the pace of transformation in South African universities.   Retrieved December 2 2013, 2013, from http://www.ukzn.ac.za/news/2013/10/24/seminal-study-devises-equity-index-to-measure-the-pace-of-transformation-in-south-african-universities

Gradin, C. (2011). Race, poverty and deprivation in South Africa (pp. 1 - 36): Society for the Study of Economic Inequality.

Granheim, U.H, & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today, 24*, 105 - 112.

Greene, J.C., Caracelli, V.J., & Graham, W.F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, *11*, 255-274.

Green, B., Jones, M, Hughes, D, & Williams, A. (1999). Applying the Delphi technique in a study of GP`s information requirements. *Health and Social Care in the Community, 7*(3), 198 - 205.

Gruppen, L.D., Mangrulkar, R.S, & Kolars, J.C. (2010). Competency-based education in the health professions: Implications for improving global health. http://www.healthprofessionals21.org/docs/CompBasedEd.pdf

Guri-Rosenbilt, S., Sebkova, H & Teichler, U. (2007). Massification and Diversity of Higher Education Systems: Interplay of Complex Dimensions. *Higher Education Policy, 20,* 373 – 389.

Guri-Rosenblit, S., & Sebkova, H. (2004). *Diversification of Higher Education Systems: Patterns, Trends and Impact.* Paper presented at the Second Scientific Committee Meeting for Europe and North America, Paris.

Hall, E. (2009). The Delphi Primer: Doing real world or academic research using a mixed-methods approach 3. In E. Hall & E. Knab (Eds.), *The Refractive Thinker: An anthology of higher learning.* Volume 11 Research Methodology (Vol. II). Las Vegas: The Lenz Leadership Institute.

Hammett, D. (2007). Cuban intervention in South African health care service provision. *Journal of Southern African Studies, 33*(1), 63 - 81.

Haralambos, M., & Heald, R.M. (1985). *Sociology themes and perspectives* (2nd Edition ed.). London: Bell and Hyman.

Harris, M. (2007). The protege and the sage: Students perceptions of work-based mentoring experiences. *Health SA Gesondheid, 12*(2), 51 - 62.

Hartman, N, Kathard, H, G, Perez, S, Reid, J, Irlam, G, Gunston, . . . B, Ige. (2012). Health Sciences undergraduate education at the University of Cape Town: A story of transformation. *South African Medical Journal 102*(6), 477 - 480.

Henning, E., Van Rensburg, W., & Smit, B. (2004). *Finding your way in qualitative research.* Pretoria: Van Schaik Publishers.

Higher Education Authority. (2008). National Plan for Equity of Access to Higher Education 2008 - 2013 (National Office of Equity of Access to Higher Education, Trans.) (pp. 1 - 100). Dublin: National Office of Equity of Access to Higher Education, Higher Education Authority.

Higher Education Funding Council for England. (2013). Trends in young participation in higher education (pp. 1 - 37). United Kingdom: Higher Education Funding Council for England.

Higher Education South Africa. (12 January 2012). HESA statement on the University of Johannesburg Incident (12 January 2012), Press Release. Retrieved from http://www.hesa.org.za/sites/hesa.org.za/

Higher Education South Africa. (2010). Sector position paper on the report of the Ministerial Committee on transformation and social cohesion and the elimination of discrimination in South Africa`s public higher education institutions. In H. E. S. Africa (Ed.), (pp. 2 - 69).

House of Commons Public Accounts Committee. (2009). Widening participation in Higher Education. London: House of Commons Public Accounts Committee.

Hovdhaugen, E. (2013). Widening participation in Norwegian Higher Education. Leicester: HEFCE.

Howlett, M., & Ramesh, M. (2003). *Studying Public Policy. Policy Cycles and Policy Subsystems.* (2nd ed.). Ontario: Oxford University Press.

Huang, F. (2012). Higher Education from Massification to Universal Access: a Perspective from Japan. *High Education, 63*, 257 – 270.

Huybrecht, S., Loeckx, W, Quaeyhaegens, Y, De Tobel, D, & Mistiaen, W. (2011). Mentoring in nursing education: Perceived characteristics of mentors and the consequences of mentorship. *Nurse Education Today, 31*, 274 - 278.

Heymann, L., & Carolissen, R. (2011). The concept of 'first-generation student" in the literature: Implications for South African higher education. *South African Journal of Higher Education, 25*(7), 1378 -1396.

Idvall, E., Berg, A, Katajisto, J, Acaroglu, R, Deolinda Antunes da Luz, M, Efstathiou, G, . . . Suhonen, R. (2012). Nurses` Sociodemographic Background and Assessments of Individualized Care. *Journal of Nursing Scholarship, 44*(3), 284 - 293.

International Council of Nurses (ICN), & Florence Nightingale International Foundation (FNIF). (2013). The Global Nursing Shortage: Priority Areas of Intervention. *The Global Nursing Review Initiative* (pp. 1 - 64). Geneva: International Council of Nurses.

Jacob, W.J. (2006). Social Justice in Chinese Higher Education: Regional Issues of Equity and Access. *Review of Education, 52,* 149 – 169.

James, R. (2007). Social equity in a mass, globalised higher education environment: the unresolved issue of widening access to university [Electronic version]. Retrieved July 15, 2010 from http://www.cshe.unimelb.edu.au

James, R. (2002). Socioeconomic background and Higher Education participation: An analysis of school students` aspirations and expectations (Department of Education, Science and Training). Canberra: Department of Education, Science and Training.

Jansen, J. (January 7 2012). Matric razzmatazz conceals sad reality, *IOL News*. Retrieved from http://www.iol.co.za/news/south-africa/western-cape/matric-razmatazz-conceals-sad-reality-1.1209349

Jansen, J. (2011). *We need to talk*. Northcliff and Northlands: Bookstorm and Pan Macmillan.

Jansen, J. (2003). Mergers in South African Higher Education: Theorising change in transitional contexts. *Politikon, 30*(1), 27 - 50.

Jenvey, N. (2013, October 5 2013). Students ill-equipped by schools for university study, University World News Global Edition. Retrieved from http://universityworldnews.com

Jirwe, M., & Rudman, A. (2012). Why choose a career in nursing? *Journal of Advanced Nursing, 68*(7), 1615 - 1623.

Johnson, R.B., & Onwuegbuzie, A.J. (2004). Mixed Methods Research: A research paradigm whose time has come. *Educational Researcher, 33*, 14-26.

Johnson, R.W. (2013). UCT`s racial admissions policy: A reply to Max Price. *http://www.politicsweb.co.za/politicsweb/view/politicsweb/* Retrieved 1 April 2014, from http://www.politicsweb.co.za/politicsweb/view/politicsweb/en/page71616/

Jones, B., Coetzee, G, Bailey, T, & Wickham, S. (2008). Factors that facilitate success for disadvantaged higher education students. *Rural Education Access Programme (REAP)*. Cape Town: REAP.

Khan, M. M. (2006). Health Policy Analysis: The Case of Pakistan. (PhD), Rijksuniversiteit Groningen, Maastricht.

Kajander, A. & Lovric, M. (2005). Transition from secondary to tertiary mathematics – McMaster University Experience. *International Journal of Mathematics Education in Science & Technology, 36*, 149 - 160.

Kapborg, I. (1998). Nursing education in Sweden: development from vocational training to higher level education. *Journal of Advanced Nursing, 27*, 372 - 378.

Keane, E. (2011). Dependence-deconstruction: widening participation and traditional-entry students transitioning from school to higher education in Ireland. *Teaching in Higher Education, 16*(6), 707-718.

Keeney, S., Hasson, F. & McKenna, H. (2006). Consulting the oracle: ten lessons from using the Delphi technique in nursing research. *Journal of Advanced Nursing, 53*, 205-212.

Kemper, E.A., Stringfield, S. & Teddlie, C. (2003). Mixed methods sampling strategies in social science research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of Mixed Methods in social and behavioural research* (p.273-296). Thousand Oaks: Sage Publications

Kingdon, J. (1996). *Agendas, Alternatives, and Public Policies*. New York: Harper Collins.

Kloot, B., Case, J.M, & Marshall, D. (2008). A critical review of the educational philosophies underpinning science and engineering foundation programmes. *South African Journal of Higher Education, 22*(4), 799 - 816.

Kotecha, P. (2008). *Revitalising higher education in the SADC region Chapter 1* [Electronic version]. Retrieved March 18, 2009, from www.sarua.org

Kotha, S.R, Johnson, J.C, Galea, S, Agyei-Baffour, P, Nakua, E, Asabir, K,, Kwanash, J., Gyakobo, M., Dzodzomenyo, M. & Kruk, M.E. (2012). Life course factors and likelihood of rural practice and emigration: a survey of Ghanaian medical students. *Rural and Remote Health, 12*, 1 - 12. http://www.rrh.org.au

Kreindler, S.A., Dowd, D.A., Star, N.D, & Gottschalk, T. (2012). Silos and Social Identity: The Social Identity Approach as a Framework for Understanding and Overcoming Divisions in Health Care. *Milbank Quarterly, 90*(2), 347-374.

Kubsch, S., Hansen, G, & Huyser-Eatwell, V. (2008). Professional values: The case for RN-BSN completion education. *Journal of Continuing Education in Nursing, 39*, 375 - 384.

Kuehn, B.M. (2007). Global shortage of health workers, brain drain stress developing countries. *Journal of American Medical Association, 298*(16), 1853 - 1855.

Lam, D., Ardington, C, & Leibbrandt, M. (2011). Schooling as a lottery: Racial differences in school advancement in urban South Africa. *Journal of Development Economics, 95*(2), 121 - 136.

Lasswell, H.D. (1956). *The Decision Process: Seven Categories of Functional Analysis*. Maryland: University of Maryland Press.

Layer, G (Ed.). (2005). *Closing the equity gap: The impact of widening participation strategies in the UK and the USA*. Leicester: National Institute of Adult Continuing Education.

Leathwood, C. & O`Connell, P. (2003). "It`s a struggle ": the construction of the "new student" in higher education. *Journal of Education Policy, 18*(6), 597 - 615.

Lemmer, W.E. (1998). Successive surveys of an expert panel: Research in decision-making with Health Visitors. *Journal of Advanced Nursing, 27*, 538 - 545.

Letseka, M., & Breier, M. (2008). Student poverty in higher education: the impact of higher education dropout on poverty. *Edited by Simeon Maile*, 83.

Lewis, J. (2009). Redefining Qualitative Methods: Believability in the Fifth Moment. *International Journal of Qualitative Methods, 8*(2), 1-14.

Liese, B. & Dussault, G. (2004). *The State of the Health workforce in Sub-Saharan Africa: Evidence of Crisis and Analysis of Contributing Factors.* Washington, DC: The World Bank.

Linstone, H.A. & Turoff, M. (Eds) (1975). *The Delphi Method. Techniques and Applications.* Massachusetts: Addison-Wesley Publishing Company.

Lipscomb, M. (2008). Mixed methods nursing studies: a critical realist critique. Nursing Philosophy, 9(1), 32-45.

Littlejohn, L., Campbell, J, Collins-McNeil, J, & Khanyile, T. (2012). Nursing Shortage: A Comparative Analysis. *International Journal of Nursing, 1*(1), 22 - 27.

Liu, M.Q, Yu, J.T., & Li., P.F. (2006). Tuition Fees and Equitable Access to Higher Education in China. *Peking University Education Review, 4*(2), 47 - 61.

Loewenson, R & C. Thompson (Eds.). (2003). *Equinet discussion paper number 4*: Regional Network for Equity in Health in Southern Africa (EQUINET), Health Systems Trust (South Africa) & MEDACT (UK).

Lowe, H., & Cook, A. (2003). Mind the gap: Are students prepared for higher education? *Journal of Further and Higher Education, 27*(1), 53 - 76.

Lui, Y. (2013). Meritocracy and the Gaokao: a survey study of higher education selection and socio-economic participation in East China. *British Journal of Sociology of Education, 34*(5-6), 868 - 887.

Maassen, P & Cloete, N. (2007). New South African Realities. In N. Cloete, R. Fehnel, P. Maassen, T. Moja, H. Perold & T. Gibbon (Eds.), *Transformation in Higher Education. Global Pressures and Local Realities in South Africa.* Landsdowne:Juta and Company.

MacGregor, K. (2009, August 16 2009). South Africa: Shocking results from university tests, University World News. Retrieved from www.universityworldnews.com

MacGillivray, J.L. & Cuthbert, R. (2003). *Investigating weaknesses in the underpinning mathematical confidence of first year engineering students.* Paper presented at the Australasian Engineering Education Conference.

Malachowski, A . (2009). *New Pragmatism*. Durham: Acumen.

Manana, M. (2013). *High level of collaboration needed to address shortage of pharmacists*. Paper presented at the 1st National Pharmacy Conference, Sun City, North West, South Africa. Press Release retrieved from http://www.sapcconference.za.org/news/DHET

Mapasela, M., & Hay, H.R. (2005). Through the magnifying glass: A descriptive theoretical analysis of possible impact of the South African higher education policies on academic staff and their job satisfaction. *Higher Education, 50*, 111 - 128.

Marais, B.J, de Villiers, M, Kruger, J, Conradie, H, Jenkins, L, & Reuter, H. (2007). The role of educational strategies to reverse the inverse performance spiral in academically-isolated rural hospitals. *South African Family Practice, 49*(7), 15.

Margalit, R., Thompson, S., Visovsky, C., Geske, J., Collier, D., Birk, T., & Paulman, P. (2009). From professional silos to interprofessional education: Campus wide focus on quality of care. *Quality Management in Health Care, 18*(3), 165 - 173.

Marks, G., Fleming, N, Long, M, & McMillan, J. (2000). Patterns of participation in year 12 and higher education in Australia: trends and issues (Longitudinal Surveys of Australian Youth (LSAY). Camberwell: Australian Council for Educational Research.

Mars, M. (2011). Tele rehabilitation in South Africa - is there a way forward? *International Journal of Telerehabilitation*. telerehab.pitt.edu/ojs/index.php/Telerehab/article/view/6069/6314

Mayosi, B.M, Flisher, A.J, Lalloo, U.G, Sitas, F, Tollman, S.M, & Bradshaw, D. (2009). The burden of non-communicable diseases in South Africa. *The Lancet, 374*(9693), 934 - 947.

Mazmanian, D. A., & Sabatier, P.A. (1989). *Implementation and Public Policy*. Lanham Maryland: University Press of America.

McCarron, G.P., & Inkelas, K.K. (2006). The gap between educational aspirations and attainment for first-generation college students and the role of paternal involvement. *Journal of College Student Development, 47*(5), 534 - 549.

McCowan, T. (2007). Expansion without equity: An analysis of current policy on access to higher education in Brazil. *Higher Education, 53*, 579 - 598.

McCowan, T. (2004). The growth of private higher education in Brazil: implications for equity and quality. *Journal of Education Policy, 19*(4), 453 - 472.

McIlrath, C., Keeney, S., McKenna, H., & McLaughlin, D. (2009). Benchmarks for effective primary care-based nursing services for adults with depression: a Delphi study. *Journal of Advanced Nursing, 66,* 269-281.

McKenna, H., Hasson, F., & Smith, M. (2002). A Delphi survey of midwives and midwifery students to identify non-midwifery duties. *Midwifery, 18*, 314-322.

McLaughlin, K., Moutray, M, & Moore, C. (2010). Career motivation in nursing students and the perceived influence of significant others. *Journal of Advanced Nursing, 66*(2), 404 - 412.

McMillan, W.J, & Barrie, R.B. (2012). Recruiting and retaining rural students: evidence from a faculty of dentistry in South Africa. Rural and Remote health, 12, 1 - 10. http://rrh.org.au

Mdepa, W. & Tshiwila, L. (2012). Student diversity in South African higher education. *Widening Participation and Lifelong Learning, 13*, Special Issue, 19 – 33

Metcalfe, A. (2009). The geography of access and excellence: spatial diversity in higher education system design. *Higher Education, 58*(2), 205-220.

Miers, M.E, Rickaby, C.E, & Pollard, K.C. (2007). Career choices in health care: is nursing a special case? A content analysis of survey data. *International Journal of Nursing Studies 44*(7), 1196 - 1209.

Miles, M.B., & Huberman, A.M. (1994). *Qualitative Data Analysis (2nd ed.).* Thousand Oaks: Sage Publications.

Miller, W.L. & Crabtree, B.F. (1999). Depth Interviewing. In B.F. Crabtree & W.L. Miller (Eds.), *Doing Qualitative Research* (2nd ed.). Thousand Oaks, CA: Sage

Mills, C., Heyworth, J, Rosenwax, L, Carr, S, & Rosenberg, M. (2009). Factors associated with the academic success of first year Health Science students. *Advances in Health Science Education 14*, 205 - 217.

Millward, P., Turner, R, & van der Linden, D. (2012). The retention and success of under-represented groups in a Bachelor of Education program in New Zealand. *Asia-Pacific Journal of Teacher Education, 40*(2), 171 - 183.

Ministry of Education, (1997). *Education White Paper 3 - A Programme for Higher Education Transformation [Electronic version].* Retrieved July 26, 2010, from http://www.info.gov.za/whitepapers/1997/education3.htm

Ministry of Higher Education and Training. (2009). *Ministerial statement on higher education funding: 2009/10 to 2011/12*.

Miyata, H., & Kai, I. (2009). Reconsidering Evaluation Criteria for Scientific Adequacy in Health Care Research: An Integrative Framework of Quantitative and Qualitative Criteria. *International Journal of Qualitative Methods, 8*(1), 64-75.

Mji A. (2002). What influences students to university education? Insights from the horse's mouth. South African Journal of Higher Education, 16(2), 166 - 172.

Mokadi, A.T. (2004). *Conceptions of the transformed university: South Africa/African engaged*. Paper presented at the Colloquium on 10 years of Democracy and Higher Education Change, Muldersdrift.

Molefe, L.P.D. (2013). The Pedagogical Content Knowledge of South African Life Sciences Teachers Teaching Evolution for the First Time. Master's Thesis. Faculty of Science. University of the Witwatersrand. Retrieved from http://wiredspace.wits.ac.za/bitstream/handle/10539/

Monyooe, L., Tjatji, M, & Mosese, E. (2014). South Africa`s increased matriculation passes: What skunks behind the rose? *Journal of Education and Training Studies, 2*(1), 180 - 192.

Morley, L. & Lugg, R. (2009). Mapping Meritocracy: Intersecting gender, poverty and higher educational opportunity structures. *Higher Education Policy, 22*, 37 -60.

Morse, J.M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods 1* (2), Article 2. Retrieved June 7, 2010, from http://www.ualberta.ca/~ijqm/

Morse, J.M. (2003). Principles of mixed methods and multimethod research design. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of Mixed Methods in social and behavioural research* (p.189-208). Thousand Oaks: Sage Publications.

Morse, J.M., Niehaus, L., Wolfe, R.R & Wilkins, S. (2006). The role of the theoretical drive in maintaining validity in mixed-method research. *Qualitative Research in Psychology, 3*, 279-291.

Morse, J.M., Swanson, J.M., & Kuzel, A.J. (2001). *The nature of qualitative evidence*. Thousand Oaks: Sage

Mouton, N., Louw, G.P, & Strydom, G. (2013). Critical Challenges of the South African School System. *International Business & Economics Research Journal, 12*(1), 31 - 44.

Mouton, N., Louw, G.P, & Strydom, G.L. (2012). A Historical Analysis of the Post-Apartheid Dispensation Education in South Africa (1994 -2011). *International Business and Economics Research Journal, 11*(11), 1211 - 1222.

Munk, M. D., Thomsen, J. P., Hansen, G. I., & Eiberg-Madsen, M. (2013). The Educational Strategies of Danish University Students from Professional and Working-Class Backgrounds. *Comparative Education Review*, *57*(3).

Murray, N. (2010). Conceptualising the English language needs of first year university students. The International Journal of the First Year in Higher Education, 1 (1), 55–64.

Myburgh, J. (2014, 9 January 2014). Matric 2013: Why the FState and NWest`s success is illusionary.   Retrieved 2 April, 2014, from http://www.politicsweb.co.za/politicsweb/view/politicsweb/

Naidoo, P, Motala, N, & Joubert, W.E. (2013). Matriculation scores as an indicator of academic success in an Occupational Therapy education programme. South African Journal of Occupational Therapy, 43(1), 21 - 25.

Naidoo, U., Flack, P.S, Naidoo, I, & Essack, S.Y. (2012). Secondary school factors relating to academic success in first-year Health Science students.

Ncayiyana, Daniel J. (2012). The vexed question of race-based medical school admissions. *South African Medical Journal, 102*(4) (np).

Nduna-Watson, Nhlanhla, Brombacher, A, Reddy, V, & Khoza, E. (2010, 16 April 2010). Paper presented at the National Science and Technology Forum (NSTF), Proceedings of workshop on science, technology, engineering and mathematics (STEM) education, Old Mutual-MTN Science Centre, Gateway Centre, Umhlanga Ridge, KwaZulu-Natal.

Nel, C., & Kistner, L. (2009). The National Senior Certificate: Implications for access to higher education. *South African Journal of Higher Education, 23*(5), 953 - 973.

Nemutandani, M.S, Maluleke, F.R.S, & Rudolph, M.J. (2006). Community service doctors in Limpopo province. *South African Medical Journal, 96*(3), 180 - 182.

Nkosi, B. (30 September 2013). HETN slams AfriForum`s student race request, *Mail and Guardian*. Retrieved from http://mg.co.za/article/2013-09-30-hten-slams-afriforums-student-race-request

Nzimande, B. (2014). Statement by the Minister of Higher Education and Training, Dr Blade Nzimande, on the 2014 Registrations and Funding of Academically Deserving Students from Poor and Working Class Households.

Oblinger, D. (2007). Strategic enrolment management: strengthening relationships in higher education. North Carolina: SAS Institute.

Obst, D., & Forster, J. (n.d) Perceptions of European Higher Education in Third Countries. Outcomes of a study by the Academic Cooperation Association (ACA). Country Report: USA: Institute of International Education (IIE). www.iie.org/~/media/Files/.../International-Students-in-the-**US**.ashx

OECD. (2008). Tertiary education for the knowledge society (Vol. 2). Paris: Organization for Economic Cooperation and Development.

Onwuegbuzie, A.J, & Combs, J.P. (2011). Data Analysis in Mixed Research: A Primer. *International Journal of Education 3*(1), 1 - 25.

Onwuegbuzie, A. J., & Combs, J.P. (2010). Emergent data analysis techniques in mixed methods research. A synthesis. In Abbas Tashakkori & C. Teddlie (Eds.), *Sage Handbook of Mixed Methods in Social & Behavioural Research* (2nd ed., pp. 397 - 430). Thousand Oaks: Sage Publications.

Onwuegbuzie, A.J., & Leech, N.L. (2007) A call for qualitative power analysis. *Quality and Quantity 2007,* (41), 105-121.

Onwuegbuzie, A.J., & Leech, N.L. (2005). On becoming a pragmatic researcher: the importance of combining quantitative and qualitative research methodologies. International *Journal of Social Research Methodology: Theory and Practice,* 8 (5), 375-387.

Onwuegbuzie, A.J. (2003). Effect Sizes in Qualitative Research: A Prolegomenon. *Quality and Quantity, 37*, 393-409.

Onwuegbuzie, A.J., & Teddlie, C. (2003). A framework for analyzing data in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioural sciences* (2nd ed., pp. 351-387). Thousand Oaks, CA: Sage.

Opini, B.M. (2012). Examining the motivations of women students with disabilities participation in university education in Kenya. *Scandinavian Journal of Disability Research, 14*(1), 74 - 91.

Oplatka, I., & Lapidot, O. (2012). Muslim women in graduate studies: some insights into the accessibility of higher education for minority women students. *Studies in Higher Education, 37*(3), 327 - 344.

Oppenheimer, M., & Ansara, D. (2013). The new affirmative action: Abandoning race as a proxy for disadvantage. *The Journal of the Helen Suzman Foundation* (71), 46 - 51.

Osborne, M. (2003). Increasing or Widening Participation in Higher Education? - A European overview. *European Journal of Education, 38*(1), 5 - 24.

Oulton, J.A. (2006). The Global Nursing Shortage: An overview of issues and actions. *Policy, politics and Nursing Practice, 7*(3 suppl.), 34S - 39S.

Ozdemir, Nesrin, & Hacifazlioglu, Ozge. (2008). Influence of family and environment on students` occupational choices and expectations of their prospective universities. *Social Behavior & Personality: An International Journal, 36*(4), 433-446. doi: 10.2224/sbp.2008.36.4.433

Padarath, A., Chamberlain, C, McCoy, D, Ntuli, A, Rowson, M, & Loewenson, R. (2003). Health personnel in Southern Africa: Confronting the maldistribution and brain drain. In R. Loewenson & C. Thompson (Eds.), *Equinet discussion paper number 4*: Regional Network for Equity in Health in Southern Africa (EQUINET),Health Systems Trust (South Africa) & MEDACT (UK).

Parker, D., & Van Staden, E.L. (2013). Enrolment Planning Cycle 2014/15 – 2019/20 Priorities. Unpublished.

Pascarella, E.T, Pierson, C.T, Wolniak, G.C, & Terenzini, P.T. (2004). First-Generation College Students: Additional evidence on College experiences and outcomes. *The Journal of Higher Education, 75*(3), 249 - 284.

Pascarella, E.T., Wolniak, G.C., Pierson, C.T., & Terenzini, P.T. (2003). Experiences and outcomes of first-generation students in community colleges. *Journal of College Student Development, 44*(3), 420 - 429.

Patten, M. Q. (1990). *Qualitative Research and Evaluation Methods.* 2nd Ed., Newbury Park, CA: Sage.

Penrose, A.M. (2002). Academic literacy perceptions and performance: Comparing first-generation and continuing-generation students. *Research in Teaching of English, 36*(4), 437 - 461.

Polit, D.F., & Beck, C.T. (2012). *Nursing Research. Generating and assessing evidence for nursing practice.* Philadelphia: Lippincott Williams & Wilkins.

Polit, D.F., & Beck, C.T. (2010). *Essentials of Nursing Research. Appraising evidence for nursing practice.* 7th Ed. Philadelphia: Lippincott Williams & Wilkins.

Powell, J.J.W, & Solga, H. (2011). Why are higher education participation rates in Germany so low? Institutional barriers to higher education expansion. *Journal of Education and Work, 24*(1-2), 49 - 68.

Price, M. (2013). Higher education: Redress does not mean settling for mediocrity - Max Price.   Retrieved 1 April, 2014, from http://www.politicsweb.co.za/politicsweb/view/politicsweb/en/page71616/

Pruitt, S.D, & Epping-Jordan, J.E (2005). Preparing the 21st Century global healthcare workforce. *British Medical Journal, 330*, 637 - 639.

Raholm, M., Hedegaard, B.L, Lofmark, A, & Slettebo, A. (2010). Nursing education in Denmark, Finland, Norway and Sweden - from Bachelor`s Degree to PhD. *Journal of Advanced Nursing, 66*(9), 2126 - 2137.

Rankin, N., Schoer, V., Sebastiao, C., & van Walbeek, C. (2012). Predictors of Academic Performance: National Senior Certificate versus National Benchmark Test. *South African Journal of Higher Education, 26*(3), 564-585.

Rawat, A. (2012) Gaps and shortages in South Africa`s health workforce. Ontario: The Centre for International Governance Innovation.

Reddy, V, van der Berg, S, Janse van Rensburg, D, & Taylor, S. (2012). Educational outcomes: Pathways and performance in South African high schools. *South African Journal of Science, 108*(3/4), 1-8.

Redfern, S. (1996). Individualised patient care: Its meaning and practice in a general setting. *Journal of Research in Nursing, 1*, 22 - 33.

Reichert, S. (2009) Institutional Diversity in European Higher Education. Tensions and challenges for policy makers and institutional leaders. Brussels: European University Association.

Reid, S J, & Cakwe, M. (2011). The contribution of South African curricula to prepare health professionals for working in rural or under-served areas in South Africa: A peer review evaluation. *South African Medical Journal, 101*(1), 34 - 38.

Rennie, T., & Anderson, C. (2013). Oversupply and Under-resourced: The Global Context of Pharmacy Education. *American Journal of Pharmaceutical Education, 77*(6), 1 - 2.

Republic of South Africa. 2008. National Qualifications Framework Act (Act No. 67 of 2008). Pretoria: Government Printer

Republic of South Africa. 2001. General and Further Education and Training Act (Act No. 58 of 2001). Pretoria: Government Printer

Richardson, J.T.E. (2010). Widening participation without widening attainment: the cases of ethnic minority students. *Psychology Teaching Review, 16*(1), 37 - 45.

Rodrigues Vieira, C., & Viegas Vieira, I. (2011). Determinants and projections of demand for higher education in Portugal. Paper presented at the International Conference on Applied Economics.

Rognstad, M.K, Aasland, O, & Granum, V. (2004). How do nursing students regard their future career? Career preferences in the post-modern society. *Nurse Education Today, 24*(7), 493 - 500.

Rolfe, G. (2006). Validity, trustworthiness and rigour: quality and the idea of qualitative research. *Journal of Advanced Nursing, 53*(3), 304-310. doi: 10.1111/j.1365-2648.2006.03727.x

Ross, A.J. (2007). Success of a scholarship scheme for rural students. *South African Medical Journal, 97*(11), 1087-1090.

Rothmann, S. & Malan, M. (2011). Work-related well-being of South African hospital pharmacists. *SA Journal of Industrial Psychology, 37*. Available at http://www.sajip.co.za/index.php/sajip/article/view/895

Ryan-Nicholls, K.D., & Will, C.I. (2009). Rigour in qualitative research: mechanisms for control. *Nursing Research, 16*(3), 70 - 85.

Sabatier, P.A (Ed.). (2007). *Theories of the Policy Process* (2nd ed.). Cambridge MA: Westview Press.

SABC. (2013). Motsoaledi decries shortage of pharmacists. Retrieved December 19, 2013, from http://www.sabc.co.za/news/a/

Salamonson, Y., Everett, B., Koch, J., Andrew, S., & Davidson, P.M. (2008). English-language acculturation predicts academic performance in nursing students who speak English as a second language. *Research in Nursing and Health 31*, 86 - 91.

Sales, M, Kieny, M. P, Krech, R, & Etienne, C. (2013). Human resources for universal health coverage: from evidence to policy and action. Bulletin of the World Health Organisation, 91(11), 797 - 896. www.who.int/bulletin/volumes/91/11/en

Sammons, P. (2010). The contribution of mixed methods to recent research on educational effectiveness. In Abbas Tashakkori & C. Teddlie (Eds.), *Sage Handbook of Mixed Methods in Social & Behavioural Research* (2nd ed., pp. 697 - 723). Thousand Oaks: Sage Publications.

Sandelowski, M. (2000). Combining qualitative and quantitative sampling, data collection, and analysis techniques in Mixed-Method studies. *Research in Nursing & Health, 23,* 246-255.

Sandelowski, M., Barroso, J., & Voils, C.I. (2007). Using qualitative meta-summary to synthesize qualitative and quantitative descriptive findings. *Research Nursing Health, 30,* 99-111.

Sandelowski, M., Voils, C., & Knafl, G. (2009). On quantitizing. *Journal of Mixed Methods Research, 2009*(3), 208-222.

SAPA. (2014, 7 January 2014). Universities warn of limited space, no walk-ins, *Mail & Guardian*. Retrieved from http://mg.co.za/article/2014-01-07-universities-warn-of-limited-space-no-walk-ins

SAPA. (2013). Students flock to KZN varsities, The Independent on Saturday, pp. 1 - 16.

Schofield, D.J, & Fletcher, S.L. (2007). The physiotherapy workforce is ageing, becoming more masculinised, and is working longer hours: a demographic study. *Australian Journal of Physiotherapy, 53*, 121 - 126.

Scott, I., Yeld, N. and Hendry, J. (2007). *A case for improving teaching and learning in South African higher education.* Higher Education Monitor No. 6, Pretoria: Council on Higher Education

Shavit, Y., Arum, R, Gamoran, A, & Menahem, G (Eds.). (2007). *Stratification in higher education: a comparative study*. Stanford, CA: Stanford University Press.

Sheldon, K.M, Ryan, R.M, Deci, E.L, & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: it`s both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin, 30*(4), 475 - 486.

Sikakaka, C.N.T. (2013). Against the odds: Health and Hope in South Africa. The story of medical education for Blacks in South Africa (MESAB). *South African Medical Journal, 103*(12), 892.

Sim, J., & Wright, C. (2000). *Research in Health Care.* Cheltenham: Nelson Thornes Ltd.

South Africa. (2013). National Health Amendment Act No. 12 of 2013, 529 Stat. 35 (24 July 2013). Pretoria: Government Printer.

South Africa. (1997). Higher Education Act No. 101 of 1997. Pretoria: Government Printer

Spaull, N. (2013). South Africa`s education crisis: The quality of education in South Africa 1994 - 2011. Johannesburg: Centre for Development and Enterprise.

Statistics South Africa. (2013). General Household Survey 2012. (P0318). Pretoria: Statistics South Africa Retrieved from www.statssa.gov.za.

Statistics South Africa. (2012). Census 2011. (P0301.4). Pretoria: Statistics South Africa.

Statistics South Africa. (2010). General Household Survey 2009 [Electronic version]. Retrieved June 13, 2010, from www.statssa.gov.za

Statistics South Africa. (2009). Mid-year population estimates 2009 [Electronic version]. Retrieved August 30, 2009, from www.statssa.gov.za

St. John, E.P. (2013). Social Justice & Globalization. *Harvard International Review, 35*(1), 45-49.

Stewart, A. (2008). *Outreach and social inclusion: Outreach and social cohesion.* . Paper presented at the Go8/DEEWR Forum, Melbourne University. http://go8.edu.au/_documents/university-staff/events/2008/social

Streiner, D.L., & Norman, G.R. (1995). Health Measurement Scales A Practical Guide to their Development and Use (2nd ed.). New York: Oxford University Press.

Subotzky, G. (2003). *Public Higher Education* [Electronic version]. Retrieved March 20, 2009, from http://hrdreview.hsrc.ac.za

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology combining Qualitative and Quantitative approaches.* Thousand Oaks: Sage Publications.

Tashakkori, A., & Teddlie, C.(Eds) (2003). *Handbook of Mixed methods in social and behavioural research.* Thousand Oaks: Sage Publications

Tashakkori, A., & Teddlie, C. (2008). Quality of inferences in mixed methods research: calling for an Integrative Framework. In M. Bergman (Ed.) *Advances in Mixed Methods Research: Theories and Applications*. London: Sage Publications

Taylor, S. (2012). A note on matric result trends. http://nicspaull.files.wordpress.com/2013/01/taylor-2012-matric-results-note-stephen-taylor

Taylor, S., & Yu, D. (2009). Socio-economic status and educational achievement: Does education provide a stepping stone out of poverty in South Africa? In J. Hofmeyr (Ed.), *2009 Transformation Audit. Recession and Recovery*. Cape Town: Institute for Justice and Reconciliation.

Teddlie, C. & Johnson, R.B. (2009). Methodological thought since the 20th Century. In C. Teddlie & A. Tashakkori (Eds.), *Foundations of Mixed Methods Research. Integrating Quantitative and Qualitative approaches in the social and behavioural sciences* (p.62-82). Thousand Oaks: Sage Publications.

Teddlie, C., & Tashakkori, A. (2009). *Foundations of Mixed Methods Research. Integrating Quantitative and Qualitative Approaches in the Social and Behavioural Sciences.* Thousand Oaks: SAGE Publications.

Teddlie, C. & Yu , F. (2007). Mixed methods sampling: A typology with examples [Electronic version]. *Journal of Mixed Methods Research*, 1, 77-100. Retrieved April 21, 2010 from http://mmr.sagepub.com/cgi/content/abstract/1/1/77.

Teferra, D., & Altbach, P. (2004). African Higher Education: Challenges for the 21st Century. *Higher Education, 47*(1), 21 - 50.

Telles, E. & Paixao, M. (2013). Affirmative Action in Brazil [Electronic version]. *LASAForum, XL1V,* Retrieved September 2, 2013 from http://lasa.international.pitt.edu/forum/files

Terrion, J.L, & Leonard, D. (2007). A Taxonomy of the characteristics of student peer mentors in higher education: findings from a literature review. *Mentoring & Tutoring: Partnership in Learning, 15*(2), 149 - 164.

Tjabane, M., & Pillay, V. (2011). Doing justice to social justice in South African higher education. *Perspectives in Education, 29*(2), 10 - 18.

Tumbo, J.M., Couper, I.D, & Hugo, J F M. (2009). Rural-origin health science students at South African universities. *SAMJ: South African Medical Journal, 99*(1), 54-56.

UNESCO. (2010). Trends in Tertiary Education: Sub-Saharan Africa (pp. 1 - 7): UNESCO Institute for Statistics,.

UNESCO. (2008). Overcoming Inequality: Why Governance Matters. In UNESCO (Ed.), *EFA Global Monitoring Report*. Oxford: UNESCO and Oxford University Press.

UNESCO, Institute for Statistics. (2007). Global Education Digest 2007: Comparing Education Statistics Across the World. Montreal: UNESCO Institute of Statistics.

UNESCO. (1998). World Declaration on Higher Education for the Twenty-first Century: Vision and Action and Framework for Priority Action for Change and Development in higher Education [Electronic version]. Retrieved September 2, 2013 from http://unesco.org

UNESCO. (1960) *Convention against Discrimination in Education* [Electronic version]. Retrieved September 2, 2013 from http://www.unesco.org/education/pdf/DISCRI_E.PDF

UN Department of Economic and Social Affairs, & UN Department of Public Information. (2005). Millennium Development Goals: Progress Chart. www://un.org/millenniumgoals/pdf/mdg2005progresschart: United Nations.

United Nations (1948). *Universal Declaration of Human Rights* [Electronic version]. Retrieved September 3, 2013 from http://www.ohchr.org/EN/UDHR/Documents/60UDHR/bookleten.pdf

van der Berg, S. (2008). How effective are poor schools? Poverty and educational outcomes in South Africa. *Studies in Educational Evaluation, 34*, 145 - 154.

van der Linde, I. (2013). *HIV/AIDS in South Africa: At last the glass is half full*. Paper presented at the 6th SA AIDS Conference, Durban.

van der Merwe, D. & de Beer, M. (2006). Challenges of student selection: Predicting academic performance. *South African Journal of Higher Education, 20*, 547-562.

Vanderstraeten, R. & Biesta, G. 1998. Education, Diversity and Constructivism: A pragmatic point of view. *Annual meeting of the American Educational Research Association.* San Diego.

Visser, Herman. (2008). Listen to the urgent sound of drums: Major challenges in African higher education. *New Directions for Institutional Research, 2008*, 65-77

Vossensteyn, J.J. (2013). Widening participation in higher education in the Netherlands. Leicester: HEFCE.

Waetjen, T. (2006). Measures of redress: defining disadvantage in a university access programme. *South African Review of Sociology, 37*(2), 200.

Walker, J.H, DeWitt, D.E, Pallant, J.F, & Cunningham, C.E. (2012). Rural origin plus a rural clinical school placement is a significant predictor of medical students` intentions to practice rurally: a multi-university study. *Rural and Remote health, 12*, 1 - 9. http://rrh.org.au

Walt, G. (1994). *Health Policy. An Introduction to Process and Power.* Johannesburg: Witwatersrand University Press.

Walt, G., Shiffman, J., Schneider, H., Murray, S.F., Brugha, R., & Gilson, L. (2008). "Doing" Health policy analysis: methodological and conceptual reflections and challenges. *Health Policy and Planning, 23,* 308-317 [Electronic version]. Retrieved June 13, 2010, from http://heapol.oxfordjournals.org at Ebsco.

Wang, L. (2011). Social Exclusion and Inequality in Higher Education in China: A Capability Perspective. *International Journal of Educational Development, 31*, 277 – 286.

Wangenge-Ouma, G. (2013). Improvements in access, but participation rates still a problem. Retrieved March 9, 2014, from http://transformationaudit.org/blog/wp-content/uploads/2013/02/improvements

Wangenge-Ouma, G. (2010). Funding and the attainment of transformation goals in South Africa`s higher education *Oxford Review of Education* (Vol. 36, pp. 481 - 497).

Wangenge-Ouma, G., & Cloete, N. (2008). Financing higher education in South Africa: public funding, non-government revenue and tuition fees. *South African Journal of Higher Education, 22*(4), 906 - 919.

Waters, K.R, & Easton, N. (1999). Individualized care: Is it possible to plan and carry out? *Journal of Advanced Nursing, 29*, 79 - 87.

White, E. (1991). *The future of psychiatric nursing by the year 2000: a Delphi study.* University of Manchester, Manchester.

Whittock, M., & Leonard, L. (2003). Stepping outside the stereotype. A pilot study of the motivations and experiences of males in the nursing profession. *Journal of Nursing Management, 11,* 242 - 249.

Wilks, J. & Wilson, K. (2012). Going on to uni? Access and participation in university for students from backgrounds of disadvantage. *Journal of Higher Education Policy and Management, 34*(1), 79-90.

Wilkinson, D., Zhang, J, & Parker, M. (2011). Predictive validity of the undergraduate medicine and health sciences admission test for medical student`s academic performance *The Medical Journal of Australia, 194*(7), 341 -344.

Wilson-Strydom, M. (2012). Using the NBT`s to inform institutional understandings of "under-preparedness": Implications for admissions criteria. S*outh African Journal of Higher Education, 26*(1), 136 - 151.

Wilson-Strydom, M. (2011). *Traversing the chasm from school to university in South Africa: A student perspective*. Paper presented at the EAIR 32nd Annual Forum, Valencia Spain.

Wilson-Strydom, M. (2011b). University access for social justice: a capabilities perspective. *South African Journal of Education, 31*(3), 407 - 418.

WHO. (2013). Global health workforce shortage to reach 12.9 million in coming decades. Retrieved December 26, 2013, from http://www.who.int/mediacentre/news/releases/2013/health-workforce-shortage/en/

Woldetensae, Yohannes (Producer). (31 October 2014). African Union Initiatives in Higher Education. [Power Point presentation] Retrieved from http://eacea.ec.europa.eu/intra_acp_mobility/events/docs/ghana/presentations/african_union_initiatives.pdf

Wolfenden, K.J. (2013). Race in elite American universities: Diversity as distraction. *Student Pulse, 5*(2), 1/1. Retrieved from Student Pulse website: http://www.studentpulse.com/articles/726/race-in-elite-american-universities-diversity-as-distraction

World Bank. (2009). Literature Review on Equity and Access to Tertiary Education in the Africa Region.

World Bank. (2006). World Development Report. Washington DC: World Bank.

World Health Organization. (2010). Increasing access to health workers in remote and rural areas through improved retention [Electronic version] *Global Policy Recommendations*. Geneva: World Health Organization. Retrieved 20 May 2011 from http://whqlibdoc.who.int/publications/2010

World Health Organisation. (2006). *Working together for health. The world health report 2006.* Geneva: World Health Organisation.

World Health Organization. (2005). Preparing a healthcare workforce for the 21st Century: the challenge of chronic conditions. Geneva: World Health Organization.

Yang, X. (2010). Access to Higher Education for Rural-Poor Students in China. *Education Research Policy Practice, 9,* 193 – 209.

Yeld, N. 2009. *National Benchmark Tests Project as a National Service to Higher Education. Summary Report*. Pretoria: Higher Education South Africa.

Yeld, N. (2007). Critical questions? Some responses to issues raised in relation to the national benchmark tests project. *South African Journal of Higher Education, 21*(5), 610 - 616.

Yeld, N., & Hendry, J. (2002). Grade Inflation in the Senior Certificate? Cape Town: University of Cape Town.

Yin, R. K. (2009). Case Study Research Design and Methods (4th Edition ed.). Thousand Oaks: SAGE Inc.

Yorke, M., & Thomas, L. (2003). Improving the retention of students from lower socio-economic groups. *Journal of Higher Education Policy and Management, 25*(1), 63 - 74.

Young, F., Critchley, J.A, Johnstone, L.K, & Unwin, N.C. (2009). A review of co-morbidity between infectious and chronic disease in Sub Saharan Africa: TB and Diabetes Mellitus, HIV and Metabolic Syndrome, and the impact of globalization *Globalization and Health, 5*(9), 1 - 9.

Zaaiman, H, van der Flier, H, & Thijs, G.D. (1998). Selecting South African higher education students: critical issues and proposed solutions. *South African Journal of Higher Education, 12*(3), 96 - 0101.

Zachariah, R., Ford, N, Philips, M, Lynch, S, Massaquoi, M, Janssens, V, & Harries, A.D. (2009). Task shifting in HIV/AIDS: opportunities, challenges and proposed actions for sub-Saharan Africa. *Transactions of the Royal Society of Tropical Medicine and Hygiene, 103*(6), 549 - 558.

Annexure 1

Document Summary Form (Adapted from Bloomberg & Volpe, 2008 and Miles & Huberman, 1994)

    Document Form

                                           Site: _____

                          Document: _____

         Date received or collected: _____

Name or description of document:

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Event or contact, if any, with which document is associated (include date if known):

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Significance or importance of the document:

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Page No.	Key words/Concepts	Comments: Relationship to the research questions

Brief summary of contents:

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Significance or purpose of the document:

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Is there anything contradictory about the document?

☐ Yes

☐ No

Salient questions/issues to consider:

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Additional comments/Reflections/Issues:

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Annexure 2

Interview schedule.

Demographic questionnaire.

1.

Male	Female

2. Age in years .... years

3. Job title ....

4. Department ....

5. Length of time in the position at current university .... years .... months

6. What is your highest education level ....?

Good day and thank you for agreeing to be interviewed for my study.

Grand tour question.

I trust you are aware of the governments` White paper on the Transformation of higher education which came out in 1997? One principle of this white paper was redress for past inequities. The universities, as autonomous institutions, have translated parts of that white paper into selection and admission policies. I am interested to hear of your knowledge and experience of how the implementation of these policies is affecting access to health science education.

1. What do you think has facilitated access to health science education at your university?
2. What do you think the challenges, if any, are to accessing health science education in your university?

Student demographic:

3. Please describe the student demographic profile at this university as you experience it.

4. Do you think it is representative of the country demographic in terms of class, race and gender? Explain.

5. Are you aware of the student profile in terms of secondary schooling and/or where the students originally come from/live?

    a. Are you seeing an increase in students from rural areas?

    b. What are the barriers, do you think, to students from rural areas accessing health science education in universities?

    c. It has been said that students from rural areas will most often go back to these areas on graduation which is what this country needs, how do you think the university might attract more students from these areas?

    d. What do you think would make health science education at university an attractive option for students from rural areas?

Retention and Throughput rates:

6. How have the access policies, particularly alternative access affected student retention and throughput?

7. Why do you think this is happening?

8. What has facilitated student retention and throughput?

9. What, do you think, are the challenges related to student retention and throughput?

Annexure 3

Interview Number 1

Interview with the Dean of Health Sciences

6 June 2011

Raw data
PO: Good day and thank you for agreeing to be interviewed for my study. I trust you are aware of the government`s white paper on the transformation of higher education which came out in 1997. One principle of this white paper was redress for past inequalities or inequities and the universities as autonomous institutions have translated this and other parts of that white paper into selection and admission policies. I am interested to hear of your knowledge and experience of how the implementation of these policies has affected access to health science education and perhaps as a start it might give you some help to think of factors that have facilitated access and what have been the challenges in that access. Speaking about access specifically for the previously disadvantaged candidates? Ok. Health sciences as you know is an extremely demanding academic, uh, academic disciplines, let`s put it that way, talking about all the health sciences in totality and because of the nature of the course content and it being so cognitively demanding it is necessary to be able to recruit people who are most likely to succeed and so if you look at health sciences faculties across South Africa you will see that their policies, admission criteria are pretty high uhm… that being said most admissions criteria are also… go concurrently with redress criteria and there`s room within the admissions criteria for alternatives access uhm…acceptance of students from foundation programmes etc so we have the selection criteria in terms of equity and redress you also have the alternative access policy etc which is built into selection admissions criteria, minimum criteria for admission on the one hand alternative access policy etc that is built into the selection. Let`s separate admissions criteria and selection criteria, so the admissions criteria is largely based on matriculation or national senior certificate scores and in the vast majority of

disciplines you would have people rated from highest to lowest and students being given places accordingly. What tends to happen in the Faculty of Health Sciences is that we would take in, in the first instance all the previously disadvantaged groups largely black Africans that have met the minimum criteria, ok, so that is the one way of addressing it.

The second would be so so, so that's one way of addressing or redressing or equity but within the prevailing selection criteria, ok. Uhm in the Faculty of Health Sciences we within the selection criteria we divide the students we take up into several cohorts so you will have the vast majority being taken in from the matric or NSC cohort and what I have just explained to you that all previously disadvantaged candidates meeting the minimum admissions criteria will be taken in whereas all the others would be based on merit so you have x number of places, x minus the number of African candidates who make the selection criteria the rest is handed out amongst the merit students highest to lowest ok. Then within the selection criteria you also have a cohort of students you will take from the BSc lot people that have done one or more years of university training, main stream university training. Uhm these people would uhm… generally have a lower matric point than would meet the admission criteria but the proof of them succeeding or being retained, or coping with university comes up with their first year results or their degree results and so they are a different category when they come in and again the African candidates are prioritized provided they have passed everything on their first sitting and they have over 60% and it varies in the different programmes. We also have science foundation programmes so we allocate a certain number of seats to the science foundation programme, we don`t take into consideration matric points or NSC points but we look at their science foundation results only and we rate them highest to lowest and take in the students. These are largely African students so we don't really… the race issues of the previously disadvantaged generally don't come up with science foundation because in the university first priority is given to previously disadvantaged anyway so you find very few Indian or White students in science foundation so it is not so important to say we will take all African students first and then … so science foundation and acceptance from those who have

finished one or more years of university education is a broad definition of alternative access. We very rarely, there is an RPL policy but we very rarely take people in from RPL directly into the main stream programme, they would be routed as an RPL candidate to the science foundation programme, show proficiency to matric level and then they would join the mainstream programme but we have not to date in my 6 and a half years admitted anybody in the undergraduate programmes based on RPL. So in a way Faculty of Health Sciences is being true to two things – it is being true to setting an entrance criteria that ensures access translates to success right but it is also true to trying to redress the past inequalities but because… I suppose it would be truer to the access translated into success if you had to prioritize the equity and transformation and redress greater priority is given to ensure access translates to success as opposed to redressing past imbalances without an assurance that people that we take in are going to succeed so do you see what I am saying… it is one and the other so there are two things, I suppose, I am not prioritizing redress I am prioritizing access and translation into retention and success and I will accept previously disadvantaged candidates in so much as they meet the minimum selection criteria… selection criteria as opposed to admissions criteria, there`s a difference because admissions have so many points full stop, whereas selection says I`m now dividing my full group of applicants into several cohorts, I am not only taking matric with the best of the points I am also taking, not mature students but tertiary education, people who have gone through higher education of some sort, I am taking science foundation students and I am taking well there is RPL but I explained that RPL does not come into mainstream programmes directly.

PO: and then some of the challenges?

So… we would like to gradually increase the student cohort to be demographically representative and initially now I am going way back into the previous… founding institution it slowly… the target for previously disadvantaged increased from 40 to 50 to 60 but we seldom find… we`ve found ourselves meeting the target every year because for us it was more important to ensure the students we took in had a fair chance of getting through it as opposed to meeting demographic targets and having drop

outs or academic exclusions so while our target may be 50 or 60 % we have slowly, we are slowly

getting there as opposed to having achieved it on the first … and we are not there yet. Some

programmes manage to reach their targets of 50%, it is now 50% previously disadvantaged but the vast

majority of them don`t and for very good reasons. They often state that it does not help, in a way

equity and redress is at cross purposes with the funding formula because your teaching input grants

depend on your full time FTE, one full FTE will give you your full teaching input grant and your

teaching output grant comes up when your students graduate so you really want to make sure that you

take in students that are going to finish in the minimum amount of time and graduate because you

need to ensure that that amount of funding to ensure that you will be able to run your programmes.

Health sciences, as you know, is very expensive because of the critical training the transport, the

cutting edge technology that gives new equipment etc so it is very important to ensure that your

funding, your budgets are … particularly important at …..(name of institution removed to ensure

anonymity) because our budgets are directly linked to the income. It is not true in other universities

where they are given a certain amount but it is not linked to what they bring in and therefore it is very

important for us to have a large full time, no people failing so they are carrying one course , not a full

time equivalent, not a full FTE but a portional FTE, get them out the sooner the better so we get the

teaching output grant because that also decreases as you take minimum plus one year, minimum plus

two years etc. So I am saying in the ….…..(name of institution removed to ensure anonymity)   context

the funding formula because it is so directly linked to the budget may in a way be at cross purposes

with equity and redress… so the challenges would be recruiting the people who meet the admissions

criteria, and each year we see more and more people from the designated groups actually meeting the

criteria however if you have to go and delve deeper into disadvantage etc you will see that a large

number of then come from the previous Model C schools and the private schools and we have a

fraction of people coming from the rural schools etc so I think the vast majority of our previously

disadvantaged candidates come from the Dinaledi schools so if we want to address things like rurality

etc, I haven`t delved too much into looking at how many students coming from the urban, peri-urban and rural and the way the Department of Basic Education categorizes the Dinaledi schools as the ones that the science and maths are equipped to offer science and maths at a level that will allow the students to come into science and maths in Health sciences at Higher Education institutions

Gender we are largely more female than male over there we might be skewing the demographic the other way as the vast majority of our students are female. We haven`t looked at class whatsoever. I suppose we can look at class if we look at health sciences students that succeed to get NSFAS funding but a large number of our health science students irrespective of class also get DoH funding and that's because they wish to have the service aspect of it covered. Class... we may get a picture but not a 100% picture because of the nature of the programmes NSFAS funding is one but the provincial DoH and the national DoH also give funding across the board not necessarily to the needy but on merit as well because of the component of service that gets paid back by … get funded for a number of years.

Researcher … anecdotal evidence of fraudulent applications to NSFAS…

Well if you read the report there has been an overhaul of the NSFAS system for various reasons and I am not quite sure why… (door bell ringing… sorry).

PO: Talking about the demographics, in the reading I think that the issue of class is quite difficult to capture… in Australia, for example, they use postal code and if you are coming from this area …

A domestic worker living in a very affluent area so if you consider the confounders it is one of the ways as long as we recognize …

PO: You have spoken about the Dinaledi schools and otherwise is there a way of knowing where the students are coming from? You have said that you feel most of them are coming from…

The department of management information if the students , if the university students have put in their secondary school education they can tell you where they are coming from and I do have a fair idea of where it is I haven`t, I haven`t I must say interrogated it but I , liken our list with the basic education list but the vast majority of the previously disadvantaged come from Model C schools and

private schools. There are people who come from none of those and there are people coming from the rural areas but they are in the minority.

PO: OK, that is what I was going to ask you next. Are you seeing an increase in the students coming from rural areas and what do you think are some of the barriers to those students? Keeping in mind that the literature indicates that if they come from a rural area they are more likely to go back and that is what we are hoping for.

Sitting in the Dean`s position it is very difficult for me to have an in depth understanding of the demographics and where they are coming from and whether they are increasing from the rural areas year by year , we can certainly get that information, estimate yes perhaps but by what proportion, I don`t know. I also don`t necessarily believe that people go back to where they come from and there is a whole lot of work being done by Cheer and Ridasa and all of them that is based on the premise that if you come from a rural area you are likely to go back to the rural area. But I have had a, again this is anecdotal and has been my personal experience with students who have said no never I am now earning at a certain rate which allows me to have a lifestyle that is not rural and they are not likely to go back so yes it is true for some but it is not true for others.

PO: It is like leaving the country isn`t it, leaving the country and coming back to the country few do … have you got any ideas about how the university might attract more students from rural areas?

Within the Faculty of Health Sciences there is the list of Dinaledi schools across the country which tells you exactly which schools offer the science and maths that allows students to get into university and what we have done is because FoHS gets 33000 applications for 500 places we are not short of applicants but what we are doing is so we target our recruitment to the rural and the peri urban areas. Again it has just started now as in end of last year and beginning of this year and so we have to analyse the levels of, first we have to define what we regard as and what indicator we use for rurality and then do an estimate of how many students apply from those separate post codes for example over the years and if there is a considerable jump between the one year and the next and it can be likened to the

recruitment then that's another story but again applications don`t equate to admissions but it would be good to see is at least our recruitment strategy allows or encourages people from rural areas to apply these are kinds of things we could probably get information for and if you would like to follow up this interview with quantitative data that we can get from management information I would be happy to provide it.

PO: What do you think would make health science education at university an attractive option for students from rural areas?

I think the vast majority of students whether they are rural or any area are aware of doctors, nurses and pharmacists followed… physiotherapists next . I am not concerned that health sciences is not attractive but I think there are certain professions in the health sciences that are more attractive than others and part of the recruitment strategy for health sciences to make it exactly whether recruitment is undertaken in the rural schools or the private schools make the students aware of the range of health science professions that are available and the necessity for each one of them because the burden of disease has a place for every single health science professional so our challenge will be getting people in from rural areas number 1 the second challenge will be getting people across the board but I suppose more people from rural areas to apply for the lesser known health science professions like the speech and audiology , OT, dental therapy as opposed to dentistry etc but I am just speaking off the top of my head and the next challenge would be for us is to ensure we meet the demographics but the true demographics and not colour coding if you like where you are getting the very affluent African student   taking up your positions and on an equity plan you look great but it is not really the true disadvantage of rurality, of financial disadvantage, of previous disadvantage because of location, home etc.

PO: Uhm I think we have spoken about access policies and alternative access affecting retention and throughput…

Can I just add a little bit on that one … there used to be considerable amount of funding for access

programmes and bridging thing`s and gradually the access and foundation being slowly phased out while they move to offering extended programmes so a BSc 3 becomes a BSc 4 and a B Com 3 becomes a B Com 4 and the funding from the Department of Higher Education and Training goes to extended programmes rather than foundation and access programmes in higher education and I suppose it is also to do with the differentiation and now that we have a post-secondary education sector and we are trying to look at vocational the FET`s, further education and the GET`s and the FET`s and the higher education training as one big sector so there `s two sort of things to bring, first of all the funding for access and foundation has become, is decreasing and being replaced by extended programmes, that is the first thing and secondly because it has now become a post-secondary education sector as opposed to a completely higher education sector there`s probably going to be different access issues involved and GET, general education is a standard 8 as we knew it, a grade 10 now, would get into a FET college whereas a matric, NSC certificate etc depending on your results will get you a diploma which allows you to enter a University of Technology, will get you a bachelors which allows you to enter a university etc so access policies …I can`t even remember what access policy we have at this university , we do have an access policy, I need to go back to it but in the translation in the new NSC and the new Higher Education acts and things like that I think the translation of access is subsumed into the admission and selection criteria whereas the faculty already had the leeway to determine this ourselves without too much question why we chose 30 as opposed to 27 for our minimum criteria, it was left largely to the academic expertise of the Faculties and the disciplines to decide what it is. So in a way we set the bar to allow students to be able to get into the health sciences programmes or not and the higher you set the bar the larger the proportion of one category or more than one category of students you will get. I mean everyone speaks about under prepared secondary education and diversity of secondary education preparedness etc it does play a role however it is the responsibility of the HE institution to be cognizant of the different levels of preparedness and put into place different things, it can be as simple as support structures or it can be as complex as teaching in the way in which the student s have

learnt, and I am talking specifically to the OBE curriculum which is really a different theoretical paradigm of learning as opposed to the matric which was quite didactic in a way. This way there is a lot of group work, constructivism, peer assessment, continuous formative, summative assessment etc and students are learning differently, with technology, with different pedagogy, etc so so it is also the responsibility… I suppose I am digressing from access but it is also the responsibility of the universities to make sure you can teach them.

PO: I think that`s … from my side in terms of the questions because we`ve spoken… it was about retention and throughput and how the access had affected that, so you have spoken to that and why do you think that is happening …

Can I just say that I have done some research on first year performance of the old matric cohort and the new, the last of the old matric cohort 2008 students and the first of the new NSC cohort and I have stratified the students into mainstream therefore those who meet the admissions criteria, alternative access those who have points matric points lower than … then language 1 and language 2, language being a proxy of previously disadvantaged and matric points being the proxy for mainstream and alternative access and what we found that in health sciences the ones that differ are the ones that perform less well I am not saying they fail but they perform less well are the AA, the alternative access and the language 2 cohort they do perform across the board less well they pass but their mark, their average mark is lower generally than that … so its…. Irrespective of the numbers that we take in and irrespective of the fact that they generally do well and the vast majority , cohort completion rates of 90 and they all get through the vast majority in the minimum time etc the level of performance differs and it is lower in the alternative access and language 2 group, so they do have, they do require additional support etc, and then if you look at various other parameters of how they perform … but again if you compare NSC and matric outside the realm of this in terms of access, if you compare NSC and matric, the matric perform better in terms of marks but the NSC do better in terms of percentage of curriculum passed at the first sitting, so they have a different skills set so maybe time management

and things like that so you are not getting an average of 60% but you are passing many more modules and getting many more credits per year compared with the matrics who are getting a 70% average but may not necessarily be passing and getting the same number of credits per year. Again this is anecdotal and it is two years in question and it really can`t say too much until we track them throughout but… in terms of performance and all of that it is largely language and alternative access that would be excluded, it is the language 2 students that drop out and will take more than the minimum time and who would have lower average mark than would be maybe a sign of diversity of preparedness at secondary education level

PO:… and I think… you know some of the literature is saying that the value, how people have been brought up to value higher education and what it will do, what it translates into later on in your life if you are coming from a family where your parents have got… you are not first generation university and you have got that support system that encourages you when times are hard and the chips are down and so perhaps that is also and … not only the academic preparation but some of the social sort of …

But how does one value something that one does not know the value of the benefits of and that is a different parameter all together…

PO: I think so perhaps where you`ve highlighted that there is a number of different areas that you can do in Health Sciences but people tend to go for the main stream ones and if they had broader knowledge it would be ok to go for something they didn`t know about …

And it works… people may aspire to be nurses but are capable of being Doctors or Pharmacists and reversely people might aspire to be doctors but find that they are really only suitable for a OT or speech language because again the cognitive demand not just cognitive but psychological demands… demands the whole thing is demanding a different… emotional intelligence, is more demanding depending upon the various levels of the profession that you are looking at …

PO: Good, thank you very much …

Annexure 4

Index of content validity

Two of the five key policy goals of The National Plan for higher education in South Africa (2001) address access to higher education. These goals are:

    a.   To provide access to higher education to all irrespective of race, gender, age, creed, class, or disability and to produce graduates with the skills and competencies necessary to meet the human resource needs of the country

    b.   To promote equity of access and to redress past inequalities through ensuring that the staff and student profiles in higher education progressively reflect the demographic realities of South African society.

The purpose of this research is to explore the implementation of those goals related to university education in health science programmes. The research consists of two phases – a qualitative phase and a quantitative phase. This questionnaire is to be used to collect data for the quantitative phase and is in the process of being developed. This is the first round of item review. A second round will be done. Once the questionnaire has been validated it will be circulated via e-mail to selected participants for completion.

Items were developed from a review of the literature and interviews with key informants.

For each of the following items, please indicate two areas: a) whether you believe that the item is relevant to implementation of achievement of the access goals and b) whether the item is clear. Please use the following scale: 4 (highly relevant), 3 (quite relevant), 2 (somewhat relevant), & 1 (not relevant) and : 4 (absolutely clear), 3 (quite clear), 2 (somewhat clear), & 1 (not clear).   There is space for comments next to each item.

    When you are finished, please add any comments on areas which may have been omitted.

	Instructions relevant				Additional Comments	Clarity of wording				Additional Comments
	4 **Highly relevant**	**3** **Quite relevant**	**2** **Somewhat relevant**	**1** **Not relevant**		**4** **Absolutely clear**	**3** **Quite clear**	**2** **Somewhat clear**	**1** **Not clear**	
Are instructions relevant and clear?										

Item	Relevance of item				Additional Comments	Clarity of wording				Additional Comments
	4 Highly relevant	3 Quite relevant	2 Somewhat relevant	1 Not relevant		4 Absolutely clear	3 Quite clear	2 Somewhat clear	1 Not clear	
1. Different professions within health care such as nursing, physiotherapy, and medicine are marketed equally.										
2. Rural settings need to be targeted in order to ensure that all qualified students learn about the career opportunities in health sciences.										
3. Current marketing strategies use all available media such as newspapers, radio, television, and popular social networking technologies such as Facebook and twitter.										
4. Potential students are well informed when they make their choice of the health sciences profession.										
5. Housing / student accommodation is a major motivating factor when students choose health science programmes.										

Item	Relevance of item				Additional Comments	Clarity of wording				Additional Comments
	4 Highly relevant	3 Quite relevant	2 Somewhat relevant	1 Not relevant		4 Absolutely clear	3 Quite clear	2 Somewhat clear	1 Not clear	
6. Students are passionate about their choice of the health sciences field.										
7. There are adequate seats for all students that meet the admissions criteria in the health science programmes.										
8. There are adequate numbers of students coming from rural areas.										
9. Many students take easier matric subjects just to strengthen their application for admission.										
10. Some students receive priority admission status based on history of being disadvantaged.										
11. Results from standardized exams are the main factor in determining whether a student is admitted.										
12. The school/discipline/department sets the "bar" for admission and students who don`t meet these minimum criteria are not admitted.										

Item	Relevance of item				Additional comments	Clarity of wording				Additional comments
	4 Highly relevant	3 Quite relevant	2 Somewhat relevant	1 Not relevant		4 Absolutely clear	3 Quite clear	2 Somewhat clear	1 Not clear	
13. Economic constraints do not impact on whether a qualified student is admitted.										
14. Secondary school education prepares all qualified students for higher education in health-care fields.										
15. Students, whose primary language at home is not English, are adequately prepared for university study.										
16. Students who are not prepared for health sciences university study can take preparation courses to better equip them for academic success.										
17. Students are given the opportunity to take longer than the usual number of years of study in order to be successful.										
18. Students who complete alternative access programs perform equally well to mainstream students.										
19. Learner focused curricula improve student success.										

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Item	Relevance of item				Additional comments	Clarity of wording				Additional comments
	4 **Highly relevant**	**3** **Quite relevant**	**2** **Somewhat relevant**	**1** **Not relevant**		**4** **Absolutely clear**	**3** **Quite clear**	**2** **Somewhat clear**	**1** **Not clear**	
20. Students choose different universities because of their strategies of teaching.										
21. Innovative team-based teaching strategies improve student outcomes.										
22. Early identification and intervention for at-risk students improves retention.										
23. Many at-risk students drop out early in their program of study.										
24. Our throughput and graduation rates are within national norms/benchmarks.										

Additional comments on the total survey

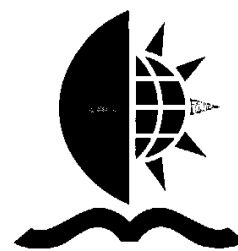Your role within the academic institution (please mark one)

Dean ☐   Head of school/department/programme ☐   Faculty/Academic ☐

THANK YOU FOR YOUR PARTICIPATION

ANNEXURE 5

Ethics approval

29 OCTOBER 2010

Mrs. PM Orton (201500357)
School of Nursing

Dear Mrs. Orton

PROTOCOL REFERENCE NUMBER: HSS/1276/010D
PROJECT TITLE: Access to Higher Education in the Health Sciences – a policy implementation analysis.

                                                                        EXPEDITED APPROVAL
I wish to inform you that your application has been granted Full Approval through an expedited review
process:

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed
Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be
reviewed and approved through the amendment /modification prior to its implementation. In case you
have further queries, please quote the above reference number.
PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

....
Professor Steven Collings (Chair)
HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

cc. Supervisor – Dr. P Brysiewicz
cc. Prof. S Essack
cc. Mr. S Reddy

Annexure 6

Consent form for audio recording

I have read and understood the information sheet on the Access to higher education for the health sciences – a policy implementation analysis research project. I was provided with the opportunity to ask questions and given adequate time to think about the project.

I understand that participation in this project is completely voluntary and that I may withdraw from it at any time and without giving any reasons. I have not been pressurized into participating in any way.

I am fully aware that the results of the study will be used for scientific and educational purposes and that the results will be published. I agree to this provided my privacy is guaranteed.

I understand that the interview will be audio recorded, and that the recording will be used solely for the purposes of data analysis in this study. I have been informed that only the researcher will have access to the recording and that the recording will be deleted off the voice recorder immediately it has been transferred onto her personal computer which I understand to be password protected.

I therefore agree to the interview being audio recorded:

Interviewee`s name: _____

(Please print)

Interviewee`s signature: _____Date: _____

Statement by interviewer.

I confirm that I have provided the interviewee with the information sheet. They have read the information sheet and had the opportunity to ask questions.

I confirm that the interviewee has given consent freely.

Interviewer`s name: Penny Orton

Interviewer`s signature:_____Date:_____