An investigation into Dental Technology lecturers' discourses of academic identity formation within the emergence of Universities of Technology in South Africa

By

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I, Thobani Linton Gumbi, declare that this thesis is my own original work except where otherwise stated and acknowledged.

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Abstract

Post-apartheid restructuring of the South African Higher Education system has brought about significant changes. Institutions of Higher Learning have implemented minor and major changes in their objectives, delivery of knowledge, functions, accreditations and overall outcomes (Du Pre 2006, Reddy 2006, Department of Education 1997). One of the more significant transitions within South Africa's Higher Education landscape has been the conversion of technikons into universities of technology (UoTs) (Powell & McKenna 2006).

This thesis investigates the discourses of academics within a university of technology, exploring their responses to and constructions of institutional shifts. The study has an ontological focus in that it is interested in the 'being' of Dental Technology academics. It is interested in the discursive constructions not only of themselves as academics, but also of their work in this changed institutional context.

By conducting interviews with the Dental Technology academics lecturing in universities of technology in South Africa, it was the intention to explore these academics' discourses on institutional shifts. Adopting discourse analysis as the primary method of data analysis enabled the exploration of how academics constructed the notion of academic identity, how they discursively constructed students and knowledge, as well as other core issues related to their work.

ACKNOWLEDGEMENTS

As with many acknowledgement sections, it is set in a hierarchal structure of who the author feels deserves the most recognition. In that case I would like to give recognition first to my supervisors Professor Sioux Mckenna and Mr Greg Bass who has shown a great deal of patience and support throughout the years I have taken to complete this study. If I had to mention all you have done to support me, there would be no space on this page to acknowledge anyone else. Sioux, I would sincerely like to say thank you for believing in me, especially when I almost stopped believing in myself, for helping to provide answers when this study was called into question. Thank you for giving me the strength, guidance, advice, encouragement, wisdom and direction to complete this journey.

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"Consider it pure joy, my brothers and sisters, whenever you face trials of many kinds, because you know that the testing of your faith produces perseverance. Let perseverance finish its work so that you may be mature and complete, not lacking anything. If any of you lacks wisdom, you should ask God, who gives generously to all without finding fault, and it will be given to you." The Bible, James 1 vs 3-5.

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ABBREVIATIONS

B.Tech:	**Bachelor's Degree in Technology**
M.Tech:	**Master's Degree in Technology**
CHE:	**Council on Higher Education**
CPUT:	**Cape Peninsula University of Technology**
CTP:	**Committee of Technikon Principles**
DHET:	**Department of Higher Education and Training (formed in 2009)**
DoE:	**Department of Education**
DT:	**Dental Technology**
DUT:	**Durban University of Technology**
HEQC:	**Higher Education Qualification Council**
HEQF:	**Higher Education Qualification Framework (2007)**
HEQSF:	**Higher Education Qualification Sub-Framework (2013)**
NATED:	**National Assembly Training & Education Department**
NHD:	**National Higher Diploma**
NQF:	**National Qualifications Framework**
SERTEC:	**Certification Council for Technikon Education**
SADA:	**South African Dental Association**
SADTC:	**South African Dental Technicians Council**
SAQA:	**South African Qualifications Authority**
UoT:	**University of Technology**
WIL:	**Work Integrated learning**

CHAPTER ONE: INTRODUCTION

1.1 Introduction

The change in institutional nomenclature from Technikon to University of Technology has taken place at a time of numerous other changes in the South African Higher Education sector. These changes include institutional mergers, changes in the schooling system, shifts in Higher Education funding and a drive to transform the Higher Education system from the inequalities of our Apartheid past. All this has occurred alongside the opening up of the South African economy, where major leaps in technology and a shift towards the so-called 'knowledge economy' have been experienced. Such enormous change emerges from multiple causes and has numerous effects, therefore it would be difficult for any study to delineate where its concerns begin and end. This study looks at how the change from Technikon to University of Technology has been experienced by academics in one vocationally focused programme, Dental Technology. The study is undertaken across three Universities of Technology in South Africa, namely, the Durban University of Technology, Tshwane University of Technology and the Cape Peninsula University of Technology. Multiple issues that pertain to the experiences of academics during this period are acknowledged, but the study endeavours to focus specifically on those issues related to the change in institutional type.

This study is underpinned by an understanding of the importance of discourses: that the way we speak about the world has the effect to enable or constrain our actions in a certain way. This study acknowledges that the world is made up not only of language, but takes the position that the ways in which we use language is powerful and worth studying in its own right. This study is a discourse study and analyses the views of

Dental Technology academics to examine how they make sense of their own identities. The study explores how Dental Technology academics discursively construct their institutions, how they discursively construct the knowledge of the curriculum, and how they discursively construct their students. It seeks to answer the following research questions:

1. What are the discourses by which Dental Technology academics construct their identities in a UoT?
2. What are the discourses by which academics construct the shift from Technikon to UoT?
3. What are the possible implications of these constructions for Dental Technology teaching and learning?
4. What are the implications of these constructions for the Dental Technology industry?

The theoretical nature of discourses and constructions of identity is discussed in detail in Chapter Three of this dissertation. This first chapter serves to provide a rationale for the study and to outline the context in which it takes place.

1.2 Background to the study

The shift in institutional identity from Technikon to University of Technology (UoT) has a number of implications, many of which are experienced by the academics themselves. This shift has taken place in the context of much debate but little direction in the national documentation (Engel-Hills *et al.* 2010). While there are many documents describing what a University of Technology is, for example, the descriptions offered by Gillard (2004), Scott (2006) and Du Pre (2010), there are few which delineate explicitly how this new institutional type differs from a Technikon or

what the impact of such change might be on academics. The discourses by which academics construct themselves and their work in the new institutional type, provide insights into the nature of this shift as well as highlight the implications for professional training, as in the case of this study, for Dental Technicians. This thesis is being written at a time of great flux in South African Higher Education when after twenty years of democracy, many changes are occurring and new changes are being proposed.

The National Plan for Higher Education as set out by the then Minister of Education, Professor Kader Asmal in 2001, provided the strategic framework for re-engineering the Higher Education system. This plan was written in accordance with the Education White Paper 3 - “A Programme for the Transformation of Higher Education” (Department of Education 1997) and was to be implemented in the manner stated in this paper. This plan for Higher Education was to be drawn up by the Department of Education (DoE) after consultation and advice from various statutory advisory boards, including the Council of Higher Education (Department of Education 1997). The Higher Education Qualifications Framework (HEQF), which was a single qualifications framework, was published in 2007 under the then Minister of Education, Ms Grace Naledi Pandor.

The HEQF was intended to enable the articulation of programmes and the transfer of students between programmes and Higher Education institutions, which the then separate and parallel qualifications structures for universities and the former technikons (now Universities of Technology) were perceived to preclude (Department of Higher Education and Training 2013). The HEQF (2007) was replaced by the Higher Education Qualifications Sub-Framework (HEQSF) in 2013, which attended to some concerns about articulation, but was fundamentally similar to the HEQF. The HEQSF, among other characteristics, is purported to be flexible to accommodate different types

of Higher Education institutions and to enable institutions to pursue their own curriculum goals with creativity and innovation (Department of Higher Education and Training 2013). This is a privilege that was not accorded the former Technikons, which deeply desired an ease of access between institutions (Du Pre 2010). It was, however, one that would require significant consideration of how their programmes might articulate with the general and formative degree programmes of a traditional university, and/or with postgraduate education following on from the diploma.

One of the purposes of The White Paper 3 of 1997 was to contribute to the creation, sharing and evaluation of knowledge. This would be achieved by assuring that the three institutional types present at that time (Colleges, Technikons, and Universities), would not continue to be regarded as discrete sectors with mutually exclusive missions and programme offerings. According to the White Paper 3 of 1997, the creation, sharing and evaluation of knowledge between institutions would have been facilitated by recognition of the scope for collaboration, on the basis of common purposes and mutual interests and of their distinctive roles (Department of Education 1997). This loosening of institutional boundaries was not without critics and, a few concerns were raised. One criticism levelled was that such blurring has led to academic drift, whereby all institutions increasingly seek to offer formative degrees (Kraak 2004 and 2006). Another concern raised was that it fails to acknowledge distinctions in the kinds of knowledge offered in different institutional types (Muller 2009). These issues are deliberated on in Chapter Three.

The White Paper 3 indicated that when writing the National Plan, the DoE would, in collaboration with the Council of Higher Education (CHE), be required to assess the optimal number and type of institutions needed to meet the goals of a transformed Higher Education system. Following this assessment, institutions would either require

consolidation or retooling for new missions and goals. Reshaping the institutional landscape was part of the National Plan for Higher Education published by the Ministry of Education in 2001. Institutional self-interest could not be allowed to prevent planning, which the National Plan stipulated may lead to institutional mergers and closures, and the development of new institutional forms where these were necessary. Furthermore, each institution would be responsible for the development of its own institutional plan that would fall within the framework of the National Plan and be implemented according to procedures which would be negotiated between the Department of Education, institutions and the CHE (Department of Education 2001).

The DoE believed that institutional co-operation remained an important factor when addressing the social, educational, economic and political goals of the Higher Education system. The goal was, in particular, to build new institutional identities and cultures. Therefore the National Plan for Higher Education (2001) was aimed at providing this new landscape for Higher Education. One of the methods of providing a new landscape was the proposed merging of institutions.

The DoE argued that there was no single factor that underpinned the reasoning for mergers or for new institutional and organisational forms. A range of factors linked to these mergers was stated. For example, the rationale for merging a historically white and a historically black institution may differ from merely merging two institutions with similar racial histories. The purpose may be that of overcoming the racial fragmentation of the Higher Education system. In another case, it may be that of achieving economies of scale or scope. In yet other cases, the rationale may be the reorganising of governance and management structures and improving administrative systems. Furthermore, a merger may also be a combination of all of these factors. “It may also be linked to improving the quality of provision and strengthening the

sustainability of the national higher education system against the background of increasing competition from foreign and multinational institutions which are looking for new educational markets in response to economic and financial pressures within their own countries" (Department of Education 2001: 82). Through mergers and incorporations between 2002 and 2005, and the formation of two new universities in 2013 and the de-merging of one in 2014, the South African Higher Education system now has 26 public universities.

These mergers occurred alongside other significant shifts in the sector. In 2003 the then Minister of Higher Education, Mr Kader Asmal, announced the renaming of technikons to universities of technology. The name change from 'technikon' to 'university' implied that there would be a change in the way that these institutions fulfilled their role, function and place in the South African Higher Education landscape (Du Pre 2006, Reddy 2006). The White Paper for Post School Education and Training (2013) expresses the need for vocational and skills education within the education sector of South Africa and argues that South Africa needs a diverse Higher Education sector which is purposefully differentiated. The paper then goes on to set out principles for the current differentiation of the university sector, which comprises traditional universities, comprehensive universities and universities of technology, and how they will formulate institutional missions.

The National Development Plan (2011), which provides a vision for 2030, aims for quality education and encourages shifts in technology and innovation to address present day challenges. Knowledge production is one of the main purposes of higher education, as well as to educate and produce individuals with high-level skills for the labour market and to provide opportunities for social mobility, social justice and democracy. The National Development Plan (2011) recognised that high quality

knowledge production cannot not be successfully achieved in light of the challenges that presently face South African Higher Education. These challenges include low student participation, curricula that do not readily articulate, an educational environment that is alienating and insufficiently qualified staff.

In order to achieve its objectives, the DHET has set out the targets it wishes to achieve. Those that pertain to Higher Education include the increase of graduation rates to more than 25 percent by 2030. This will require an increase in the number of graduates which currently stands at 167 469 to a combined total of 425 000 by 2030. In order to achieve this, a 70 percent increase in enrolments is proposed from 950 000 in 2010 to 1 620 000 in 2030 (National Planning committee 2011).

Research, technology and innovation have been identified as the areas requiring the most extensive improvement. In this respect, the National Plan (2011) proposes to produce more than 100 doctoral graduates per million of the South African population per year. Currently, South Africa produces 28 doctoral graduates per million per year, in comparison with other countries such as the United Kingdom, which produces 288 doctoral graduates per million, the United States of America produces 201 per million, Australia has a figure of 264 per million and Brazil stands at 48 doctoral graduates per million per year (National Planning Committee 2011). To achieve the proposed target, South Africa needs to produce 5000 doctoral graduates per year compared with the 1420 produced in 2010 (National Plan 2011). For South Africa to be a seen as a leading innovator, it is noted in the National Plan (2011) that most of these doctorates should be in science, engineering, technology and mathematics. In addition, and crucial to the focus of this study, the National Plan (2011) also looks to increase the percentage of academic staff with doctoral level qualifications from the current 34% to over 75% by 2030.

The growth in Higher Education since 1994 has been significant. The increase in the enrolment of students, however, has not been accompanied by a similar increase in the number of academics. Consequently, academic staff have experienced increased teaching loads and a high student to staff ratio at many institutions (National Planning Committee 2011).

It is within this complex and shifting Higher Education context that this study looks at the experiences of academics working in a University of Technology. This study examines the ways in which shifts in institutional identity have affected the academics' perceptions of their own identities and their conception of their work. The context briefly outlined here is discussed in further detail in the next chapter, as is the specific context of the Dental Technology programmes offered in three Universities of Technology in South Africa.

1.3 Rationale and aims of the study

Throughout the writing of papers, publications, planning and implementation of a new landscape for Higher Education in South Africa, a great deal of emphasis was placed on the infrastructure, programmes, institutional plan and governance of newly merged institutions. Little emphasis was placed on understanding the effect on the academics upon whom the mergers and shifts in institutional types would have a direct impact as it related to their work, attitude and understanding of their role in the new institutional setting (Winberg 2005)**.**

This research offers a historical perspective on the process of institutional change in one specific programme, namely Dental Technology. Furthermore, the research seeks to describe academics' views of the particular forms of institutional structures, and

shifts in these structures over time. This study seeks to explore how academics have experienced shifts in these institutions, and the implications of these shifts for academics' identities.

The shift in institutional identity from 'Technikon' to 'UoT' has a number of implications, many of which are experienced by the academics. These implications are evidenced through the discourses by which academics construct themselves and their work in the new institutional type. Insight into the nature of institutional shifts aims to highlight the implications for Dental Technology academics, technicians and the Dental Technology profession. The study has an ontological focus in that it is interested in the 'being' of the Dental Technology academics, and in the discursive constructions**,** not only of themselves as academics but also of their work in this changed institutional landscape.

Without such fine grained studies that seek to make sense of the experiences of the academics through analysis of their own discourses, we run the risk of having policies and plans which are symbolic only. Unless the impact of such shifts on those at the delivery front of providing undergraduate education is considered, Higher Education will not be in any position to attain the ambitious goals set out in the 2011 National Plan.

It is for these reasons that this study aims to explore the discourses by which Dental Technology academics construct their identities in a university of technology, as well as the discourses by which they construct the shift from Technikon to University of Technology. This study aims to explore the understanding of Dental Technology academics of the possible implications for Dental Technology teaching and learning, and the Dental Technology industry.

1.4 Assumptions and Delimitations

In this study, it is assumed that the views of participants in the interview process are a true reflection of their feelings and understanding.

This study was limited to Dental Technology lecturing staff at the three Universities of Technology that offer Dental Technology. Participants are registered under the South African Dental Technicians Council. A further limitation with respect to participants was the small number of participants available as there are only three institutions in the country that offer Dental Technology. The findings of this study however can potentially provide insight to other departments within UoTs in terms of academic identity.

Further limitations to this study are those of relating to my position as a lecturer in a Dental Technology programme.my position allowed me to access to participants as a lecturer in the same discipline. My position has the potential to limit the study as I have a vested interest in the topic as I experience the discourses that I investigate. The position of lecturer however also allows me find deeper understandings on the subject matter which an outsider may not recognise.

Barnett (2005) refers to the current super complexity in the higher education landscape where rapid change is being experienced due to a number of variable such as constraints in funding, globalisation and internalisation of curricula, these rapid changes can be seen to be a limitation on the study.

1.5 Structure of the thesis

Chapter Two of this research report provides the context of this study by discussing the history of technikons and the emergence of UoTs. The international experience of higher education shifts will be looked at and the Dental Technology programme will

then be introduced. Chapter Three introduces the conceptual framework of this study which discusses discourses and their integral underpinning of this thesis. Thereafter constructions of the identity of academics are discussed. The chapter ends with a consideration of the literature on the issue of academic identity, one of the core concepts of this study. Chapter Four discusses the methodological approach followed during this study, then continues with a discussion of the research design and the research process selected. The use of Discourse Analysis is described along with a detailed engagement with the concept of discourses and how they function to constrain and enable practices. It is in this chapter that a description of the interview method used for data collection is provided.

Chapter Five comprises an identification of the main discourses used by Dental Technology academics by which they construct identities of themselves, the institution, their students, their programme and the Dental Technology industry. The discourses will be discussed in relation to the literature presented in Chapter Three. Chapter Six discusses another dominant discourse from the data, that of constructions of knowledge. This chapter looks at how academics organise and convey knowledge among themselves**,** and how such constructs have been affected by institutional shifts. Chapter Seven then examines how academics discursively construct students in the emerged UoTs. The ways in which they understand and discuss their students have implications for both their constructions of themselves as academics, discussed in Chapter Five, and their construction of knowledge in the curriculum, discussed in Chapter Six. Chapter Eight concludes the thesis and considers the implications of the findings. This chapter also discusses the limitations of this study and makes suggestions for future research.

CHAPTER TWO: CONTEXT OF THE STUDY

2.1 Introduction

The discussion of the context in which any study is conducted is critical as it enables the reader to understand the essential aspects of the study. This study takes the position that academics' constructions of the shifts in the Higher Education system emerge out of their own environment, and can only be understood within this context. Academics' constructions of identity are constrained by their historical and social understanding of institutional types. Therefore, within the changing institutional landscape, the interest is in whether or not the new institutional landscape affects their understanding of what is required of them. The process of change is not by any means unique to South African higher education. Trends such as institutional mergers and the emergence of new institutional types have been experienced internationally (Du Pre 2010). Following international experience may shed light on and provide insight as to what may be expected and how these expectations will manifest themselves in a South African context.

2.2 The history of Technikons

The introduction of technikons in South Africa began in 1969, with the adoption of the Advanced Technical Education Act No. 40 of 1967. This Act had led to the establishment of six Colleges of Advanced Technical Education (CATE). The introduction of these colleges was to meet the fast growing needs of commerce and industry (Bunting 2001). The curricula of programmes offered at a CATE were centrally developed and controlled by the Department of Education.

In 1979**,** the six colleges for advanced technical education underwent a name change to 'Technikons**'**. With the establishment of technikons, South African higher education institutions were now divided into two institutional types, namely, traditional Universities and technikons. The National Party government believed that it had been able to identify the essence of the two types of institutions into which it divided the South African higher education system (Bunting 2001: 62). Moreover**,** in keeping with its educational policies**,** the National Party determined that universities could not become involved in technology (in the sense of the application of knowledge) and that technikons could not become involved in scholarly activities involving the generation of new knowledge (Bunting 2001: 62). The technikon curriculum was nationally controlled and documented in the National Assembly Training & Education Department (NATED) Report 151.

A significant regulating body at the time was the Certification Council for Technikon Education (SERTEC). The council was established through the SERTEC Act no. 88 of 1986. In collaboration with professional bodies SERTEC was involved in the certification of programmes. Institutions, however, were only able to apply for accreditation of new programmes once included in the NATED Report 151.

An organising body for the technikon sector was the Committee of Technikon Principals (CTP), which was the association of the rectors of all the technikons in South Africa. The CTP co-ordinated educational, strategic and policy matters amongst all technikons in the country. The CTP was instrumental in the approval of new programmes**,** prior to being included in the NATED Report 151. The CTP provided technikon rectors and other top-level technikon representatives with a forum for discussion, formulation of strategies and promulgation of new ideas.

The technikon system in South Africa could have been seen as “overregulated” prior to 2001. This was identified when the effect of national control over the curriculum was reviewed with regard to the outline for quality assurance at the time (Cooke, Naidoo and Sattar 2010). Reddy *et al.* (2006) described the approach by the Certification Council as “overly mechanistic and unlikely to encourage the development of strong and confident institutional quality management systems”. During the period 1979 to 1988**,** some autonomy on curriculum development was afforded to institutions as national examinations were gradually phased out (Cooke, Naidoo and Sattar 2010). The NATED Report 151 was amended and although institutions were not allowed to deviate from the nationally approved curriculum**,** individual institutions were able to set their own examinations and conduct compulsory external moderation.

In the early 1980s, a convenor system was established, whereby selected institutions were afforded greater responsibility in leading curriculum development initiatives for specific programmes. The introduction of the convenor system was an attempt to alleviate centralist control by the Department of Education. The development of a new programme involved an application by a technikon convening a meeting with other technikons who might be interested in offering the programme**.** This meeting would include representatives from industry and any other stakeholders. A curriculum document developed by the convenor institution was then approved through SERTEC. Thereafter, every five years SERTEC would then make inspections, every five years, of programmes in the institutions against the approved curriculum document. In 1986**,** the Department of Education allowed institutions to adapt 30% of the curriculum to facilitate “local content” in programmes, the other 70% was still controlled centrally with a fair degree of state monitoring (Cooke *et al.* 2010).

In 2003, the convenor system was disbanded. While the convenor process was introduced for the benefit of the institutions, Cooke *et al.* (2010) and Boughey (2010) recognise that there have been long-term effects of the convenor system**.** In the UoT setting, a possible long-term effect has been the disempowerment of academic staff at an institutional level**,** with regard to input and changes to the curriculum. This was due to most staff members having to deliver curricula that had been developed elsewhere and yet were required to be evaluated centrally. Boughey (2010) indicates that the convenor system must have impacted negatively on the extent to which academics in technikons contributed to knowledge production and the development of curricula.

Technikon education was underpinned largely on institutions having a close relationship with industry and the provision of work integrated learning to ensure that graduates experienced the practicalities of working in industry. The essence of technikons lay in their involvement in the development, implementation and practical application of technology (Gillard 2004) and in their ability to prepare graduates for a particular occupation or industry. The DoE (1997) described technikons as offering a career-focused, hands-on approach to education and training, and the construction of graduates with knowledge that was immediately relevant in the workplace. The major**,** and arguably the most important formal distinction between technikons and universities in South Africa**,** was the technikons' focus on vocational qualifications. Subsequently, there has been a drift between traditional universities and technikons, which blurs their distinction, because vocationally oriented programmes have been introduced in a number of strongly discipline-based research universities (Gillard 2004).

When technikons were first introduced to South African higher education, they did not include undergraduate and postgraduate degree offerings, and offered only two-year certificates and three-year diplomas. With the rapid advancement of technology and the growing need for high-level industry-focused programmes, a decision was taken to extend technikon programmes to include undergraduate and postgraduate degrees. It was argued that technikons had clear objectives and a focus that provided a broad variety of learning opportunities to accommodate the needs of a developing economy**.** These institutions also had an ethos of being more "employer-centred" and were continuously striving to make their students more competent, more employable and more directly supportive of entrepreneurial activities and economic growth (Committee of Technikon Principals 2003).

While the term 'technikon' is specific to South Africa, there are similar types of institutions elsewhere in the world, which were commonly referred to as **'**polytechnics**'**. A polytechnic is characterised by "a wide diversity of continuing education, including vocational training, that contributes to the maintenance, advancement, and dissemination of knowledge and expertise and promotes community learning, and by research, particularly applied and technological research, that aids development" (Gillard 2004: 33).

The CTP document*, Position, Role and Function of Universities of Technology in South Africa* (Committee of Technikon Principals 2004) was drawn up to promote the formation of universities of technology**,** argued that UoTs would focus on innovation and development; they would present as a strong partner alongside the more traditional research-oriented institutions. The broad spread of programmes currently offered by most technikons would be retained**,** as it was also argued that a focus on Science and Technology underpinned by Commerce and Business, as well as by the

Social Sciences (Committee of Technikon Principals 2004), was important. The drive for the change from Technikon to University of Technology can thus be seen to have come from within the sector itself.

2.3 The Emergence of Universities of Technology

Universities of technology came into being as part of the major reconfiguration of the higher education landscape, which took place from 2004 onwards**,** through a process of mergers and restructuring of the focus of some institutions. South Africa's thirty-six higher education institutions (twenty-one traditional universities and fifteen technikons) were trimmed down to twenty-three institutions. These comprised eleven traditional universities (some of which were merged with others), six comprehensive universities (arising largely out of mergers between a traditional university and a technikon), and six universities of technology (created from eleven technikons) (Du Prè 2010, Jansen 2004).

The Committee of Technikon Principals (CTP) had already investigated the concept of a UoT type institution as far back as 1997, which meant many of the former technikons supported the emergence of UoTs as they had campaigned for the designation change for many years (Du Pre 2010; Reddy 2006). The technikon movement's requests to the Ministry for permission to become UoTs, focused chiefly on perceptions both national and international, about the name 'technikon'. In their motivation to the Minister**,** the CTP stated that "the name [technikon] still has associations with the apartheid era and the binary system in which it existed" (Committee of Technikon Principals 2003. 961). In addition, the CTP motivated that with the strides towards internationalisation**,** the name **'**technikon**'** could become a "stumbling block" for South Africa (Committee of Technikon Principals 2003. 961). In

2001, the CTP placed a task team to draw up a position paper on universities of technology in South Africa that would petition the DoE to change the name from 'technikon' to that of 'UoT'. In addition**,** the proposed changes would include increased freedom and autonomy with regard to (a) establishing, monitoring and maintaining academic standards and (b) an associated decrease in national control of the curriculum (Cooke *et al.* 2010).

The National Working Group (NWG) was appointed in 2002 by the then Minister of Education Kader Asmal**,** to "advise the minister on the appropriate arrangements for restructuring the provision of higher education on a regional basis through development of new institutional and organisational forms including institutional mergers and rationalisation of programme development and delivery" (Department of Education 2002). The NWG supported the view that universities and technikons should continue to operate as higher education institutions with distinct programmes and mission foci. The NWG did not support the suggestion that technikons be renamed universities of technology. They were of the view, however, that an alternative name such as "Institute of Technology" could be considered appropriate. This nomenclature was adopted first by the Durban Institute of Technology (DIT). DIT was the first technikon to merge and move away from the name "technikon". Subsequent to the DIT merger, other technikons merged and called themselves 'Universities of Technology', the introduction of which was permitted into South African higher education. DIT was later, in 2004, to change its name to the Durban University of Technology.

The CTP further made note of the fact that "it is extremely difficult to explain why technikons are degree-awarding institutions, but are not called universities" (Committee of Technikon Principals 2003). This statement may be seen to suggest

that the status name change could involve nothing more than a renaming of the technikons – after all, both types of institutions at the time of renaming offered degrees.

2.4 The International Experience

Initiatives which brought about shifts in higher education abroad, and which had similar objectives as those that led to the emergence of UoTs in South African higher education**,** should be observed and analysed**.** Such observation and analysis could provide some foresight as to what can be anticipated in the South African higher education context.

2.4.1 The United States of America

Land-grant universities founded in the USA are perhaps the oldest examples of institutions designed to promote access and opportunity through making higher education available to the general public (Department of Education 2004a). The USA government was required by the Morrill Act of 1862, to provide land that could be sold for the establishment of a college in each state of the United States of America. Their original mission and reason for the inception of these institutions has expanded greatly but they are still committed to engaging in basic and applied research (Department of Education 2004a). Similar to the technikons in South Africa**,** the US saw the creation of professional schools that develop a wide range of aspects**,** including vocational, as well as what they term 'career' majors[1], which were in line with each institution's general education requirements. These professional colleges provided tertiary access to students who do not meet the entry requirements for university degrees and thus provided an alternate access routes through these junior or community colleges.

[1] This indicated that these programmes were career-focused fields that led to applied degrees

Community colleges offer a variety of short programmes**,** many of which are of a directly work-related and vocational nature. Added to this are general education programmes that offer students the opportunity to transfer to study university degrees. As with most programmes found at the former technikons in South Africa**,** the vocational direction in the community colleges of America are mostly designed to lead to qualifications that will place the student directly in the workplace. The DoE (2004b) reports on the shifts that further occurred in these American institutions**,** where an increasing number of students looked to transfer from vocational programmes. The response by the American higher education system was to "deepen" the academic components of the programmes to meet the change in needs of the labour market, and to allow for the transfer from these institutions into traditional Universities.

2.4.2 Australia

Universities of Technology were introduced in Australian higher education at the beginning of 1988 (Du Pre 2010). This change in profile occurred in phases and created a new identity for the institutions. The new institutions focused on practice-oriented education with strong links to industry**,** as well as building on a growing research reputation (Du Pre 2010). Effort was concentrated on the merging of institutions which were different culturally, in their organisational structure, and in their approaches to teaching and research. This necessitated movement of staff and programmes between campuses**.** Staff development to strengthen the research culture and establish more consistent approaches to teaching and learning became imperative.

The second phase, beginning in the mid-1990s, saw a strong focus on international student recruitment, combined with an expansion of professional post-graduate

programmes for domestic students. A greater emphasis on both research and flexible learning became priorities during this period.

The third phase began in 2000 with a ten year strategic vision. One major theme was a concentration on research funding, while another was based around enhancements to teaching and learning, and continued entrepreneurial activity.

2.4.3 Germany

Germany has one of the oldest university systems in Europe. Universities of Co-operative Education (formerly known in Germany as the Berufsakademie) have been a success story in the thirty years of their existence. In the state of Baden-Württemberg, there were eight universities of co-operative education operating across eleven campuses. On 1 March 2009, the German state of Baden-Württemberg changed the legal status of the Berufsakademien. The eight institutions are now collectively called Baden-Württemberg Co-operative State University, thereby raising the status of the institutions to ensure national and international recognition. The Baden-Württemberg Co-operative State University is the first university in Germany to integrate academic studies and work experience. Its trademarks are the participation of training companies and institutions, as well as the dual learning principle of studies (Du Pre 2010).

Cerych and Sabatier (cited in Department of Education 2004b) note that low levels of participation**;** a highly segmented and impermeable system**;** too few highly qualified youth and a poor relationship between higher education programmes and employment were the issues that this shift in higher education was supposed to address. Two institutional types were proposed from the shift: co-operative and integrated types, which would see mergers of staff and student bodies. Both institutions would offer short duration vocational programmes and longer duration academic programmes.

According to Cerych and Sabatier (cited in Department of Education 2004b), the implementation of this shift did not fulfil all of its initial intentions and objectives. This was in part due to the federal government not having the power to compel states to set up these institutions (Stumpf 2003). Another reason identified for the lack of fulfilment of the objectives, was the resistance of the older, established universities. Kvale and Brinkman (2008) notes that this resistance could have arisen out of a fear of loss of prestige that may be attributed to merging with other institutions. What was observed in states where these institutions were established, was that large student intakes occurred as entry requirements were lower than for traditional universities and higher than for technical colleges. Integration of courses was observed but was also limited where courses were less status-differentiated and where there was greater ease in moving from one course or institution to another. Staff integration was not very successful as high levels of tension were noted. The challenges confronting staff related to salary scale, teaching loads, academic status and promotion possibilities (Stumpf 2003).

2.4.4 Switzerland

The Swiss Universities of Applied Sciences occupy an influential position in Swiss education, culture and the economy. The majority of Swiss students (around 80%) from Grade 10 onwards complete the rest of their schooling at a technical high school. When students complete Grade 12 and want to enrol for Higher Education, the logical place for that 80% to follow up the technical education they received from Grade 10-12, is at technical Universities, which in Switzerland are the Universities of Applied Sciences (Du Pre 2010). Du Pre (2010) attributes this strongly technical Higher Education system to Switzerland being one of the richest countries in the world. This country enjoys an excellent reputation in high-precision tooling, high beam research,

biomedical research and manufacturing, chemistry, construction, computers, food, banking and investments.

2.4.5 Following the international example

Highlighted in the DoE document (Department of Education 2004a) "*Creating comprehensive universities in South Africa: a concept document*", was the statement that internationally there is no complete institutional fit between the examples that have occurred in other countries and how UoTs will function in South Africa. This is attributed to the unique nature of the Technikons. In this document, the DoE states that although many of these institutions have evolved beyond their original missions and now offer programmes that are similar to traditional Universities, they still possess a strong technological and vocational orientation. The DoE recognises trends of these institutions to emulate traditional Universities and expressed concern as to how this affects the provision of vocational, technically-orientated programmes (Department of Education 2004a).

The Finnish Higher Education system underwent mergers of different institutions in an effort to turn Finland into a 'knowledge' society. These institutional types were distinct from Universities, with a strong orientation towards practical education. The success of these institutions can be attributed to two strategies: significant investment in their technological infrastructure and the strengthening of the general, technological and work placement components of curriculum (Department of Education 2004a).

The Department of Education (2004b) noted that internationally the collaborative efforts within institutions have yielded noticeable results especially in the areas of research and student diversity. They further recognised that the shifts in Higher Education are a process, and with collaboration and support from other individuals, institutions and industries, the change in Higher Education can be a productive

learning experience. Institutions, however, are required to conform to national policies that have been developed and structured to potentially guide processes within institutions, whilst differentiating between institutional types (Department of Education 2004b).

2.5 Higher education structural bodies

The role of policies designed to govern Higher Education cannot be ignored in a study on the shifts that have taken place, as these policies and frameworks aid in the design, delivery and assessment of programmes. The nature and structure of these bodies is of relevance to academics that are the focus of this study, as they are guided by these bodies in their practices. The policies that have governed the emergence of the UoT and outlined their proposed function before these institutions were in operation, are still currently guiding the operations and structuring of the UoTs as they function today.

The South African Council on Higher Education (CHE) is an independent, statutory body established by the Higher Education Act of 1997. The CHE advises the Minister of Education on all matters related to Higher Education. This body also assumes responsibility for quality assurance in Higher Education through the accreditation of programmes and institutions, audits of the internal quality management systems of institutions and quality promotion and capacity building initiatives (Council on Higher Education 2014). Revised approaches to quality and quality assurance were apparent following the establishment of the Higher Education Quality Committee (HEQC) in 200, as a permanent sub-committee of the Council on Higher Education. With the introduction of the CHE and the HEQC, the first national quality assurance body responsible for all types of Higher Education institutions in South Africa, was instituted.

The Higher Education Qualifications Framework (HEQF), which was introduced in October 2007 and published in the Government Gazette No 30353 of 5 October 2007**,** provided for the establishment of a single qualifications framework for Higher Education**.** The function of this body was to facilitate the development of a single**,** national co-ordinated Higher Education system, as envisaged in the Education White Paper 3, *A Programme for the Transformation of Higher Education* (1997). The CHE's expanded mandate as the Quality Council for Higher Education in terms of the National Qualifications Framework Act of 2008 (Act No 67 of 2008) advised Kader Asmal, the then Minister of Education, in April 2007, around "unresolved concerns about the number, nature and purposes of the qualification types", as set out in the HEQF. In light of this advice from the CHE, a review of the HEQF was then initiated in October 2010. This led to the revision of the framework and introduction of the Higher Education Qualification Sub-Framework (HEQSF) which now provides the basis for integrating all Higher Education qualifications into the National Qualifications Framework (NQF). The NQF is the national qualifications framework with an underpinning outcomes-based philosophy.

Despite some misgivings about the wisdom of introducing a framework that would include Higher Education qualifications, agreement was reached on the concept of transparent national standards housed within a qualifications framework. The NQF was legally established to provide for the registration of national standards and qualifications. The passing of the South African Qualifications Authority (SAQA) Act in 1995 created the platform for the development of an education and training system**.** This system was intended to address human resource development, learner-centeredness, relevance, differentiation, redress and learner support**.** The principles of "nation-building and non-discrimination, critical and creative thinking, flexibility,

progression, credibility, and quality assurance" (Allais 2003: 306) were also to be implemented. The SAQA Act (1995) outlined a structural framework including the NQF**,** which had been introduced as a transformative mechanism linking education and training (Allais 2003: 306). This national framework for learning was designed with access, mobility, progression, redress and improved quality as key underlying principles (SAQA 1995). All qualifications offered by accredited providers of education and training**,** including Dental Technology are registered and form part of the NQF. Having described the major national changes that led to the development of the University of Technology, the specific case that is the focus of this study, namely Dental Technology will now be examined.

2.6 Introduction to Dental Technology

The job description of a Dental Technician involves processes associated with the design, manufacture and repair of fixed and removable oral and extra**-**oral appliances and prostheses as prescribed by a dentist, but does not include direct contact with patients (Skea 2010). The restorative process begins with a patient in need of dental restorative care presenting to a dentist**.** The dentist then evaluates the patient's dental needs and should the evaluation require a prosthesis to be manufactured, instructions are conveyed to the dental laboratory in writing. An impression (a negative of the oral cavity) of the section of the oral cavity to be restored accompanies the written instruction. It is from this impression that the prosthesis is constructed. The technician interprets the written instruction and produces a functional and aesthetically pleasing prosthesis. The completed prosthesis is then delivered and charged to the dentist, who in turn fits the prosthesis and bills the prosthetic restoration to the patient.

The history of Dental Technology stems from the history of dentistry**.** The earliest reference to dentistry can be found in Egyptian manuscripts dated 3700 B.C, while the first recorded dentists were the primary dentists to the pharaohs (Skea 2010). In the mid nineteenth century**,** restorative dentistry was limited by the lack of technological knowledge and the high cost involved, as well as the lack of painless treatments.

In 1844 a dentist named Horace Wells discovered the anaesthetic effects of nitrous oxide**,** which resulted in painless dental treatment to the general public (Skea 2010). After the discovery of anaesthetics**,** a further significant discovery was made in Dental Technology. In 1843**,** Charles Goodyear discovered a flexible rubber called vulcanite. By 1851, his brother Nelson Goodyear had developed and patented a manufacturing process to produce the hard rubber (Vulcanite Dentures 2008 as cited in Skea 2010). Vulcanite was both inexpensive and easy to work with, making it an ideal material from which to construct dentures (Skea 2010). This discovery ultimately led to the dental technology industry as we know it today**.** Prosthetic appliances could now be cheaply mass produced and dentists were now free to focus on the clinical aspects of dentistry. In the late nineteenth century**,** technological services for dentists were performed by the dentists themselves or by craftsmen such as jewellers, turners and goldsmiths (Skea 2010). As production volumes increased dentists in the 20th century increasingly used dental laboratories. The first successful commercial dental laboratory was established in the United States of America in 1887 (Skea 2010)**.**

In South Africa, Dental Technology can be traced back to the early 1900s. As was the global norm, until then dentists had produced oral restorations themselves or allowed laymen to produce prostheses in the practice laboratories (Grobler 1977). This was soon followed by then the Medical, Dental and Pharmacy Act of 1928, which regulated the dental profession in the then Union of South Africa. The Act confined the work of

the Dental Mechanician[2] to the laboratory and prevented public contact as well as the prescription of treatment. Owing to the lack of formal education and professional certification at this time, anyone could label themselves a Dental Mechanician (Skea 2010). The Medical, Dental and Pharmacy Act of 1928 did not prevent the expansion of unlawful mechanicians. The canvassing of patients by illicit practitioners was common at the time, due to the economic situation and poor patient education (Skea 2010). This led to the Dental Association of South Africa (DASA) forming a Vigilance Committee in 1929, which resolved to form a register of Dental Mechanicians, control the conditions of apprenticeship to bring restrictions on dentists to employ only registered Dental Mechanicians (Grobler 1977). It was assumed that a voluntary registration of mechanicians would help stamp out the illicit practices.

In the development of organised Dental Technology, dentists dictated the terms of its formation. This situation was not unique to South Africa and occurred in many countries in the world (Skea 2010). In 1929, DASA established a number of regulations for the Dental Technology trade. The formulation of The Dental Mechanicians' Bill was one such regulation. Another regulation was that mechanicians were to undergo official training in the form of an apprenticeship programme, including undertaking an examination for Dental Mechanicians. The introduction of an apprenticeship programme was not welcomed by all Dental Mechanicians, particularly the examination process. The intentions of the dentists were treated with suspicion (Grobler 1977).

In 1932, Dental Mechanicians were scheduled under the Apprenticeship Act (Act 26 of 1922). One hundred Dental Mechanicians had passed the examination and were set for the voluntary registration process in 1932. This number represented only one

[2] Dental Technicians were referred to as Dental Mechanicians at the time.

third of the practising Dental Mechanicians. For the Draft Bill to be implemented by the Minister of Public Health**,** 165 practitioners had to be registered before 1932. As a majority representation was required to legitimate the Draft Dental Mechanicians Bill**,** further examinations were conducted (Grobler 1977). By the end of 1928, the South African Medical Council (SAMC) formed a register which was the Committee for Medical and Dental Education, Examination and Registration**.** This body was assigned the task of drawing up the rules regulating registration. The registration draft rules were as follows**:**

> Any person who has for five years previous to March 3, 1930 been engaged as his sole or principal occupation in the work of dental mechanician and (i) after examination produced a certificate to that effect from a registered dentist, or one from a registered dental mechanician to the profession; (ii) before June 30, 1930 makes application for registration to Council; (iii) produces evidence of good character to the satisfaction of the Council will on payment of a fee of £1 be registered as a dental mechanician as provided in Section 32 of Act 13 of 1928. Secondly, any person who previous to March 3, 1930 has been engaged in the work of a dental mechanician for a period of less than five years and who before June 30, 1930 notifies the Council of the period during which he has been so engaged, will be registered as a dental mechanician when he shall have completed five years employment at such work, subject to the conditions specified above and any person who wishes to be registered as a dental mechanician who has not made application before June 30, 1930 shall before such registration pay such fees and produce such certificate of character and of training and of having such examination as the Council may approve or prescribe.

(Grobler 1977:419 cited in Skea 2010)

The Union of South Africa is believed to have been the first country of the British Empire to open registration of Dental Mechanicians (Grobler 1977). The Dental Mechanicians Act 30 of 1945 made provision for the establishment of a Dental Mechanicians Board (DMB), the appointment of a registrar, registration of dental mechanicians; examinations, contracts of apprenticeship and employment, rules and regulations. This Act also regulated the trade of unmounted artificial teeth and defined acts performed by dentists and mechanicians. The implementation of this Act meant that dental technicians were now protected by law and the profession was now regulated by a professional body**,** the DMB. The significance of this was that only registered dental technicians could practise their profession and those registered could no longer be exploited as cheap labour (Grobler 1977). The Act of 1945**,** however**,** was concerned not only with the education and certification of dental technicians**,** but also with maintaining authority. Due to the relatively high number of dentists and their professional status, technicians were accorded little say in the amendment of the Dental Technicians Act. According to Skea (2010)**,** technicians' limited input in the Dental Technicians' Act 30 of 1945 resulted in them providing little input into subsequent policy decisions. Various iterations of the Act have led to the current Dental Technicians' Act of 1979. Each iteration saw the addition of more detail regarding the qualification and training requirements for dental technicians.

Currently in South Africa, Dental Technicians and Technologists are individuals who have completed training in a South African Dental Technicians Council (SADTC) approved institution. The academic institutions provide the technicians with training in the skills of fabricating corrective and replacement devices and prosthesis for natural teeth and tissues. Dental technology has, however, progressed from a period where

training was provided by dentists, to a now multifaceted qualification with a range of subjects, techniques and materials (Skea 2010).

2.7 The South African dental technology industry

Currently the dental technology industry can be seen to be as experiencing fast paced technological growth and has progressed from the days of mechnicians who were confined to dentist's back rooms to current state of the art dental laboratories with regard to equipment and materials. The growth of the dental technology profession has required a large shift in the normal daily operations of a dental laboratory, from the way laboratories communicate with dentists to the methods and materials used to manufacture prosthesis. Although there is little literature on the current status of the Dental Technology industry in South African, the dental technology industry has seen significant growth and many improvements, especially with regards to working conditions, governance and recognition as a profession. A number of issues however still remain unresolved within the Dental Technology industry. These issues include but are not limited to tariff of fees payable in respect of work done, fluctuation in salaries, introduction of clinical dental technology and a review of the Dental Technicians Act of 1974 in 2016.

2.8 The Dental Technology academic programme

The formal training of Dental Technicians progressed from the apprenticeship programme of 1945 to a Higher Education qualification in 1979. Since Dental Technology was introduced into Higher Education, Dental Technology has seen a significant increase in recognition as a profession. Even with this recognition and

industry growth, however, Skea (2010) suggests that Dental Technology has yet to gain fully fledged professional status.

When Dental Technology training moved formally to the domain of the Technikons, the structure and nature of the Dental Technology programme was described in the Dental Technicians Act 19 of 1979. Whilst the programme is still governed by the Act 19 of 1979 the programme offered today is different from that legislated in 1979. The programme was designed as a vocational three-year diploma programme, consisting of three years of full time study and a year of experiential training in a dental laboratory. At the time of first offering, all diplomas were 'National Diplomas' because the curriculum was centrally developed within one institution. All institutions, however, did have their input under the convenorship system and all Technikons offering the programme were required to adhere to the same curriculum. On completion of the year of experiential training, learners then sat for a national professional examination which if they passed, allowed them to be registered as practicing Dental Technicians (Bass 2007).

A National Higher Diploma was later introduced to the Dental Technology programme; this was an additional year of study. In 1997 the Dental Technicians' Act of 1979 was amended to make provisions for a postgraduate qualification[3]. The year of experiential training was discarded. A one-year Bachelor's degree (B-Tech) in Dental Technology was introduced. A licensing provision was introduced. Learners successfully completing the three-year diploma programme were allowed to work only as employees in dental laboratories, whereas B-Tech students were allowed to own and manage their own laboratories (Dental Technicians Act of 1979, section 18 as

[3] The implementation of a postgraduate qualification has been somewhat problematic, given the ways in which University of Technology qualifications are structured in the National Qualifications Framework, as is discussed later.

amended in 1997). In addition to the Bachelor's degree, a Master's (M-Tech) as well as a Doctorate degree (D-Tech) were introduced into the programme. The 1997 restructuring of the Dental Technology diploma and B.Tech is still in place today at the three Universities of Technology that offer the programme, all of which are included in this study.

Currently Dental Technology is offered at three UoTs in South Africa, namely Durban University of Technology (DUT), Tshwane University of Technology (TUT) and Cape Peninsula University of Technology (CPUT). In addition to the current institutions offering the programme, Dental Technology was also originally offered at the Wits Technikon. The three institutions that offer Dental Technology are now at liberty to develop their curriculum without having to rely on the National Curriculum. Each institutions' syllabus, however, must still comply with the syllabus regulations contained in the Dental Technicians Act of 1979. Curriculum collaboration by institutions offering the same programme is now on a voluntary basis and currently has occurred regularly. In all three of the institutions that offer Dental Technology, Applied Dental Technology is the only laboratory-based subject and assessment in this subject includes a practical laboratory examination at the end of each year. In the third year, a final exit level practical exam is conducted**,** as regulated by the SADTC. Other subjects are lecture based and delivered by the academics responsible for that particular subject.

The current qualification structure in all three institutions is inclusive of a fourth year Bachelor of Technology (B.Tech) degree. Despite the 1997 amendment to the Dental Technicians' Act allowing for a postgraduate qualification, the Higher Education Qualifications Sub-Framework (HEQSF) (2011) positions the present B.Tech: Dental Technology as an undergraduate degree and it is funded as such. With the current

shift in Higher Education, coupled with the emergence of UoTs, further proposed restructuring has been discussed for the Dental Technology programme. Bass (2007) explains that whenever a decision is taken to restructure a programme, significant curriculum change is involved. The institutions in this study are currently engaged in deliberations regarding the re-curriculating of the diploma into a 'professional bachelor's degree'. This has implications on the qualification requirements of academic staff (an issue that emerged repeatedly in this study, and will be discussed later), and on their ability to restructure and deliver the kind of knowledge identified in the HEQSF. The knowledge requirements for the degree qualification are fundamentally different to those identified for the diploma. The Dental Technology programme would be required to take a more theoretical stance, as in traditional universities, over the practical-based programme that Dental Technology currently is.

A shift from diploma to professional degree will also have implications for student intake, as the national entrance requirements for a diploma are significantly lower than those for a degree qualification. In line with the autonomy the institutions now enjoy, out of the three institutions that offer Dental Technology, only two are in the process of applying to offer a professional degree in the programme and one institution intends continuing to offer their existing diploma in Dental Technology.

2.9 The advancing industry and dental technology education

With the advancements in dental technology education and the inception of a variety of new equipment and materials, the current state of dental technology education has advanced since the Technikons. There has been a significant shift in the type of equipment and machinery now used in dental laboratories, with each new type of

equipment seeing an upgrade almost on an annual basis. Dental technology suppliers and manufactures have made it easier and quicker to produce most dental prosthesis.

Lecturers in dental technology have to advance with the technology movement of the dental industry by ensuring they deliver industry relevant content both technologically and theoretically. Lecturers can longer rely merely on the current state of knowledge they possess to deliver the dental technology programme as this would be a disservice to the students, who enter a different laboratory environment than their lecturers did. As with the shift from diploma to a degree the qualification or competency of the academic staff to deliver these objectives must be interrogated. Lectures should be assisted in maintain industry relevance, in terms of qualifications and now competency.

2.10 Summary

This study's focus is not on the proposed change from diploma offering to degree offering, nor is it a study of the curriculum**.** Nevertheless in undertaking a study to look at the discourses constructing Dental Technology academics' identities and experiences of institutional shifts, issues around qualification type emerged. The detailed discussion of the national Higher Education context and the history of the Dental Technology qualification, provide a framing for the later discussion of the data. Before turning to such an analysis, however, the key theoretical concepts underpinning this research are discussed in the next chapter followed by an outline of the methodology I have employed**.**

CHAPTER THREE: CONCEPTUAL FRAMEWORK

3.1 Introduction

As this study aims to understand the discourses by which academics construct their identities in a UoT, it is important to understand what discourses are and how they contribute to the construction of an individual's identity. After discussing the concepts of discourse and identity, the discussion will specifically address academic identity and what contributes to the construction of an academic identity.

3.2 Discourses

This study's focus on discourse is premised on the understanding that language contributes to how we perceive reality. The term **'**discourse**'** implies an interaction between linguistic form and social communicative practices (Gee 1992). The language we use to discuss ideas, actions, beliefs and experiences is influenced and affected by the same events. Fairclough (1992) and Gee (1992) describe discourse as oral and written text that can be examined after it has been written or spoken**,** as well as social practices that are constructed within each moment of interaction. Furthermore, discourses are value laden as they reflect ideologies, beliefs and social practices.

An individual's being is partly determined by the domain and context in which communication occurs, as discourses are constructed through spoken and written language**.** There has to be, at some level, an understanding between the individuals in communication. The development and construction of an identity in this manner, between individuals in communication, is described by Gee (2000) as discursive identity**.** He states that one's discursive identity is determined by the source of one's identity. While discourses have an effect on how individuals perceive themselves**,** they

do not exist only within individuals but within different communities as well. Communities will draw on different discourses to communicate their view of the world. Within a discourse community, distinctive ways of being and doing are required to allow people to engage and/or recognise a specific and distinctive socially-situated identity (Gee 2000). Discourses have also been described in literature as 'registers', 'codes' (Bernstein 1999, 2000) or 'social languages' (Gee 2000). Gaining acceptance into a discourse community requires an individual to understand the rules for that community, as well as the specific kinds of language and practices unique to that community. Those entering a discourse community do so through practice and the use of the rules governing that specific kind of discourse. With greater knowledge and use of a discourse, individuals are able to gain increasing legitimacy within that community (White and Lowenthal 2011).

Academic communities are also seen through such definitions and it can be said that being an academic involves not only learning to talk in a particular way, but also involves learning the beliefs and values of being an academic (White and Lowenthal 2011). Academics have built their discourses around many factors, such as their disciplinary norms and values. Academic discourses are also, at least in part, established through the institutions where academics engage in such communities (White and Lowenthal 2011). Thus, the discourse community of Dental Technology has its own set practices and language which afford legitimacy to those who belong to the community. The merging of discourses allows individuals to stay recognised in different contexts. These discourses co-exist in individuals. In this study, the academics draw on the discourses of the Dental Technology industry and academic communities in their everyday work identities. The conventions around being an academic may require review, as they may have been altered or challenged with the

emergence of UoTs. This study considers the ways in which these identities co–exist and whether the institutional transition to UoT has had implications on the ways in which these identities co-exist.

The boundaries of discourses, however, allow for change when challenged, as can be seen with the emergence of UoTs which propose change in South African Higher Education. With institutional re-structuring, academics are in a position to hold on to old discourses or explore, resist and establish new discourses. In the exploration of new discourses, individuals may choose to accept new boundaries and abide by the new conventions or resist changes and risk falling out of what is considered socially acceptable.

3.3 Constructions of Identity

Every individual has his or her own identity that defines him/her as a person. The construction of this identity is built up over time from past experiences, current situations and future aspirations (Gee 2000). The construction of identity has been discussed in many writings and has been considered from different understandings in the literature. Through self-evaluation over time, identity is continually informed, formed and reformed, as individuals develop and interact with others and as situations are experienced and anticipated (Wenger 1998). Henkel (2005) describes the construction of identities as being shaped and reinforced in and by strong and stable communities, and by the social processes which occur within those communities. Taylor (1989) concurs with Wenger (1998) and Gee (2000) but gives more recognition to individual choice in the construction of identity. They all, however, acknowledge the importance of a defining community for the process of identity construction. Mulhall *et*

al. (1992) and Taylor (1989) give one function of such a community as providing the language in which individuals understand themselves and interpret their world.

Gee (2000) suggests that humans have multiple identities related to our many societal roles. This study draws on the constructions of identity outlined by Gee (2000) (shown in Table 4 below), where he sketches out four approaches to understanding identity construction. Gee describes these approaches as defining what it means to be a certain kind of person**.** He defines identity as "the kind of person one is recognised as being, at a given time and place". Whilst all four approaches are used to form an individual's core identity, it is vital to understand that these perspectives of identity are not separate from each other. The approaches are different aspects of how identities are formed and sustained. These perspectives of identity have states of power that determine them and to which one is subject within each respective approach of an identity.

Table 1: Four perspectives on identity (Gee 2000: 3)

Process	**Power**	**Source of power**
1. Nature-identity	A state developed from forces: *We are what we are primarily because of our natures*	In nature
2. Institution-identity	A position authorised by authorities: *We are what we are primarily because of the positions we occupy in society.*	Within institutions
3. Discourse-identity	An individual trait recognised in the discourse/ dialogue: *We are what we are primarily because of our individual accomplishments as they are recognised by others through interaction.*	Of /with "rational" dialogue individuals
4. Affinity- identity	Experiences shared in the practice: We are what we are because of the experiences we have had within certain sorts of affinity groups**.**	Of "affinity groups"

The nature perspective in Table 4 above refers to a state of identity over which an individual has no control and has done nothing to accomplish. An example of this nature perspective would be sex or race. The power of this identity is derived from nature**.** Society then imbues this with meaning. The process through which this power unfolds is outside of an individual's control (Gee 2000). This study does not seek to explore the identity from the 'nature perspective'**.** Within an institution of higher education, however, this perspective of identity certainly holds relevance**,** as academics of a certain gender or race may construct or be constructed in their position or role differently from others.

The institutional perspective on identity refers to one's position within society, usually determined by an authority outside of oneself. Henkel (2005) and Archer (2008) describe a similar notion that contributes to identity**.** They refer to this perspective as 'community' and to the positions recognised within a community. The interpretation of this word may differ in different writings, Quigley (2011) interprets the term "community" as being the 'who' 'what' 'where' and 'when', and as a means for describing a collection of individuals who possess similar goals, values and interests. The understanding given by Henkel (2005: 157) will be used in the context of this study. She asserts that "identity is constructed within the context of social institutions and relationships, it is shaped and reinforced in and by strong and stable communities and the social processes generated within them." Gee (2000) explains that the process through which this power works is authorisation, that is, laws, rules, traditions, or principles that allow the authorities to confer qualifications and positions to individuals which then allows the individual rights and responsibilities in accordance with that position.

The third perspective on identity suggested by Gee (2000, Table 4 above) is the discourse perspective, which holds that who an individual is, is primarily because of individual accomplishments and how these are recognised by others. The source of this power is neither from nature nor an institution, but from rational individuals. By **'**rational**'** Gee (2000) implies that these individuals talk about, and interact with each other for specific reasons and not because they are compelled to do so by any external factors or authority. The process through which this power works is recognition **–** the fact that rational individuals recognise an individual as being a certain type of person through their interaction with that individual.

If a particular discourse values a particular kind of identity, then that identity would be rewarded. For example, in the technikon era, academics with stronger links to industry were valued and were more likely to be hired and promoted (Boughey 2010, Winberg 2005). This was because of the discourse privileging industry expertise and experience (Reddy 2006). People draw on collectively available discourses to indicate what they value or devalue about individuals and this then reinforces these discourses. Institutional identities require discourse and dialogue to sustain them. Gee (2000) makes clear that roles take on specific meanings within specific social contexts. For example, if no one talked about and treated professors as they do, the community would not see their value as such.

The fourth perspective of identity described by Gee is that of affinity. Affinity describes like-mindedness. An affinity group is made up of people who share "an allegiance to, access to, and participation in specific practice" (Gee 2000: 12). This perspective requires each of its members to have some sort of mandatory experiences to be a part of that group. An individual chooses to be a part of the group**,** therefore the power that determines this affinity identity is a set of characteristic practices. The process through

which this power works is participation or sharing**.** These individuals may not know each other**,** but are able to participate in and share the experiences on the particular subject common to that group.

Quigley (2011) and Gee (2000) acknowledge that an individual's identity can change from moment to moment in the interactions in which they may find themselves. Identity can also change from context to context and can also be vague or unstable. Wenger (2002) argues that identity can be understood through the practices with which one engages, where Identity is understood not as a fixed property, but as part of the lived complexity of a person's development. With this understanding in the literature**,** it can be seen that identity cannot be summed up in one simple sentence**. I**t can be said that the notion of identity is a constantly shifting target, which differs for each individual and which is theoretically complex.

One cannot have an identity of any sort without some interpretive system underwriting the recognition of that identity (Taylor 1993). The interpretive system may be peoples' differing views of nature**,** it may be the norms, traditions and rules of institutions**,** it may be the discourse and dialogue of others, or it may be the mechanisms of affinity groups (Gee 2000). Individuals are subject to the sources of power which construct these interpretive systems. If these sources of power are at a constant flux**,** this has implications for the discourses of identities.

3.4 Academic Identity

An understanding of academic identity, its construction and transformation, is important in the exploration of discourses and the ability of academic staff to transform to the institutional shift from Technikon to UoT.

The landscape of Higher Education, like any other field, is not fixed but constantly shifting, evolving and changing. Likewise, the meanings associated with being an academic and what constitutes academic work are always in development (Archer 2008). If the work an individual does has influence on his/her identity, academics in tertiary institutions are constantly finding themselves adapting to new situations and methods of working. Thus, if academics find themselves in a place of uncertainty or instability in the work place, this will have an effect on their identities (Henkel 2005). In the shift from Technikon to UoT**,** the name change in itself triggers a different kind of thinking in people's minds about the type of institutions technikons have now become.

Henkel (2005) argues that a key aspect of academic identity is that of 'autonomy' or the ability to determine for oneself what research projects one undertakes and even to determine how one's time should be spent. Given the constraints of the Technikon environment, which was quite tightly controlled with a largely prescribed syllabus and heavy teaching loads, it is unclear that autonomy was much associated with the identities of academics at the time (Boughey 2010, Winberg 2005).

Henkel (2000) also indicates that the notion of being a 'professional' is key to academic identities. Where a profession is interpreted as an occupation in which members control their own work (Freidson 2001), some occupations may find themselves not fully recognised as professions. To obtain recognition as a profession, these occupations may use strategies to bring them on a par with the recognised professions, such as raising the qualifications bar for potential members of those fields. The Dental Technology profession may very well find itself in this situation. This aspect is discussed further in this study, as is the influence it has on the identity of the academics.

Many Technikon academics transferred directly from industry, and their expertise was relevant in the Technikon environment. They possessed years of working experience in their particular professions and identified strongly with the values and ethos of their profession. With the shift to a University of Technology and the introduction of new titles and qualifications, academics from the Technikon era may now be required to construct themselves somewhat differently. As discussed in the institutional perspective of identity, these titles and qualifications bring with them certain roles, expectations and discourses that might be very different from the roles with which they were familiar.

Clegg (2008) and Barnett and Coate (2005) argue that the massive policy changes in Higher Education around the world have fundamentally changed the role of Universities and thereby, the identities of those who work within such institutions. Their concern is with the increasing demands made on traditional Universities, in that they are expected to provide skilled workers for economic growth, produce knowledge that can solve real-world problems and lead to profit as well. The shift from Technikon to UoT may be considered to be a different kind of shift in Higher Education to the one argued by Clegg (2008) and Barnett and Coate (2005) immediately above, however, the effect of institutional identity on academics remains pertinent to this study.

Academics are consistently scrutinised as teachers by students, as workers by management/administration, as researchers by their peers and as a critical voice by the broader community (Churchman et al 2009: 513). They therefore need to be confident about their academic identities, as well as have a clear indication of their role and position in Universities of Technology. Becoming a UoT has had significant implications for the identity of academics.

The structures in which individuals operate, possess the potential to either constrain or enable them. Academics' reactions to change can be manifested in different ways. Archer (2008) suggests that three different fundamental stances towards constraint or enablement are possible, namely evasive, subversive and strategic stances. These can either enable or constrain academics as they attempt to pursue their various 'projects', from teaching and students, undertaking research, constructing knowledge, linking with industry and other practices academics generally engage in and pursue, as they seek to establish and understand their identities as academics.

One way of preserving an academic identity is either to minimise or avoid confrontation and challenge, which can be achieved by confining interactions to those who share that identity, or to remain in isolation (Henkel 2000). Academics could choose to engage in dialogue only with individuals whom they know have similar views and discourses. This is an evasive stance that academics could adopt to preserve the identity in which they have become accustomed (Trowler and Cooper 2002). A subversive stance could be adopted, where academics display a withdrawal of intellectual labour and a lack of ownership and commitment to work practices. Some academics, however, may look forward to the opportunity to re-evaluate their academic identity within the institutions and may see this institutional shift as an opportunity for growth and development, thereby adopting a strategic stance to the new institutional environment (Trowler and Cooper 2002).

This chapter has discussed the nature of discourses and the view that they can be seen as socially shared ways of thinking, talking and believing. Under the new institutional landscape, Higher Education institutions are in the process of defining their identities. Academics identities will be actively challenged, shaped and developed in response to these changes. This study explores the issue of discourse and

academic identity, and more specifically, the ways in which institutions and people within those institutions “work to construct and sustain a given Discourse” (Gee 2000:111) The discussion now turns to the methodological processes followed in this study.

CHAPTER FOUR: METHODOLOGY

4.1 Introduction

This chapter discusses the paradigm, approach and methodology of this research study, and reasoning for the selected methods employed in both data collection and analysis. This investigation explores the discourses through which academics construct themselves and their work, amidst the shift from Technikon to University of Technology. Transcriptions of interviews conducted between 2012 and 2014 were used as data from which to analyse discourses previously identified in the research literature and those that emerged through the research process. The chapter begins with a description of the various research paradigms and then gives an overview of the interpretive paradigm within which this study was framed. It then moves on to a discussion of the processes of data collection and analysis used in the investigation to explore the research questions this study aimed to investigate, which are :

1. What are the discourses by which Dental Technology academics construct their identities in a UoT?
2. What are the discourses by which academics construct the shift from Technikon to UoT?
3. What are the possible implications of these constructions for Dental Technology teaching and learning?
4. What are the implications of these constructions for the Dental Technology industry?

4.2 Research Paradigms

Paradigms can be described as sets of beliefs that guide action and frame the ways in which we view the world and how we exist within it (Guba 1990; Denzin and Lincoln 2005). Cohen, Manion and Morrison (2009) describe research paradigms as providing a frame for addressing the research question and directing the researcher with regard to methodology and analysis.

McKenna (2004) defines paradigms as reflective of a system of thinking and practice that directs the research's ontology, epistemology and methodology. This study was informed by this definition of paradigms. Hughes and Hitchcock (2001) define the use of the word 'ontology' as referring to issues of being, and 'epistemological questions' as those questions that interrogate knowing, and the nature of knowledge. He further defines methodology as a theory or analysis of how research should operate. Hughes and Hitchcock (2001) explain that ontological assumptions of 'being' give rise to epistemological considerations of 'how we know'. These, in turn, will direct methodological considerations, which has implications for the selection of specific data collection techniques.

In any study, the researchers' beliefs and points of view allow them to be distinctive in the understandings and interactions with their surroundings, which result in a difference in the methods of conducting research. The researchers' actions and beliefs, however, have to conform to standards and procedures understood and recognised by the global community. Lather (1991) refers to four research paradigms that may guide research processes: positivist, interpretive, critical and post-structural approaches. She further states that it would be misleading to say that paradigms have firm boundaries between them, as they share commonalities.

The distinction between paradigms is in the understandings of the nature of reality. For example, whether the notion of academic identity is viewed from a constructivist or a positivist point of view, it is likely that this will lead to opposing views about identity. Work in the constructivist paradigm rejects the traditional epistemological claims which see knowledge as an objective representation of reality, but are rather concerned with the interaction with a wide range of knowledge and its construction of reality (Teddlie and Tashakkori 2009). Because positivists are concerned with observable facts, such notions of identity as a socially constructed shifting plurality would be problematic. For the positivists, identity may be more about what methods would best allow academics to achieve their goals, whereas for a constructivist, identity is likely to be perceived as a contextual and highly contested space where together, academics construct their identities. This study takes a more 'middle-of-the-road' approach and employs an interpretive paradigm. It is to the interpretive paradigm that the discussion now turns.

4.3 Positioning this study in a Research Paradigm

The purpose of research in the interpretive paradigm is to understand a specific context as it is. In this paradigm**,** reality is seen, at least in part, as a construction which is relative to its context. Practically**,** this paradigm is concerned with the generation of knowledge in the form of explanatory understanding which can inform and guide practical judgement (Terre Blanche, Durrheim and Painter 2006).

In common with the other post-positivist paradigms, this paradigm does not attempt to generalise or replicate. The focus of this paradigm has shifted from the prediction and generalisation of positivist research**,** to interpretation (Terre Blanche, Durrheim and Painter 2006). This is not to say the findings of this study have relevance only for the three institutions that participated in the study**,** nor for the academics working in Dental

Technology programmes at these institutions only. If the findings of the study were entirely contextually bound, they would have no validity**,** or possibly even interest beyond those directly involved in the study context. Instead this study argues for 'moderatum generalisation' (Payne and Williams 2005)

Moderatum generalisations in a study are moderate generalisations that most resemble the everyday generalisations of the lifeworld in their nature and scope**.** It is possible, however, to express them formally. It is the understanding that while context has enormous bearing on how events occur and are experienced, modest and pragmatic generalisations in a study are desirable (Payne and Williams 2005: 296). Such generalisations should be moderate and open to testing in other contexts. It is envisaged that the findings in this study will not lead themselves to sweeping statements about academic identity and institutional change**,** or to the ways in which these impact on vocational programmes. It is anticipated, however, that the findings may well be of interest and relevance to similar contexts across different programmes**,** or even different countries and might highlight issues for consideration in such different contexts**.**

Another characteristic of the interpretive paradigm is the belief that no research is value free or objective in nature (Vorster and Quinn 2015). This guides the research design to collect data from those who have experienced the phenomenon being studied and to consider deeply the words the participants use to describe their experiences.

The interpretive paradigms' ontological assumption is that, as opposed to just one, a number of social realities exist for each individual and the experience of truth is unique to each individual. This is not to deny the existence of a physical reality beyond the multiple experiences and interpretations of such experiences. This paradigm simply foregrounds the concern with how the participants construct their own social reality. In

order to engage or identify these realities**,** an understanding is required of the participants' daily experiences as well as a consciousness of the numerous meanings to routine and difficult events in a particular setting.

The ontology of this research is therefore concerned with the discourses which Dental Technology academics use to construct their identities in the setting of a UoT, subject to their experiences as academics and Dental Technicians. As reported by Powell (2010)**,** the epistemological assumption of the interpretive paradigm suggests that an interpretation of the discourses that academics use to construct their identities can only be interpreted from the views of each individual participant. As the data required in this study is embedded in the respondents' knowledge of past experiences with the subject matter, to obtain this knowledge, interaction between the researcher and the respondents is necessary**.** This interaction takes place through a qualitative interpretive methodological approach.

The interpretive paradigm framed the data collection process of this study with the use of semi-structured interviews to gather data. Terre Blanche, Durrheim and Painte (2006) describe a good interpretive account as showing what the world is like from a particular perspective, while at the same time drawing attention to its status as a perspective. This interpretive account leads to what is described as the "nominalist–realist" debate. The nominalist believes that it is the individual consciousness that gives meaning to reality**,** while in contrast, it is the opinion of the realist that reality exists independently of the individual consciousness (Cohen, Manion and Morrison 2009).

This study takes the position that academics construct their identities and their work within the institutional types in which they operate. A focus of this study is an understanding of Dental Technology academics' constructions of reality in a new

institutional landscape**,** is a focus of this study. The practical interest of the interpretive paradigm relates to the desire to take “the right action within a particular environment” (Grundy 1987:13). The discussion now turns to the research process followed in this study.

4.4 The Research Process

Since the 1980s**,** qualitative research methodologies have become more prominent and stress “the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry” (Denzin and Lincoln 2005: 10). Using this approach**,** the researcher is able to explore issues with openness, depth and detail (Durrheim and Wassenaar 2004) and to understand not only what happens, but also how and why it happens the way it does (Henning, Rensburg and Smit 2004). The qualitative approach involves sampling, developing study instruments, collecting and analysing data, and checking the validity of the findings.

The selection of the sample size in this study was based upon the purpose of this study, which was to conduct an exploration of Dental Technology academics’ discourses on the emergence of UoTs. It is important to carefully consider the groups that form part of the study. For this study**,** nonprobability purposive sampling was employed as the study is very specific to the type of respondents required**.** The respondents**’** knowledge of the topic is imperative. “Nonprobability sampling refers to any kind of sampling where the selection of elements is not determined by the statistical randomness” (Terre Blanche, Durrheim and Painter 2006). Purposive samples were selected**,** as this sampling depends not only on the availability and willingness to participate, but also on the premise that selected cases are typical to

the population (Terre Blanche, Durrheim and Painter 2006). The sampling was purposeful in that the study was looking for Dental Technology academics only.

At the Universities of Technology, the Dental Technology academics are responsible for delivery of the Dental Technology programme. Shifts in the institutions have implications for academics' practices within the institutions, as well as their identities and their discourses about being (and becoming) in a UoT. All three institutions offering Dental Technology in South Africa were included in the study. The sample size, although small, is representative of the number of academics who hold academic posts in Dental Technology programmes. The small sample size and its delineation to Dental Technology only, limits the ability to make broad generalisations about institutions and academics. The use of data collected from a small sample allows the researcher to explore how these specific Dental Technology academics discursively construct their work and identities, and thereby make sense of their individual understanding of the emergence of UoTs.

The data source for this study was interviews. The data was analysed by means of a discourse analysis of the transcripts from the interviews, in terms of the emerging discourses. In the remainder of this chapter, each step in the research process is described in an attempt to make transparent the methodology of this study.

4.5 Data Collection

Documentation was a source of evidence that was utilised in this study. Noor (2008, cited in Powell 2010) explains that documentation is evidence that allows the verification of information gathered in interviews. Documents used in this study

included past and current National Education Policy documents, Technikon regulatory documents and institutional policies.

The primary data source, however, was interviews with Dental Technology academics. Prior to undertaking these data collection interviews, pilot interviews were conducted with two academics in the Department of Emergency Medical Care and Rescue (EMC) at the Durban University of Technology. This department was chosen because it is in an allied field, existing as it does within the Faculty of Health Sciences, and additionally because the academics would have experienced the shift from Technikon to UoT. The pilot interviews assisted with refining the semi-structured interview questions, and gave the researcher an opportunity to develop interview skills. The pilot interview was important as it gauged how well the data required for this study could be effectively collected. The pilot was also an opportunity to test the audio equipment and quality of the recordings. These interviews were followed by brief discussion with the pilot participants to get feedback on the researcher's interviewing skills and the clarity of the questions.

The participants in the pilot study were keen to participate and believed that the transition from Technikon to UoT had led to major shifts in their work environment and on the expectations of them. The pilot interviews were not included in the data analysed in the following chapters, but there were substantial overlaps in the issues raised across the departments of EMC and Dental Technology. This may suggest that the findings in this study have bearing in other similar contexts.

As the participants in the study were not randomly sampled, the study does not intend to represent a generalised picture of UoT discourses. Instead this study aims to honestly reflect some of the discourses about UoTs that do exist**,** and attempts to

consider how these interact with the discourses academics use to construct their identities. The unit of analysis focuses on the individual academic within their context.

In total, fifteen interviews with Dental Technology academics were conducted. DUT engaged seven academic staff members with whom interviews were conducted, three academic staff members were interviewed at TUT and five interviews were conducted with CPUT academic staff members.

The aim was not to make comparisons between the institutions that offer Dental Technology**,** but rather, as the unit of analysis chosen will depict, to focus on the individual academic within his or her specific context. The objective was neither to make generalisations across the institutions**,** nor was it to explore the role that curriculum and professional issues play in individual responses. Furthermore the aim was not to focus on the number of individual factors such as race, gender, or age. This is not to deny the ways in which such factors may affect the discourses called upon by academics to construct their individual identities, but rather that such specificity was outside of the scope of this study.

The identities of the institutions is public knowledge because Dental Technology is offered only at Durban University of Technology, Cape Peninsula University of Technology and Tshwane University of Technology. However, the relevant ethics committees have been assured that the actual data quotes would not be tied to any particular institution. The concern in this study is not with commentary on any particular programme or institution, but rather with a broad view of how the institutional shifts have affected the academics' identities and sense of their work.

Academics at all institutions were contacted via their Heads of Departments or Programme and asked if they were willing to participate. They were then asked to identify the most suitable time and place for them, in which the interviews could be

conducted. Interviews at DUT were conducted in early 2013**,** according to the availability of the academics. Interviews with TUT academics were conducted in May 2014 at Tshwane University of Technology. Interviews with CPUT academics were conducted in June 2014. Ethical clearance to DUT academics was obtained alongside the proposal approval process as I am an academic in this institution, whereas in the other two institutions, further approval processes were required.

An informed consent letter was signed by academics who agreed to participate in the study (see Appendix A). The interviews were semi-structured, with an open-ended interview structure (see Appendix B). This allows for richness of data as open-ended interviews enable us to collaboratively make "audible and visible the phenomenal depth of the individual subject at the centre of our shared concerns" (Terre Blanche, Durrheim and Painter 2006). All interviews were recorded and transcribed**.**

The researcher made the decision to transcribe the pilot interviews**.** On completion**,** a decision was made to employ the services of a transcriber. Four interviews were sent for transcription**.** These were returned incomplete several months later. The services of another transcriber**,** who transcribed all the interviews including the initial four was then utilised. These practical issues had to be attended to so that the integrity of the final transcripts could be maintained.

4.6 Data Analysis

A discourse analysis was the data analysis method employed in this study. The role of discourses adopted in this study, as discussed in Chapter Three, was to investigate how academics construct and make sense of their identities in the institutional setting in which they now find themselves. As previously discussed, discourse analysis is a

sociolinguistic approach and from this perspective**,** talk is not "merely about actions, events and situations, but also as a potent and constitutive part of those actions, events and situations" (Potter and Wetherell 1987: 21).

NVivo software was utilised as a data management tool for the discourse analysis. The use of NVivo software allowed for easier coding of the transcripts and organisation of quotes descriptive of the discourses identified.

Gee's (2011) guidelines for discourse analysis were followed and adapted to the context of this study. Gee (2011: 5) argues that "no one theory of discourse analysis is universally right or universally applicable." He indicates that any study of language-in-use requires the researcher to take from and adapt available discourse tools.

In particular, and in keeping with the study**'**s concern for identity, the use of the 'The Big "D" Discourse Tool' was utilised, which Gee (2011: 201) explains thus:

> For any communication, ask how the person is using language, as well as ways of acting, interacting, believing, valuing, dressing, and using various objects, tools, and technologies in certain sorts of environments to enact a specific socially recognizable identity and engage in one or more socially recognizable activities. Even if all you have for data is language, ask what Discourse is this language part of, that is, what kind of person (what identity) is this speaker or writer seeking to enact or be recognized as. What sorts of actions, interactions, values, beliefs, and objects, tools, technologies, and environments are associated with this sort of language within a particular Discourse?

The issues that emerged in the literature review were taken into consideration**,** such as the South African Higher Education context, the policy documentation around shifts in institutional type, the concept of academic identity and the nature of Dental Technology as both a profession and a vocational programme. As the data was

reviewed, a number of the issues raised in the literature were evident in the data, and loose coding of those issues was undertaken.

These steps resulted in hundreds of codes on NVivo, which were then grouped in terms of overlap. It was also clear that not all issues could be discussed in this thesis**,** therefore prominence was given to the most significant issues discussed in the data. Gee (2011: 6) argues that when engaged in discourse analysis**,** attention must be paid to all details that are "arguably deemed relevant in the context where the speech was used and that are relevant to the arguments the analysis is attempting to make."

A degree of difficulty was experienced in selecting which of the many issues raised were most relevant to the focus of the study. A further difficulty presented itself in determining how to analyse these concerns as discourses, and not just as a series of 'issues'. In all cases the question asked was**:** what meaning does the identified discourse have in cultural, political and social terms (Fairclough 1992; Gee 2011), and what power or effect might the discourse have on the academics in the study?

4.7 Validity and Reliability

Terre Blanche, Durrheim and Painter (2006) suggest that unintentional errors due to the misunderstanding of questions are among the reasons for incomplete data. An assumption was made in this study that the respondents had no reason to provide misleading information while conducting these interviews. The trustworthiness of the data was enhanced by assurances that their identity would not be revealed and that no data would be ascribed to a particular institution.

Any possible misunderstandings were minimised by introducing and explaining the topic prior to commencement of all interviews. The semi-structured interviews also

allowed for re-phrasing of questions in situations where it was evident that participants did not understand the question.

Lather's seminal text on validity (1991) identifies four ways in which consensus in the analysis process can be achieved:

1. Use of multiple sources and methods, and triangulation of these.

Data was elicited from academics across three different universities. The data is primarily from interviews. This spread is not for the purposes of generalisation but rather to provide a fuller picture. While triangulation has been indicated as a means of reducing bias and improving validity, it "implies that there is only one true social reality, and researchers simply have to decide on the most appropriate methods to measure or describe it" (Arksey and Knight 1999: 24). In this case, the inclusion of the three institutions was not to ensure validity by cross-checking, but rather to ensure validity by achieving a broad range of perspectives.

2. A check on the validity of constructs by constantly looking for the weak points of theories being used. In this study, a literature review helped to identify some discourses that academics may use to construct their identities. This literature was utilised to construct the semi-structured interviews.

3. Establishment of face validity by recycling findings back to participants in the research process for verification. This was especially difficult given the subtle nature of discourses in general and the unconscious nature of identity discourses in particular. Aspects of this research were presented at a national conference in 2012 and feedback from that was taken into account.

4. An attempt to establish action through the research. As this is interpretive research, the objective was less about moving the participants towards action and more of

attempting to deconstruct discourses in the hopes of increasing awareness. The aim of this study is to raise an awareness of the extent to which the Higher Education context at UoTs constrains and enables academic identities.

The data analysis process is guided by the research intentions. The analysis processes followed in this study included categorisation and coding**.** This process serves to identify emerging key concepts and patterns. The process then involves interpreting the data by finding and discussing meaning, and finally by explaining how the interaction process relates to the use of discourses to construct meaning (Fairclough 1992).

The questions of validity and reliability within research are just as important in both qualitative and quantitative methods, though they may have to be treated somewhat differently. Reliability and validity are salient in research because constructs in social theory are often ambiguous and not directly observable (Neumann 2013). The value of this approach is that it yields genuine insights into the processes which shape the behaviour and language use in context. Validity is often treated as established by a congruence between different instruments, or perhaps a triangulation from different research methods. Because of the different theoretical assumptions in discourse work, and uses in qualitative methods, these approaches to reliability and validity are largely unworkable here. Within this type of study, however, there are important considerations which can be, and have been, addressed in this study.

Interpretation of open-ended research questions may be difficult as there is a possibility that the responses may not have the same degree of similarity. Therefore, it is important to note that all perceptions are considered valid in as much as they provide insight into individuals' experiences. Maxwell (1996: 60) argues that the main threat to valid interpretation is imposing one's own framework or meaning on the

results, rather than understanding the perspective of the people who were studied and the meanings they attached to their words and actions. From these, only the common themes that arose were identified and discussed in this study. The validity of each response was assessed individually, rather than within the interview as a whole, thus ensuring that critical information was not lost due to the fact the respondents preferred answering questions with which they felt comfortable. Einster (1991 cited in Terre Blanch, Durrheim and Painter 2006) points out that the most important test of any qualitative study is its quality. In this qualitative research, authenticity and trustworthiness were used as vital quality indicators. As discussed in Chapter Three, sweeping generalisations have been avoided. It was clearly indicated that the projections in this study were those of the Dental Technology academics who participated and not necessarily the general view of all academics or institutions.

Reliability is largely built into a quality interview process in which there is coherence (Symon 1998 cited in Terre Blanch, Durrheim and Painter 2006). In this study, reliability was gained by following a semi-structured interview process. The researcher attempted to be non-judgemental and open to all responses during the interview process, recording only what had been said. All attempts have been made to set aside personal bias in analysing the data.

4.8 Ethical Considerations

In preparation for interviews**,** ethical clearance from each institution's Research and Ethics committee was obtained. Written consent to collect data (see Appendix C, D, and E), was obtained from each institution. This was often an extremely time-consuming process with a number of technical requirements needing to be met prior to clearance being granted.

Contact was made with the relevant Heads of Department/Programmes of the Dental Technology departments. When applying ethical considerations to the interview process, Durrheim and Wassenaar (2004) state that the essential purpose of ethical research planning is to protect the welfare and the rights of research participants in the interviews. The structure of the interview process ensured that participants fully understood the purpose of the study and the ethical purpose of obtaining informed consent. The focus on building an individual picture of discourses experienced by academics at UoTs without making comparisons between different institutions and faculties meant that the researcher was removed any reference to a particular department, institution or person.

4.9 Summary

Chapter Two presented the argument that discourses have power over our ideas and actions. This study attempts to identify the academic identity discourses of dental technology lecturers at the three UoTs that offer this programme in South Africa. This chapter has therefore described how the data was collected and analysed in order to ensure validity, reliability and trustworthiness in the attempt to elucidate such discourses, with a concern for ethical research procedures.

Having described and discussed the research methodology employed for this study, the study now moves into an analysis and discussion of the data and the findings of the research. The discussion is divided into three chapters, though there are overlaps between them. Chapter Five looks at the ways in which the participants discursively constructed their own identities within the new institutional type and whether they believed that their sense of self had altered from when they worked in Technikons. Chapter Six looks at the participants' discussions about the Dental Technology

programme and the academics' comprehension of the knowledge being taught and whether or not they believed that the institutional shift had impacted on issues of curriculum. Chapter Seven looks at how the participants discursively constructed the students in their programmes.

CHAPTER FIVE: DISCURSIVE CONSTRUCTIONS OF ACADEMIC IDENTITY

5.1 Introduction

Through the literature discussed in Chapter Three, discourses were shown to be central to academics' constructions of their identities. It was argued that understanding how academics experienced the shift from Technikon to UoT would require an analysis of such discourses. This identification of discourses related to identity does not mean that other discourses did not emerge during the analysis of data. It is only those identity discourses, however, related to the implications of the shift from Technikon to UoT as experienced by participants, which are considered in this chapter. This focus was guided by the study's research questions:

1. What are the discourses by which Dental Technology academics construct their identities in a UoT?
2. What are the discourses by which academics construct the shift from Technikon to UoT?
3. What are the possible implications of these constructions for Dental Technology teaching and learning?
4. What are the implications of these constructions for the Dental Technology industry?

The discourses focused on in this chapter are those related to identity, existing in cohesion with other discourses to construct an individual identity**.** This required a complex analysis process mapping their progress from a Technikon to a UoT.

The respondent's quotes are anonymously identified as lecturers for the purpose of this study, followed by a randomly allocated numbers.

5.2 Construction of identity

This study was concerned with how the study participants at the three UoTs that offer Dental Technology, spoke about themselves in terms of who they were at work within Universities of Technology. It was very clear in the analysis of the data, as will be shown, that the dominant discourses by which participants constructed their identities in a UoT, were those related to them being Dental Technicians and to the Dental Technology industry rather than those related to being academics in the UoTs. This was significant as the participants do not predominantly practise in dental laboratories, but rather work full time in institutions of Higher Education. Where Lecturer 9 below indicates that regardless of any shifts or changes within institutions his/her teaching is directed towards the needs of the Dental Technology industry.

"No matter how the curriculum changes and no matter how things changes, I think you should just satisfy the need in the industry and if you have, then you are on the right track." *Lecturer 9*

The majority of participants were in agreement with this understanding that their teaching is industry focused and this is has been the historical objective of the teaching in Dental Technology.

"I think we are missing our niche markets, we've got a very small market and I would rather as I said, train people for work integrated so that they can do the job. That was always the mission of a technikon so that they can go out and do the work"

Lecturer 8

"At the end of the day you want a person to be equipped more practically than theoretically... it's what I came in and I saw happening and I'm a part of it now"

Lecturer 6

"We are hands on people and if you can't work with your hands you're never going to make money [and my teaching is directed as such]." *Lecturer 2*

The fact that participants use practical competency to gauge the importance of their disciplinary communities is invariably in reference to the focus and dominant vocational underpinning of the Dental Technology profession.

While there was certainly evidence of their affiliation to the UoT and to academia in the data, the primary identity affiliation for most of the participants was to the industry of Dental Technology. Henkel (2005) argues that the disciplines are primary in the formation of academic identity. She argues that central to a Physics or History academic's identity, is allegiance to the norms, values and practices of Physics and History. The difference to Henkel's proposition is that in this study data the allegiance was to the workplace practices of the Dental Technology industry**,** rather than to a particular academic discipline.

As discussed in Chapter Three, identities are in part constructed through community belonging and commitment to community practices. Being a dental technician and being an academic both entail belonging to communities. Within this analysis, reference to these two disciplinary communities is as the 'Dental Technology community' and the 'academic community.' The nature of discourse communities means that acceptance and recognition by the community is granted through a set of identified practices and shared constructions of knowledge (Gee 2000, 2011). The

discussion now moves to participants' identification of practices that allow them membership in the two discourse communities with which they identified[4].

5.3 Two Specific Communities

Within this study it was identified that participants' strong affiliation to their profession was seen to stem from the vocational underpinning of the Dental Technology profession. Participants identified industry knowledge and laboratory expertise as sets of practices that afforded them recognition as dental technicians. Participants make a clear distinction between the institutions and the industry.

"I just think the department and the industry are two like different entities on their own, It's like every man for himself" *Lecturer 3*

Participants identified working in a dental laboratory as requiring a higher level of practical competence, in comparison to teaching in an institution which was seen to be less practically demanding.

"Being in a laboratory for thirteen years means I did work, physically worked"

Lecturer 4

In agreement with Lecturer 4, Lecturer 15 saw teaching Dental Technology as an easier option to working in a commercial laboratory environment, which he found unpleasant.

[4] In Chapter Seven, I discuss the ways in which belonging to these communities related to the participants' discursive constructions of knowledge.

“I worked there for about three years. It wasn’t a very pleasant experience. So that has made my choice easier to switch from being a Dental Technician practically, to teaching.” *Lecturer 15*

Although participants were of the understanding that working in a laboratory is more demanding, they were, however, expressive of the demands required to teach in an institutions. However according to the study participants an academic qualification does not automatically relate to someone being able to teach. This was seen to be true for both a technical qualification such as dental technology and an academic qualification such a master's or PhD. Teaching was understood by the participants to be a profession on its own that must be trained for and the necessary competencies to perform the job of a teaching must be achieved.

“Being a qualified dental technician, working behind a table in a lab is different to teaching Dental Technology which has different areas of stress and expectations.”

Lecturer 1

In addition teaching was understood to be specifically related to a type of person, where participants recognized that it is not a qualification or research engagement that will make one a better teacher but the identity of the individual. Gee (2000) offers two lenses on identity that can be useful here: affinity identity and institutional identity. Affinity identity, as discussed in Chapter Three, emerges from shared practices as participants claim membership in the affinity groups of Dental Technology and academia. To maintain membership within their disciplinary communities, participants

are required to ensure that the practices in which they engage are those that maintain their status within their affinity groups. Having the respect of those working in industry was clearly very important to many of the participants in this study because their primary identity was in terms of being a member of the Dental Technology industry.

"I have a good working relationship with the industry and that is important to maintain."
Lecturer 13

Henkel (2005) lists interactions between individuals of a group as an essential criterion for recognition by the community. Most participants maintained, as Lecturer 13 above, that they hold strong affiliations through fostering good working relationships with the Dental Technology industry.

Participants spoke of regular communication with those in industry, and expressed great pressure on them to ensure they were up to date with the progressions and developments of the industry. As Lecturer 1 below highlights, the need to maintain industry links, according to their understanding, is because of the nature and structure of the dental technology programme.

"I think keeping the links with our industry is very important. Who are we kidding? Our curriculum is structured in relation to our industry." *Lecturer 1*

"We are, we are guiding them into a path that's geared for industry" Lecturer 4

As with the Dental Technology community, Lecturer 13 below describes a set of practices that maintain or afford access into the academic community. Most

participants indicate that the practices of being an academic are defined by their institutions.

"You know, you've got to teach, you've got to publish, you've got to do research, you've got to have community engagement and you've got to do all those things, that's what the institution wants to get out of us." *Lecturer 13*

"Moving from the Technikon to the University, of course there is a huge challenge… to lecturers, as research now became a fundamental component of the life of a lecturer" *Lecturer 11*

In the discussion of the literature on this relationship between industry and technikons, the question raised in Chapter Three, as to whether such links have been affected by the institutional shifts from technikon to UoT.

"The industry requirement of the student will never change. They are always going to expect that but whether you will get that from making those changes with the staff and the teaching, exams, contact time and all that, whether you will get the same results, we will see" *Lecturer 7*

The participants recognised the practices in which they would need to engage to allow them recognition into the academic community. They also recognised how the institution in which they practise contributed to their understanding of being an academic. Lastly as can be seen by the quotes below, a few of the participants acknowledged that they did not always see the value in practices that they identify as defining an academic. A few respondents felt that they were too old to engage or implement the current practices of an academic in a UoTs that had not been inclusive of their work in the Technikon.

“There are just too many changes, I'm too old to keep quiet any more, I'm just tired now, I'm tired of fighting, in my opinion but I'm an old guy and sometimes old people are resistant to change and maybe someone else can see them merit in it.”

Lecturer 2

“If I get involved in research now, by the time I benefit from that research I will be retired.” *Lecturer 13*

As discussed in Chapter Three, Gee (2000) proposes institutional identity as one particular perspective of identity construction. He further asserts that there is a process of power that gives authority to each perspective of identity. In the case of the participants from the Dental Technology community most participants identified recognition by the Dental Technology industry, as affording them access into the Dental Technology community. With regard to the academic community and its institutional identity, the process of power comes from the structures of the academic institution itself (UoT to Technikon). Participants therefore recognised the need to ensure that they were closely affiliated to the Dental Technology industry. Being recognised as a Dental Technician was key to the participants. The strong affiliation by participants to the Dental Technology industry may stem from the vocational history of technikons.

Participants showed a level of pride in their academic identity as academics in a UoT but this was not regularly or confidently expressed in the data. It was clear that the participants grappled with issues of academic identity and recognition in the academic community.

The Dental Technology industry and academic institutions were therefore seen as discourses that participants used to construct their identities.

Henkel (2005) writes of the importance of institutions in the lives and identities of academics working within them. She argues that in traditional universities, after allegiance to the norms, values and practices of the disciplines, the next main source of academic identity is the institution in which the academic works. She states, however, that with all the changes taking place in Higher Education and the more managerial approaches being adopted, this may be shifting, as "the institution has more power to affect academic working lives but it may be a weaker source of identification" (Henkel 2005: 164).

5.4 Conflict in identities

The distinction between technikon and UoT formed the basis of many discussions in this study and the main understanding that permeated all the interviews, albeit in quite different forms, was that the focus of technikons as institutions was not the same as the focus which UoTs currently have. There was a strong agreement across the interviews that this difference in institutional context had explicit and complex implications for their identities.

"Whether we agree with it or not, that's what the institution wants and that's what we need to do." *Lecturer 4*

The discussion earlier in this chapter indicated that *sets of practices* afford recognition into communities, so it is also a shift in the *sets of practices* from technikon to UoT that have brought above conflicts in participants' construction of identities.

"It's a University of Technology. Here the difference might be that they're prompting you towards doing a master's, and in our era, they didn't prompt you to do a master's."

Lecturer 10

"Master's was not regarded as a valuable, it's not regarded as something valuable in my industry [Dental Technology], it's because they'll say, so tell us how's [how is] your master's going to help you in industry. They don't see the value of it, unless you're pursuing an academic career" *Lecturer 1*

An additional shift in practices from technikon to UoT is the appointment of teaching staff. As indicated in Chapter Two and according to the participants, in the technikons, lecturers were appointed largely on the basis of their industry experience, rather than their academic qualifications and research output.

This apparent trend has changed over a very short period of time and UoTs now have to meet national benchmarks around staff qualifications and research output. Academics in most institutions must now be in possession of a master's qualification to be appointed as an academic, and have evidence of research outputs for promotion within the academic institutions.

"So our main problem is we are going to see a lack of capacity, because of the system and that is one of the problems that the move from Technikons, to the University of Technology fails We cannot appoint [industry] experienced people."

Lecturer 8

"And also the other thing where we have a problem with according to the university rules that a lecturer has to have a minimum of a master's." *Lecturer 13*

"You know, if you want now to move up the ladder to say senior lecturer and that, then you must have a minimum as a doctorate, PhD. So that is things now that we have to grapple with" *Lecturer 15*

It was clear in the data that a few respondents were not in full agreement with such shifts in appointment practices by the institutions and argue the need for practical experience in academics teaching Dental Technology.

"So you cannot, for me, just employ a new lecturer and say do your master's, okay, the master's is not sufficient to address the practical side, that's my little perception on lecturing" *Lecturer 1*

"That's another thing about a UoT now because before you were focused on just being a lecturer and [now] everyone is supposed to have their master's qualification, if you have a master's qualification you have to have your PhD." *Lecturer 12*

"We are not going to get it, so we are only going to appoint people who've got degrees who haven't worked yet and how are they going to teach it? You see the vicious circle?" *Lecturer 8*

Lecturer 8's quotation above outlining the concern that academics are now being hired on the basis of academic qualifications, is indicative of the view of most participants, that industry experience is the key criterion required to teach Dental Technology.

This shift may mean that individuals who have less industry experience but are fully engaged in the practices of the academic community, may receive greater recognition within the institution in which they work but they may be viewed with scepticism by fellow academics in their departments and in the Dental Technology industry as well.

"I don't believe that newbies [new lecturers] should go into lecturing immediately, I don't, because they have no experience and you can't place these high expectations, okay, you're now a lecturer, go and lecture… For me, the value is the lecturer's expertise in industry, I believe that newbies need to be exposed to industry, you've got to have to be exposed to industry" *Lecturer 1*

"So you cannot, for me, just employ a new lecturer and say do your master's, okay, the master's is not sufficient to address the practical side, that's my little perception on lecturing" *Lecturer 10*

While everybody holds multiple identities at any time, these two identities were seen to be incongruent, or at least in tension, by all participants. The ways in which this tension was expressed, however, differed considerably across the participants. The way in which the participants reacted to this tension also differed. Through resistance or adoption of certain new practices within the academic community, participants were able to engage or distance themselves from their institutional communities.

Trowler and Cooper (2002) argue that disciplinary identities are contextually situated for different individuals. An example may be where different university lecturers may be more, or less able and willing to "give up" particular identities when they join educational development programmes and feel themselves potentially repositioned as novices. Allowing themselves to be positioned as novices is a position that in other discourse communities, such as being a Dental Technician, may be particularly difficult as they may be invested in being seen as an 'expert'. This might result in rejection of a repositioning as "novice" or "learner" in a new social context. Resistance is likely when engaged in any form of development (Trowler and Cooper 2002).

"What I have seen as the biggest threat is that to get with people who are not academically orientated, specifically to lecture; because we advertised once for two years to get a chrome cobalt lecturer and do you know why? You get excellent people who could teach but can't be appointed as such because that person hasn't got a master's degree or a Doctorate, he becomes a junior lecturer; and no person in his right mind who is successful, who is successful outside, is going to want to become a junior lecturer," *Lecturer 8*

In accordance with the argument of Trowler and Cooper (2002), Lecturer 8 above explained that individuals with industry experience were less likely to position themselves as a novice or learner in an educational institution as they perceived themselves as having the capacity to teach in the Dental Technology programme through the experience they have obtained in industry.

5.5 Research Identities

One of the main areas in which the academic identity and institutional identity was seen to have changed with the institutional shift from technikon to university of technology**,** was in the expectation that all academics engage in research.

"Because if you look at the mission of the University of Technology it must be applicable to research." *Lecturer 8*

"Technikon… focus was vocation, focus was driven practice, focuses on production and now the focus is on concepts." *Lecturer 1*

The participants held very different views on this issue, as this set of data quotes below will illustrate, where some participants were in agreement with the research

expectations. Some participants provided strong arguments for taking on the research identity, such as the need to progress the Dental Technology profession.

"I understand the value of having a master's degree as an academic because of the university structures and Higher Education and the need from that perspective, [but] from a Dental Technology perspective, you're not going to get Masters Dental Technicians because master's is not necessarily a requirement or it's not needed in industry." *Lecturer 11*

"My point of view is that if we don't have research and then how can we have progress within our industry." *Lecturer 12*

"I think that the industry <u>does</u> need a highly qualified person and a professional so that we can get rid of this Cinderella image that we have, you know, and be equal and be on par with dentists." *Lecturer 14*

The data also revealed that other participants had reservations with regard to the institutional expectations to engage in research activities.

"University of Technology, why are we research driven when our output is to [teach for] industry? We are in a business and we make products here[5]. And you get this all sorts of conflicting issues in between and it complicates things". *Lecturer 1*

"Which means, when you think about it, we're going to have more academics. I think that the industry will be at a loss at some point, because when you look at our industry, in terms of the research that can be done, I think it's already been done."

Lecturer 3

Lecture 3 above, indicated that they also had reservations regarding research in Dental Technology. From the perspective of this study, it would be naïve to assume

[5] L1 by referring to "here" suggests that this happening in the UoT's laboratory. However, meaning is taken that he meant "in a commercial laboratory" and the incorrect meaning is conveyed by colloquial speech.

that all research in this profession or any other, could be exhausted. According to Skea (2010) little research has been done in the professionalisation of Dental Technology only. One of the major aspects that contribute to the professionalisation of any profession, is for that profession to be able to create its own body of knowledge. This can be achieved mainly through research. Skea (2010) states that according to Greenwood (1957), theoretical knowledge is more difficult to master than operational procedures as the body of theory requires construction through systematic research. The origination of valid theory that provides a solid foundation for professional techniques is acquired through scientific methodology. It is reassuring that the views by Lecturer 3 were not shared amongst all academics.

In this study other participants also provide arguments as to their reservations on research within Dental Technology. Lecturer 4 below argues that individuals who do conduct research for qualification purposes do so and still end up working in commercial dental laboratories. Here they do not continue to research and are still immersed in what the participants recognise as the core function of a dental technician, the practical construction of dental prosthesis. This study participant failed to understand the value of education whereby individuals upgrade their qualifications for personal reasons other than with the sole purpose of having an upgraded qualification for job advancement purposes.

"Out of the 100 students that might have applied, you'd only get two percent of those students that go into research. However, even if they've done their degree, they come out, of the University of Technology, and they go out into a laboratory situation, where they don't do any more research, and they stop there." *Lecturer 4*

Understanding research from the perspective of the teaching-research nexus was not shared by all participants**.** It was unfortunate to find that a few participants expressed doubt about research contributing to their teaching and learning practices.

"No, I don't think that you are a better teacher. I think it just means that you have the skills to be more enquired." *Lecturer 11*

"Not really. I wouldn't say it [my master's qualification] has influenced my teaching." *Lecturer 3*

"I don't think it necessarily means you become a better lecturer because of research. I think that you can become a better person and maybe that translates to becoming a better lecturer" *Lecturer 12*

It was encouraging to find that this view was not shared by all participants. Other participants identified the value of research to their teaching practices.

"I think the masters' comes with another aspect of capacity building for my teaching and then I can pass it on" *Lecturer 6*

"I think research is important now and I'm glad that I did my master's because I know a lot more than I did before," *Lecturer 5*

The encouragement by institutions for participants to upgrade their qualifications blurred the purposes of research for participants. It is important in this regard to note that when discussing research, all fifteen participants were referring to attaining

postgraduate qualifications and none spoke of doing research for non-qualification purposes. Participants referred only to research engagement in terms of obtaining higher qualifications and almost only in terms of satisfying institutional demands.

"I think research does make [a better teacher], one hundred percent to make sure they get better academics." *Lecturer 5*

In an effort to place institutions in a positive light regarding the qualifications of their staff and to aid the teaching competencies of academic staff, institutions have strongly encouraged staff to upgrade their qualifications**.** In this study, participants understanding of the purpose of research in terms of improving their qualifications was depicted as a tool to assist in teaching and learning. Brew (2003) argues that the belief that there is a simple relationship between research and teaching is naïve. She indicates that research expertise only benefits teaching if it occurs within strong communities of practice so that conversations about research are entwined with and enrich conversations about teaching. Boughey (2012) also questions whether research directly affects teaching, especially at undergraduate level. Boughey (2012) goes on to argue that being a university academic means being able to construct knowledge and that this is essential for being able to induct students into the discourses of the target disciplines.

A few of the participants, outside of the master's requirement for appointment, expressed that through the shifts in institutional identity, they had been forced to engage in research activities.

"If you become a lecturer and you're in a permanent position, if you don't have your master's you have a certain time to complete it and if you don't complete it you obviously lose your position there. So that's the incentive for people to do their master's now I guess." *Lecturer 12*

"I've been told to do my research here, encouraging is not the word that I would use."

Lecturer 15

"But, you know, the idea of being forced [to research], I don't like. I'd like to be actually encouraged; I give you time off [from the institution], concentrate on, doing something. But don't tell me!" *Lecturer 13*

The analysis of the data shows that engaging in research was, at times, seen to cause tension with the disciplinary identities of participants as Dental Technicians. Participants referred to the institutions as the authority of their academic identities, and as being the main reason for engaging in research activities, whether it be to establish a research culture within the institutions or for qualification purposes.

Henkel (2005) states that academics in stable institutions with strong academic identities and with strong disciplines from which they draw their primary identities**,** are in a better position to resist change which they perceive to be detrimental to their disciplines. From this perspective**,** it can be argued that having highly qualified staff who research within their disciplines, could possibly be a contributing factor to the autonomy of the institution and to its status as a university. McKenna and Boughey (2014) found that the strongly 'argumentative' nature of the identities of academics in traditional universities led to them being able to resist a number of institutional and national pressures (not always to the benefit of the university). This resistance enhanced the university's autonomy from the state and other bodies. Without strong

academic identities, which research helps to develop, McKenna and Boughey (2014) argue that academics are more likely to comply with external drivers.

Of the fifteen participants who took part in this study, at the time of interview only three academics had their M-tech qualification in Dental Technology and none were in possession of a D-Tech in Dental Technology. Currently, in 2016, only one of the 15 persons interviewed for this study has since qualified with a Masters. Lecturer 8 below expresses concern about the institutional pressure and perhaps even industry pressure on academics to produce research.

"It[6] is one doctorate [in Dental Technology] and I think you can count all the people with Masters on two hands. So we've got great pressure to do research, where we didn't have that, we could concentrate on training students; and the type of research that I have seen done is of no real benefit, to the students" *Lecturer 8*

Other than the national directive which expects an increase in formal qualifications for academics (National Planning Committee 2011), institutions may have other valid reasons to expect a certain level of qualification of their staff. One of these, as recognised by participants, is the requirement that to teach at a certain level**,** one should have a qualification higher than that level.

In many cases**,** the idea of having a qualification higher than the level at which an academic lectures, was felt to be very threatening to people who had held their current positions for some years and had never been required to study further previous to the transition to UoT.

[6] Translated verbatim. The respondent means "There"

"I understand the university and the higher education reasoning, but there's a flipside to the reasoning, you don't need a higher qualification than a masters to teach the practical side of a vocation" *Lecturer 4*

"I posed the question … if you have lecturers in your system that have got so much experience but do not have the qualification, does that mean you just kick them out? What happens to them?" *Lecturer 12*

As Lecturer 12 above is quoted, the question is raised as to what should happen to individuals who have many years of teaching experience, but who have not gone through the research process to obtain qualifications that will allow them to teach at certain levels but have been doing so and have teaching experience. Through the discussions in this chapter it was found that research participation and engagement was a discourse by which participants construct the shift from technikon to UoT.

Furthermore**,** not only was engaging in research contentious**,** but the type of research that is done was seen as an additional tension between the identities of a dental technician and an academic. Where explorative, experimental, quantitative research was seen to be relevant and beneficial to the profession of Dental Technology, a number of master's studies undertaken under the banner of Dental Technology focused more on the educational programme and qualitative aspects of dental technology than the industry itself**.** These studies were not seen, by a few participants, as relevant to the profession of Dental Technology.

“I think a lot of qualitative things are happening [in Dental Technology research] and there is a lot of quantitative parts to the course” *Lecturer 7*

“If you go to research in a big way in Dental Technology, you must make sure that that research is dental but there are a number of people doing Dental Technology research… I am very worried about the fact that so many of our master’s students are doing master’s in other areas. But we need people who are also doing research in the hard Dental Technology stuff, the material side, the technology, the development of techniques and equipment and instrumentation and all of those things because then we really building depth in the profession itself. Not just answering questions.”

Lecturer 11

In many professions, it could be argued that the main contributors to the body of knowledge in the profession are the academics in conjunction with industry. Therefore it can be seen that part of the responsibility to produce the type of research Lecturer 11 above talks about, rests with the academics themselves. Whilst Lecturer 11 bemoans the situation that no quantitative research appears to be happening in dental technology it begs the question as to why, if this lecturer is so concerned, he/she did not engage in this type of research himself/herself. The lack of understanding of the benefits that qualitative research bring to the industry was apparent during this study. A few participants argued that the research being undertaken to improve academic qualifications did not in fact have positive practical implications for the vocational Dental Technology profession and was therefore questionable. These participants were in agreement with Lecturer 11’s statement above.

“I feel that the research though is not being swayed in a direction that should be practical… and no one is doing research that is going to improve my life as a Dental Technician.” *Lecturer 2*

“It is all soft things that they are doing it on [research], it has got no real benefit to Dental Technology.” *Lecturer 8*

Lecturer 2 indicated that the research that was currently being done within Dental Technology did not speak to the vocational nature of the industry**,** nor was it very useful to the industry. Where one participant was in agreement with the notion that there was little growth in Dental Technology research in South Africa, that participant indicated that he/she still engaged in research for his/her own personal development.

“I did it [master’s research] for myself because, I mean I know within our industry your master’s doesn’t have as much value within the South African industry as maybe overseas” *Lecturer 5*

This participant also raises the discussion point that if academics in the Dental Technology industry were well aware of the challenges experienced with research, part of the onus is on them to engage in what they view as the right kind of research. This translates to active engagement with the Dental Technology industry in the promotion of relevant and beneficial research to the industry.

As industry and practical experience is of great value and importance to the participants, it is therefore, not surprising that the majority of participants expressed a concern that many of the postgraduate studies undertaken by academics and within Dental Technology departments were more sociological and educational in focus was not surprising.

“I just have a feeling that if people want to be academics, they would concentrate more on the classical research,” *Lecturer 3*

Some of the studies referred to include issues such as the extent to which Dental Technology is a profession (Skea 2010), the inclusion of Clinical Practice in the curriculum (Mqadi 2009) and the extent to which Dental Technology industries participate in community upliftment and social responsibilities (Zondi 2014). This thesis on the identities of Dental Technology academics clearly falls within this category of sociological and educational focused research within Dental Technology. It is sincerely hoped that this view of research within the Dental Technology industry will see a shift as the importance of these types of study in any profession cannot be discounted. The need for research, regardless of the type, however, was a sentiment shared by most academics as they acknowledge the ways in which research can contribute positively, especially to the profession of Dental Technology. Academics were also of the opinion that it is not just the type of research that is an issue, it is the progression of Dental Technology research in South Africa that was lacking. Lecturer 12 describes Dental Technology research in South Africa as lagging behind when compared with the rest of the world, and also questioned the relevance of the type of research in the Dental Technology industry.

“The things they doing the research on now are sometimes not dental technology related, we are practical and we’re are behind compared to the rest of the world in research” *Lecturer 12*

A further resistance to engaging in research emerged from the perception by participants of time allocated to them to conduct research. The time and resources

allocated to conduct research was seen as limited. On the other hand, the Dental Technology programme was said to require high contact time because of the practical aspects of the programme. Most participants said their institutions describe their contact with students as 'over-teaching'. The participants argued that the nature of the programme, where the graduate acquisition of practical laboratory skills was fundamental, meant that enormous amounts of the academics time was spent teaching and facilitating practical classes.

"I was loaded with enough work, and sorry, you didn't have half the year [off] to do your master's." *Lecturer 4*

"From our institution, I must say for an institution that's pushing master's and doctorates and research a lot, there's not a lot of assistance, that's my personal opinion." *Lecturer 14*

"The unfortunate part about it is time, you can't be a full time lecturer and expect to do a masters, really." *Lecturer 3*

In addition to the view of workload as hindering research, a few participants identified lack of institutional support of researchers as working against academics to complete or engage in research.

"There are currently [institutional] structures and research which are working against, for me, against masters and doctorate students, and until those structures are sorted and the managers start questioning these structures, it's going to take masters and doctorate students even a longer time than the stipulated period."

Lecturer 1

Despite this fact, there were academics who felt determined, regardless of institutional structures and workload, to complete their research studies.

"Everybody else gets sabbatical, I never got sabbatical. But that doesn't stop me. I make my own sabbatical." *Lecturer 6*

"I mean you work on your own [with research]. I'm not sure how it works at other institutions, here we are left to our own devices, we really have to do everything yourself. So it teaches you to work on your own, to push yourself to get to a certain point, okay." *Lecturer 14*

Lastly with regard to research this study found that most participants viewed research engagement as a shift away from their identities of being a Dental Technician**.** There was also the view that there were very limited uses for research in Dental Technology. For example, Lecturer 13 below questions whether a research qualification will be of personal benefit in terms of strengthening his/her academic standing.

"In a few years' time I would like to say bye-bye to this institution. Now should I think whether. I should actually do this, would it help me? I don't think so" Lecturer 13

Lecturer 4 goes on to question whether a research degree improved one's career prospects in Dental Technology, and was of the opinion that the only use for a higher qualification in the Dental Technology industry was if one was an academic or had the intention of becoming one.

“The rest of them got their degree, but they’re still working in a laboratory, not using it.” *Lecturer 4*

Summary

Most participants agreed that the required upgrading of qualifications was the biggest change they had experienced in light of the heavy teaching loads. Participants explained that research took a backseat sometimes because lecturing was more important. Overall**,** participants suggested that the acquisition of higher qualifications made very little contribution to their teaching practices but rather had implications for their thinking habits, where participants saw research as an introduction to new thoughts and ways of approaching situations.

5.6 Staff Development

Traditionally, technikon academics have undergone little or no formal preparation for their role as teachers. The manner in which participants were trained when they were students was seen to have significance in the way they understood their roles as teachers. A majority of the participants related their teaching style as similar to the way they were taught as students, which was largely technikon vocationally focused training. The emergence of UoTs this had led to interrogation of these understandings and challenges academics to review their delivery style. This shift has led to an interrogation of academic identity for dental technology academics, as their perception of the industry needs, which is their primary identity, has not changed. However, as many academics are now encouraged to re-curriculate not just content but entire programmes and engage in deeper academic activities such as research, there is a potential for conflict in the understood identity of a dental technology academic. Once

again this can either be embraced or rejected by individual academics. Although participants indicated that their role-modelling of teaching was obtained from the way that were taught as students, and although developments have been made in their own teaching methods and philosophies, the focus in dental technology is still very much to produce a vocationally orientated technician.

The word technician in itself is a defining word of the type of work that an individual will engage in. According to the Oxford dictionary a technician is “an expert in the practical application of a science”, Where Dental Technology is discussed as being a hard science in Chapter 6 of this study, the emphasis of a technician is then on the practical application. Many academics still stay true to this focus in their teaching.

“When I came in, nobody, shall we say mentored me, like, I wasn’t made aware of the processes, many of the things I learnt on the job.” *Lecturer 3*

“There’s no formalisation of teaching which I have been taught, you have to just teach yourself.” *Lecturer 5*

When coming from industry, participants did recognise the need to be inducted and orientated into the position of being an academic through institutional structures. Participants drew attention to the fact that it is not only practical competency that is required to teach in an institution of Higher Education, and argued that additional support is required to bridge the gap between industry demands and institutional demands. This sentiment was expressed by most participants. One participant stated that he/she felt sympathy for new academics, as they were not orientated into their new institutional setting. This study, however, found that all three participating institutions have some form of institutional staff development.

"So all along we have these courses, extended courses for us because the university knows that most of us, we come from industry". *Lecturer 13*

"If we had the [the opportunities to improve] teaching background we would be better prepared". *Lecturer 5*

Nevertheless, the participants**,** however**,** all recognised that there had been an increase in structured opportunities to develop academics' professional competencies. A range of resources had been put into place for staff development initiatives aimed at teaching and learning development. It was also explained by the participants that it was generally up to the individual to participate voluntarily in these academic development initiatives whilst they existed. If the individual attending was not passionate about what they hoped to get out, training programmes would not be helpful.

"It goes back to an individual, you know, you can go and have these fantastic training courses but here's an individual who's not passionate. Now I use the word passionate, you've got to be passionate about what you do, if you're not passionate about this, no matter how many training courses is offered, it's not going to make a difference to that person." *Lecturer 1*

Participants were in agreement regarding the benefits of staff development and they supported the notion by Lecturer 1 that it is the individual's prerogative to ensure they benefit from development initiatives.

"It's a tactic to sort, to grow people, their capacity and like I said [staff development] can only help you do your job better. It won't do anything negative, that's a good thing."

Lecturer 6

Lecturer 1 above argues that engagement in such staff development initiatives relies on an individual's agency and their understanding of the benefits to their academic identity. They also indicated, however, that such initiatives do not always address the needs of the classroom and mostly speak to the personal development of an individual.

A push for the upgrading of participants' formal qualification was seen to be prioritised over other forms of staff development aimed at improving one's teaching approach or curriculum development capacity. There was a view expressed by a number of participants that having a particular disposition for teaching or being supported to improve one's teaching, was important. Lecturer 4 below makes the comparison between teachers and academics, supporting the notion of needing support.

"Teachers go to school for four years to become teachers, and we [academics] are merely coping with teaching" *Lecturer 4*

"It is not about finding the best skilled people but you need to find that balanced person that think about, new information, doing new things, sharing with other people, guiding people, having a passion for the young people … otherwise it is not going to work."

Lecturer 11

Most of participants reflected on development activities in which they had participated and recognised these as influential in the way they did their jobs.–Chapter Two

explored how a majority of the technikon academics, not only in Dental Technology but in most technikons, were industry professionals and entered into the Higher Education system with little or no teaching experience. In the situation of novice lecturers who enter the institutions and may not fully understand all of the practices and processes**,** a mentor would be beneficial to them to induct them into the institution. Other lecturers also commented that when they joined the institution, there was an expectation that they would already know how to teach and assess.

There was a concern that the work load of the lecturers precluded any ongoing focus on teaching development.

"Before you go into induction, then you can actually learn these things, because you're sitting at induction class, and it's enjoyable, or whatever, but after a year, you have tons of marking." *Lecturer 4*

Whilst other academics were in agreement that the heavy teaching load added pressure on academic staff, they still made themselves available for staff development initiatives.

"In my full lecturing load, I still went and attended all [staff development] workshops, I attended workshops. I made the time." *Lecturer 1*

There was a consensus amongst participants that institutional staff development initiatives can be useful as academics construct their identities within a changing context. This, however, often entailed that participants had to accept the position of

being a novice (Knight and Trowler 2000). Some participants expressed resistance to the ways in which their academic identities had shifted from expert to novice with the move from technikon to UoT. This was expressed in terms of the practices they were being expected to engage in. These practices, particularly research, though also in reference to new considerations around teaching approaches and curriculum development, were seen as additional work to their already demanding workload of teaching Dental Technology.

Those who reported that they had engaged in staff development initiatives, indicated that these processes enabled them to interrogate their own teaching philosophies and to learn from more "seasoned academics" within their institutions with whom they interacted in such processes.

"Networking is important because you know we don't have that teaching background."

Lecturer 5

A condition for acceptance into an affinity group involves active participation with members of that group (Gee 2000). Lecturer 12 saw greater value in the relationships and discussions in which they engaged with colleagues during staff development initiatives, than in the actual content of the programme being delivered to them. Overall, the degree to which individuals engaged in institutional staff development programmes outside of their departments was seen to be minimal.

In addition to their lecturing load, and with the end of the convenorship system, participants were now expected to take on responsibility for curriculum development, which had not been part of some of their workloads in the technikon era. This is

because, as previously discussed, under the convenorship system, once a programme had been developed, the role of technikon staff was to deliver the pre-negotiated curriculum (Boughey 2010). Issues of curriculum and knowledge construction are unpacked further in Chapter Six of this study.

5.7 Summary

While the participants drew on different discourses to construct themselves as academics in UoTs, a general finding is that the primary identity was that of being a dental technician with industry experience and industry recognition. The identity of being an academic was also strongly evident. In many cases, however, there was resistance to the inclusion of academic activities such as research as a fundamental aspect of this identity, and a view was expressed that this was a recent requirement and was directly related to the transition to UoT.

It was surprising to find that although academics work in UoTs, their primary identities were those of Dental Technicians. This could be attributed to lecturers having had industry experience prior to joining academic institutions, or to not having any formal teaching qualifications and being able to draw only on their experience as Dental Technicians.

This finding was at times seen to cause tension between the identities of being an academic and dental technician, and manifests itself in the resistance or willingness of participants to relinquish their current identities. It was seen that there was a perception that newer academics were more accepting of their academic identities and of the practices that come with that identity. Participants were expressive that their identities of being a Dental Technician were at times in conflict with the practices of a

Uot academic. It must be said that there is an obvious concern for the profession of Dental Technology, as there is such conflict in identities for those who become academics. Normally, it would be assumed that any profession would be fully accommodating of those who chose the academic route and the practices that come with it.

A common view held by a few of the participants was that this focus on research, to improve academic qualifications, was unnecessary and irrelevant to their work. Others**,** however, embraced this opportunity to improve their qualifications and saw having postgraduate qualifications as central to the identity of being an academic in a university of technology. There was no distinctive clarity as to how such qualifications related to their teaching roles.

All reference to 'research' in the data seemed to be explicitly about acquiring postgraduate qualifications**.** In light of this**,** it was not clear if research was seen to be an ongoing aspect of identity. According to Boughey (2012), in some universities there is the idea that doing research is an integral and ongoing part of being an academic.

There were similarly mixed views about the availability, quality and purpose of staff development initiatives related to approaches on teaching, learning and curriculum development. It would seem that with the concerns about the shifting demands being placed on academics, and the resultant effects on their identities, Dental Technicians would need institutional support and the development of a shared understanding of what it means to be a Dental Technology academic in a UoT.

These discursive constructions of participants' identities are further discussed in the following chapters.

Areas of this study found that there was a misunderstanding amongst a few Dental Technology academics of not only what research is but also of the benefits of research.

It is imperative that the understanding of research starts with the academics themselves as they are responsible for passing on this understanding to their students, who will in turn become the dental technology industry. Therefore, the UoT academics' understanding of research must be interrogated, as this has an impact on students' growth in research, their own academic identities and of course the body of knowledge that is constructed in the Dental Technology industry. The understanding by academics of their roles and responsibilities may have been depicted in a somewhat negative light throughout this chapter. However as will be shown in Chapter Six, academics in the UoTs are well aware of and understand their roles as academics. This chapter merely highlights some of the discourses, which were both constructive and challenging to the construction of their identities in a UoT. Chapter Six further discusses the discourses of constructions of knowledge in Dental Technology and the implications of such constructions for teaching and the Dental Technology industry.

CHAPTER SIX: DISCURSIVE CONSTRUCTIONS OF KNOWLEDGE

6.1 Introduction

The previous chapter discussed the discourses by which academics construct their identities in a UoT, and alluded to the important role that academics play in the construction of knowledge in their institutions and for the Dental Technology industry. Chapter Six further elaborates on the structures by which academics interpret and convey knowledge amongst one another, and more importantly to students, as this emerged as a dominant discourse by which academics construct their identities. The delivery and development of knowledge in an institution of Higher Education was consistently recognised by participants as the purpose for academic staff and there was frequent reference in the data to the type of knowledge and practices valued in the Dental Technology programme.

According to Muller (2009) different types of knowledge are constructed in different ways. The principles driving the production of each type of knowledge also differ from one to another. For the Dental Technology academics to understand what is required of them in a University of Technology**,** a clear indication of the knowledge that they should be constructing is needed. In this study the data suggests that shifts are taking place in how that knowledge is being conceived and conveyed by the academics.

6.2 Constructions of valued Dental Technology knowledge

To appreciate how academics understand and convey knowledge, it is important to refer back to the construction of their identities, as the focus of the knowledge they construct and convey will be directed toward their primary identity. In Chapter Five, it came to light that Dental Technology academics hold being Dental Technicians as their primary identity and recognise their authority as the Dental Technology industry. It was not surprising, then, that their teaching be directed towards the needs of the Dental Technology industry. Lecturer 8 below indicates, namely that his/her teaching is directed to preparing students for the profession, an industry that has been identified as having a very strong vocational underpinning.

"Our main purpose is to, well not real vocational training in the sense of being an apprentice, but preparing people for their profession". *Lecturer 8*

Many participants were in agreement with Lecturer 8, regarding the main focus of their teaching in Dental Technology, which is centred on students being able to engage practically with the profession of Dental Technology.

The knowledge that Dental Technology academics seek to gain for themselves was found to be directed towards being more proficient as Dental Technicians. This is in accordance with what is expected of academics teaching in an institution: to ensure a strong disciplinary underpinning to their teaching. As discussed in Chapter Five, the knowledge constructed in the technikons focused on the training of students for industry preparedness. Academics in the technikons were expected to engage in the construction of academic knowledge. With the emergence of UoTs, however, this expectation has seen academics having to engage in further depth, with being

constructors of knowledge in the institutions and the Dental Technology industry. Lecturer 13 below indicates the importance of being able to create a body of knowledge in dental technology in order to be recognised as professionals and dental technology as a profession.

"You know, if we want to call ourselves professional and all that, then we have to take dental laboratory technology as our own and create our own body of knowledge."

Lecturer 13

This need for a body of knowledge was also recognised by most of the participants. Lecturer 11 is in agreement that a change in the delivery of knowledge in Dental Technology was needed.

"I think we need to make far more serious changes in how we deliver the information."

Lecturer 11

A shift in the delivery of knowledge requires interrogation of what is seen as valuable knowledge for the profession and an understanding of the type of students the institution aims to construct. The shift from technikon to UoT brings with it a shift in the valued knowledge in the institutions. This shift, however, does not necessarily relate to a shift in valued knowledge in the professions. According to the participants, the Dental Technology industry has remained stagnant according to its valued knowledge, despite the changing academic world. Thus it is important for academics to be fully aware and capable of developing, integrating and delivering knowledge that is valuable to the institutions and at the same time the Dental Technology industry.

As discussed in Chapter 3 of this study Bernstein (2000) gives two types of discourses that can be used to comprehend the structure of knowledge: horizontal discourses and vertical discourses. Horizontal discourses are based on basic everyday common sense. It is common because everybody, whether, potentially or actually, has access to it, Horizontal discourses apply to all and to everyday living experiences as well.

Bernstein (2000) contrasts the horizontal discourse[7] of knowledge with the vertical discourse of knowledge. Vertical discourse takes the form of a coherent, explicit, and systematically principled structure. Vertical discourses are the focus of formal education and the knowledge produced and reproduced in universities. All comprise of various forms of vertical discourse.

According to Bernstein (2000), the vertical discourses of formal education can be further divided into two forms of knowledge structures: horizontal and hierarchical knowledge structures. With horizontal knowledge structures**,** progress occurs not so much through theory integration but rather through the introduction of new languages which construct a new perspective, a new set of questions, a new set of connections, and even a new problem. On the other hand, Bernstein (2000) indicates that with hierarchical knowledge structures, progress occurs through the integration of foundational knowledge to achieve more and more abstract and encompassing levels. Here new knowledge is not added on as an additional language but rather is integrated into existing knowledge. Maton (2014) describes each knowledge structure as having its own "language of legitimation" and it is through such legitimation that members demonstrate that they belong to these disciplinary communities. To become recognised as a member of a particular disciplinary community, people have to

[7] Bernstein makes use of the term 'discourse' to categorise a type of knowledge, and not as it is used in this study as discussed in Chapter One.

demonstrate an awareness of how knowledge is built in the discipline, what counts as knowledge in the discipline and also how one talks or writes about that knowledge (Maton 2014). With this understanding, it is expected of dental technology academics to be well versed in the knowledge of Dental Technology, and to deliver, interrogate and develop this knowledge.

"We are building the contents ourselves as lecturers, because our department is so specialised that if you're not in this department you wouldn't know anything about Dental Technology." *Lecturer 14*

Maton (2014) indicates that such legitimacy practices are central to academic identity. It is thus perhaps unsurprising that the academics referred to the knowledge of the discipline and its uniqueness, as does Lecturer 14 above. This observation was similar across the majority of participants, where the vocational nature of Dental Technology was again highlighted.

"We're more practically based and we're trying to write it up as if we're more theoretically based." *Lecturer 12*

"So it's gonna be like that on paper but like I said the practise of it is not gonna change, we are still gonna teach [as we always have]. " *Lecturer 6*

In light of the understanding that has been developed of UoTs in this study, it can be seen that programmes offered at UoTs will demand a greater conceptual focus within them. For the majority of participants the shift from technikon to UoT was also understood as a shift in valued knowledge. Whilst most participants understood the

need for and were aware of the knowledge shifts taking place in Higher Education, they were expressive of the challenges that the introduction of a stronger emphasis on the theoretical component to the Dental Technology curriculum posed for Dental Technology teaching and industry.

"I think it is going to have to be a lot more theoretical, it will probably be a big challenge because the Dental Technology is very practical and we are going to have to change it." *Lecturer 15*

The idea that the curriculum needs a stronger conceptual underpinning that places greater value on the theoretical and abstract aspect of the curriculum can be related to Muller's (2009) concern about the lack of verticality in many programmes that are focused on applied, workplace competencies. He argues that such programmes would "benefit from having a conceptual coherence or disciplinary core" (Muller 2009: 217). This is not to suggest that the Dental Technology programme does not have a conceptual coherence. The participants all indicated that in Dental Technology, a balance between practical and theoretical knowledge is required, as what is applied practically must be understood theoretically. To the participants, however, the introduction of UoTs represents a shift in the perceived understanding that contextual and conceptual coherence be equally weighted in the programme, a notion which the majority of participants did not agree with.

"When they equate practical and theory to the same level, I have a big problem because it's not the same." *Lecturer 1*

The Dental Technology programme was perceived to be, by Lecturer 9 below, as consisting of seventy percent practical and thirty percent theoretical.

"70% practical and 30% is theory and the theory is strictly theory" *Lecturer 9*

A number of participants were not fully convinced of the format that the change would take, as they valued industry knowledge.

"It can't change because we still have to do what we have to do. We still have the qualification and that student is going to be this kind of person when they leave here. So you can't change, you can only change the name." *Lecturer 8*

The resistance to the shift in valued knowledge in the Dental Technology programme by participants may arise from the lack of theoretical conception to practice-based knowledge. This means there is the danger that situated knowledge will be undervalued in relation to disciplinary knowledge (Winberg, Engel-Hills, Garraway and Jacobs 2013). Trowler and Cooper (2010) ask "How are teaching and learning practices conditioned by a lecturer's practice?" According to Trowler and Cooper (2002), socialisation into a discipline is also understood to involve socialisation into distinctive approaches to teaching and learning. Dental Technology academics may have a particular way in which their teaching and learning methods are structured to cater to industry and institutional needs. It was evident as will be shown in further in this chapter that academics' practices are strongly rooted in the needs of the Dental Technology industry.

Summary

In conclusion, Trowler and Cooper (2002) have raised the notion of what consitiutes a reflective practitioner when they ask “How do effective lecturers think about their practice?” They suggest that there is a clear, but usually unacknowledged, link between taking up new ways of operating as a teacher on the one hand, and changes to one’s disciplinary identity on the other. With the transition from technikon to UoT, the academics in this study felt a pressure to reconceptualise their teaching. Nevertheless, it was clear that academics that were interviewed were having difficulties understanding such reconceptualization.

6.3 Construction of Dental Technology Knowledge

Since the emergence of UoTs there has been much debate about the position of technikons and their functions within the Higher Education landscape (Du Pre 2010). However, such debates often avoid the central consideration of the purpose of professionally-oriented programmes and how students enrolled in such programmes should be prepared to engage meaningfully in the world beyond the university (Winberg, Engel-Hills, Garraway and Jacobs 2013). Nevertheless, the re-curriculation of programmes offered at UoTs has commenced. As discussed in Chapter Two of this study, the Dental Technology programme has seen major and minor changes to the programme structure prior to the introduction of UoTs.

“So the three years National Diploma followed by a one year National Higher Diploma, which gave us a different academic status. The diploma had no value, it was just a qualification that you had to do before you did your National Higher Diploma. Then we had major re-curriculation again about twenty years ago.”

Lecturer 11

Currently all three institutions participating in this study were developing their programmes with possibly significant curriculum changes emerging. This process required the endorsement of a programme, as well as the proposed programme structure by the professional body overseeing the profession. For Dental Technology, this body is the SADTC. This study did not seek to investigate detailed issues of the curriculum structure and content. Concerns are raised about issues of teaching and learning, access to the programmes, and implications for the Dental Technology industry as these emerged in the data.

"Previously we had the convenorship technikon system and we all had to agree to the same thing, not always what we at the individual institutions wanted, but what we could agree on and what council has regulated and approved. I think the big change for us really is that each institution can now have their own approach." *Lecturer 11*

The knowledge valued in the Dental Technology teaching has been focused on the needs of the Dental Technology industry, where not all academics, such as Lecturer 2 below, have been in agreement with previous changes and the now currently proposed changes to the programme.

"What they did also when it [the dental programme] changed from a three year to a four year course, nothing actually changed in Dental Technology. Nothing changed. All we did was we stretched the course. Ok, that's all we done. Which for me is insane, and exactly the same thing is happening now." *Lecturer 2*

Lecturer 1 below is in agreement with Lecturer 2 above that there has to be depth in the shift of the valued knowledge within a programme.

"'You can't re-package the contents, it needs a conceptual change, a conceptual change!" *Lecturer 1*

There was a fair amount of discussion about the possibility of shifting from offering a diploma to offering a professional degree. When the issue arose in the interviews, it was evident that there were very strong feelings in this regard. Some participants felt that this was not what was needed by industry and that the move was evident of academic drift, in that it would entail a level of theory that was neither relevant nor appropriate. Furthermore, there was also a concern that this shift would exclude the many students who had a matric grade for a diploma entry only, and did not achieve the necessary degree entry matric requirements that would give them access to the proposed professional degree.

"A better qualification means that they are actually having higher expectations but how do we ensure that we get better students? We're still going to get the same students that are just coming out of the [school] system so if they don't meet our requirements, how will they get into our class?" *Lecturer 12*

"So that also poses the question in my mind with the new programme. If we are going to get those students, obviously requirements are going to be higher when we get those students to come for Dental Technology where, because those students would be eligible for engineering and stuff like that as well. So we won't know until we get there." *Lecturer 14*

Other participants were very positive about the opportunities that would be afforded by the offering of a professional degree, and stressed that the SADTC saw this as a means of improving the professional status of Dental Technology. While there was a

generally shared view that the move to UoT entailed changes to the curriculum and to the kinds of knowledge practices that were being valued, there were varied responses to the need to adapt to a new institutional landscape. The participants generally had the opinion that it is an individual's choice not only to participate, but also to recognise the value in any development initiative**.** It is also an individual's choice to construct his or her identity by engaging in the practices of being an academic.

For a better understanding of the knowledge base of Dental Technology, Vahed (2014) discusses this through reference to a three-dimensional model by Biglan (1973). This model broadly frames and analyses the cognitive dimensions of academic disciplines.

The first dimension described by Biglan (1973) is the distinction between hard and soft sciences via the understanding that they are defined through sets of standards, from clearly defined sets of paradigms in the hard sciences**,** to less defined paradigm sets in the soft sciences. Paradigms can be described as sets of beliefs that guide action and frame the ways in which we view the world and exist within it (Denzin and Lincoln 2005)**.** Vahed (2014) describes Dental Technology as being a predominantly hard science discipline, due to the fact that the fabrication of intra-oral dental appliances involves understanding of abstract theory and linking it to concrete dental laboratory practice. As discussed in Chapter Five, It is with this understanding, whether academics are aware of it or not, of Dental Technology as a hard science that academics were seen to direct their teaching, which is to ensure that students can apply their theory and practice in industry.

“I agree with the fact that there is a need for the theory yes. The way that I explain it is that if they want to convince a dentist to do a case in a particular way, if they want to convince the dentist to do it their way or follow that procedure, that makes it easier for us as a Dental Technician, you going to speak their language or at least at the same level that they are, at the same intellectual level in order to convince them do the it.” *Lecturer 15*

The second dimension of Biglan’s (1973) model characterises the degree of practical applications of the subject matter namely, pure and applied. Vahed (2014) classifies Dental Technology as an applied qualification and programme where the knowledge has very specific practical applications for the use in dental laboratories to meet industry needs. With this understanding of Dental Technology, it was unsurprising that the knowledge, skills and attitudes that were valued by participants were primarily or almost exclusively focused on practical, workplace skills. Participants showed an understanding of the types of curriculum concepts, where constructing knowledge that caters to the needs of the Dental Technology industry was their first obligation within the programmes. This is in alignment with participant’s dominant identity discourse of Dental Technology

“Our curriculum is structured in relation to our industry.” *Lecturer 1*

“It is a practical based course, because of the kind of work that we do with dentists and all the different procedures and different machinery.” *Lecturer 7*

Vahed (2014) discusses Becher and Trowler’s (2001) understanding of applied disciplines that the primary educational focus of hard applied disciplines is to produce

practitioners, and the primary research aim of hard applied disciplines is to produce useful practical knowledge.

The structure of knowledge itself cannot make a curriculum but it can constrain what type of curriculum can be implemented in a programme (Maton 2014). Disciplinary form thus does impose constraints on appropriate curricular form (Muller 2009). The HEQSF (2013) distinguishes between two modal types of curriculum and qualification; one that is oriented more to the demands of the workplace and the other that aims to produce knowledgeable professionals, and is thus formative or research-based.

These are described by Muller (2009) as leading to curricula that have more contextual coherence or more conceptual coherence respectively. All curricula need coherence as this holds all aspects of a curriculum (teaching and learning, syllabus, assessment, materials) together to form one coherent programme. Curricula should be both contextually and conceptually coherent, although a vocational programme will emphasise coherence in terms of context, and a formative programme will emphasise coherence in terms of concepts (Muller 2009).

"Contextualising, you take the knowledge and you apply the knowledge in the right sense." *Lecturer 8*

"Dental Technology belongs in the University of Technology which is focused on vocation, vocation is industry related. Yes, I'm not saying ignore the conception and theoretical theories here but you need that industry experience to come in"

Lecturer 1

Contextual coherence has been the dominant form of curriculum coherence in technikon curricula (Shay 2012, Muller 2009, Winberg 2005,). Although all participants

identified contextual industry focused knowledge as the focus of their teaching, a majority of the participants were of the view that the Dental Technology programme needed a stronger conceptual underpinning.

"We do need a more theoretical based course. We need to have a slightly higher academic understanding of the work." *Lecturer 7*

As the Dental Technology academics recognised themselves and their teaching by the structure and needs of the Dental Technology industry, it was important to them to investigate what position the Dental Technology industry took towards the shift in teaching and curriculum from technikon to UoT.

"They took what programmes we could offer to find out okay, what does the professional body say, what does our industry say and what do we need? And then we looked at our needs and they actually found it would be nice to have a degree programme" *Lecturer 12*

To formalise a link between industry and the institutions, an understanding was needed of the relationship between applied knowledge and applied learning. Gamble (2006) defines applied knowledge as translating and re-working scientific knowledge in order to produce a conceptually different kind of knowledge through a process of reinterpretation. Participants however had a clear understanding of applied learning as students being in the workplace and using skills and knowledge constructed at the institutions as evidence of learning.

"To put things in perspective of how universities came to be and what the difference is between focus of a traditional, comprehensive and UoT and as the lecturers of the UoT understand that UoT is not about just hands, it's about both the theory and the practice and they work together, they're not separate entities" *Lecturer 1*

It can be seen that the knowledge structure in the Dental Technology programme is a hierarchical knowledge structure, where knowledge is developed through the integration of practical and theoretical understanding and application (Vahed 2014). Students have been given foundational theoretical knowledge and practical skills with the purpose of integrating those together to produce an end result, where both practical and theoretical concepts are understood and can be applied. It was made clear in the data that, to a majority of the participants, the knowledge being constructed was focused on industry and practical application, rather than on theoretical knowledge.

"Our main purpose is to, well not real vocational training in the sense of being an apprentice but preparing people for their profession." *Lecturer 8*

"We belong in a technical diploma, my honest opinion" *Lecturer 2*

With regard to construction of Dental Technology knowledge and teaching, as discussed in Chapter Three, the institutional perspective of identity described by Gee (2000) refers to the social languages of being an academic within an institution. As previously discussed in this study, technikon academics had previously been hired predominantly on the basis of practical expertise**.** This was due to the vocational focus of the programmes technikons offered, with Dental Technology being one of these

programmes. The data indicates that previously**,** academics found it relatively easy to adapt from the industry setting of operating in dental laboratories**,** to the academic setting of operating in institutions of Higher Education**,** due to the structure of the institutions at the time.

"When I came to Dental Technology, it was, it was different because the people that they brought in to start the department in the early days were Dental Technicians who did not necessarily have a formal qualification." *Lecturer 11*

With regard to teaching and learning practices within the dental technology programme as noted in Chapter Five, there needs to be a willingness to position oneself as a novice in a new affinity group to understand the construction of that group. This proved somewhat difficult for participants as in the past, affinity identity may have been very strongly based on industry expertise which they confidently had. This is evident in some of the statements made by the respondents who had taken the initiative to obtain knowledge of the theoretical underpinnings of their teaching, by furthering their studies with a teaching related qualification, or through other staff development initiatives.

"In my full lecturing load, I still went and attended all [staff development] workshops, I attended workshops. I made the time." *Lecturer 1*

"I have a further teaching qualification, which I obtained while I was working here [at the institution]" *Lecturer 10*

"Two of my colleagues have qualifications in education and one is still study towards it, I would also like to do the same" *Lecturer 14*

On the other hand, some participants saw little need for these changes due to various reasons, such as being close to retirement age or not being able to see the pertinence of these changes to the teaching of vocational qualification.

"I think and I'm speaking now maybe you know, I'm, I've got three years before I retire officially, so ja I'm of the older generation and there are staff members in my department that are also maybe towards the latter part of their career."

Lecturer 11

6.4 Summary

This chapter has looked at some of the discourses about the knowledge valued and taught in Dental Technology, and concludes that there have been significant changes emerging alongside the shift from technikon to university of technology. There seems to be a greater concern for conceptual coherence, although there was no clarity as to what form this would take. It would be the prerogative of the institutions and academics, along with industry input, to plan, construct and implement this shift in coherence. There is no complete consensus that an increased focus on conceptual coherence is desirable, as the emergence of the UoT has largely been viewed as mainly institutional name changes. Having discussed the academics' identity discourses in Chapter Five, and their discourses about valued knowledge and constructions of knowledge in this chapter, another set of discourses that were prevalent in the data will now be examined, which is the ways in which the academics discursively constructed their students.

CHAPTER SEVEN: DISCURSIVE CONSTRUCTIONS OF STUDENT

"My students are my greatest teachers when it comes to teaching and learning."

Lecturer 1

7.1 Introduction

Recognition of the types of knowledge, valuable knowledge in the institutions and industry as well as the construction of knowledge have been discussed in Chapter Six. This chapter moves on to discuss the students that are affected by this knowledge, as this is a discourse by which participants constructed their identities in UoTs. This was done through the analysis of how participants described their students whilst constructing their own academic identities. Students are clearly central to any academic institution as they play a significant role in the ways in which academics understand themselves and their roles.

7.2 Constructing Students

All participants were very clear in expressing that their major focus as academics was to provide a service to students by primarily developing students' practical competencies and, to a lesser extent delivering knowledge. The participants made it clear that their primary focus in developing students was what Bernstein (1999) referred to as 'specialised vertical knowledge', that is to produce a graduate who, after a series of graded performances and a few years, is qualified as a professional within the specialised field of Dental Technology. It was seen that the purpose of the explicit

focus on student development was to ensure a competent employee for the vocational industry of Dental Technology.

In their attempts to ensure that students become suitably qualified professionals, participants noted challenges that they experienced with the students**.** One of these challenges was the poor quality of the students who were currently entering Higher Education.

"The current students that are coming out of school now, they need more support than students in the past." *Lecturer 7*

"Students that were entering my class were different, what I was telling them [now] went way over above their heads." *Lecturer 1*

One interviewee suggested that students currently are less mature than in the past and, consequently, are less able to conceptualise and analyse problems.

"I think there was a greater maturity way back then and we often talk about why and how." *Lecturer 11*

This general view of falling standards could stem from nothing more than age old traditional views by participants who believe standards were always higher when they were students. These concerns expressed by the participants, however, are not isolated to Dental Technology. Scott, Yield and Hendry. (2007: 15) explain in a research paper prepared for the CHE that "students in technikon-type programmes on average have lower levels of school attainment, and the performance of the intake will commonly be attributed to this". This is not to discredit the current cohort of students in the UoTs but rather to find possible explanations for phenomenon such as poor

student performances in higher education from learners leaving the South African basic education system. The concerns about student preparedness therefore precede the transition from technikon to University of Technology. Interestingly, many of the participants recall students in the technikons as being better prepared.

"Back then [in Technikons], I think they geared you more to be working as a very skilled Dental Technician. And I think the standards now are much lower in many ways."
Lecturer 4

A suggestion was offered as to why lecturers were currently perceiving students to be more immature and thus less ready for higher education. The changing demographics of the students entering dental technology has changed and with change comes challenges to those still locked into the past.

"Most of them were white, most of them were older because they all went to the army and the two years of battle, which brought a certain level of maturity and more certainty about what they want to do. So by the time they got here they were at least twenty or twenty one years old and definitely disciplined in most cases. Now it has changed and that it is not necessarily always supporting learners in the best way. They are much younger, they are more immature." *Lecturer 15*

The discourse about the quality of students, contrary to lecturer 4's opinion that the UoTs are more lenient, was largely expressed in terms of students coming from disadvantaged backgrounds and generally being inadequately prepared for Higher Education.

"It's like we attract English second language students, if you're attracting English second language students, you cannot possibly use the same teaching style that you were taught." *Lecturer 6*

"See the type of students we are dealing with okay, we not just dealing with an academic problem, we dealing with an attitude problem and [a] financial problem. Student personal problems, financial problems, residence, transport problems are so great that the academics problem is actually a small factor. *Lecturer 1*

Thus, there may be an alternative reasoning for this occurrence. The term 'disadvantaged' and 'underprepared' have come under criticism (Scott, Yield and Hendry 2007, Boughey 2010). It is argued that at times these labels lead to pathologising of the student problem and thereby an avoidance of having to address issues at the level of curriculum or pedagogy. The massive shift in student demographics from those in technikons and subsequent participation of students from wider socio-economic backgrounds has had important implications for the participants in this study.

"When I say different calibre of student, it's not one colour or race it's a different calibre, it's throughout." *Lecturer 12*

"The demographics [here at my institution] are quite different from other universities, the type of learners you are attracting, it was one of the biggest signs and it failed me that lecturers are not perceptive about that." *Lecturer 1*

Alongside participants' perceptions of a shift in the conceptual focus for the Dental Technology programme and their views on the calibre and type of students was a

further concern about student access to the newly structured programmes. Participants recognised that a move to a degree programme would require a shift in entry requirements. An increase in entry requirements would see the Dental Technology programme attract the 'kind' and calibre of student that participants desire. If, however, this calibre of student is not already attracted to Dental Technology, participants expressed concern as to how higher entrance requirements will then persuade prospective students to study Dental Technology.

"They are trying to upgrade the entrance requirements and Dental Technology is not all that easy for students. We don't have the greatest pass rate, because it is not the easiest." *Lecturer 4*

"A better qualification means that they are actually having higher expectations but how do we ensure that we get better students, we're still going to get the same students that are just coming out of the system [school system], so if they don't meet our requirements, how will they get into our class?" *Lecturer 12*

"So that also poses the question in my mind with the new programme if we are going to get those students, obviously requirements are going to be higher, will we get those students to come for Dental Technology?. Because those students would be eligible for engineering and stuff like that as well. So we won't know until we get there." *Lecturer 15*

"We are going to have the same student coming in here to a professional degree and we are going to be told as lecturers, because it's always the lecturers' fault, to teach them [when they are not performing]." *Lecturer 1*

Many of the discourses constructing the students in the data were what Boughey and McKenna (2015) characterise as the ‘discourse of the decontextualised student’. This discourse, according to Boughey and McKenna (2015), is the dominant way in which students are understood across Higher Education in South Africa and entails explanations for student failure being vested in the attributes of the student him or herself. Therefore, according to some understandings in Higher Education, the problem would then be that students are not hard-working enough, motivated enough, or intelligent enough.

“During the time of the technikon, I experienced that the students then were very independent workers, you know, and they were very motivated too. But now I find that with these students they’re not that motivated, you know.” *Lecturer 13*

“I would say the type of students we are getting, it sort of clashes with the old ways of doing things.” *Lecturer 4*

“They [the students] expect that no matter what happens they don’t have to really work hard, someone’s going to push them along.” *Lecturer 12*

There was less evidence of any recognition of those interviewed regarding what Boughey and McKenna (2015) term the ‘discourse of the student as a social being’, whereby students are understood to bring with them views, experiences and values which may or may not be recognised by the university. In this latter understanding, student success and failure is more likely to be understood in terms of how the university welcomes or alienates students, how the knowledge traditions are made accessible or are assumed to be self-evident etc. Lecturer 1 below indicates that

teaching has changed to accommodate the students, whereas Lecturer 4 below feels that the institutions are too lenient with the current students.

"I think I always pursue to try and accommodate my students as best as I can and to change my style, oh of course I change my style of teaching, oh I've changed my styles dramatically, I had to." *Lecturer 1*

But in the Technikon era, there was no leniency … In terms of the type of education and the education system that we are in, it's a little more lenient, lenient I think, lenient towards the student. *Lecturer 4*

Another issue that was often raised in the study was that some students study Dental Technology by default because they apply for Dental Technology alongside many other diploma courses, not really knowing what the profession entails. This issue was raised in terms of the identity of what a Dental Technician is and the need for student Dental Technicians to desire being part of that community. It was seen as important to the participants that the students aspire to be dental technicians if they are to be successful with their studies.

"Some of them come in and they don't even know what a Dental Technician does but they want to do Dental Technology." *Lecturer 13*

This may be due to previous experiences where students have not been exposed to the profession and merely study what their high school results allow them to study. Bernstein (1999) uses the term 'sensibility' whereby previous experiences are seen to be influential in the thinking of an individual, as one is limited by the sensibility of the

knowledge one has already acquired. Therefore, disadvantaged students would, in Bernstein's terms, be seen to have additional difficulties in acquiring the target knowledge because their previous formal and informal learning experience would not have provided them with the 'valued sensibility'. Bernstein was criticised for being elitist in making these claims but his intent was to demonstrate how education privileged certain sensibilities above others Maton (2007).

The call for curriculum development that enables epistemological access for all students, regardless of their prior educational experiences, has gained momentum in South Africa (Scott Yield and Hendry 2007). Some participants recognised that the current students have different needs from those who entered the institutions under a more elitist higher education era, which served a narrower demographic in terms of race and socio-economic group.

"I think the other thing that one needs to take into account is that the students that we are getting into the system are very different from what they were twenty years or ten years ago." *Lecturer 11*

"Now you can't teach the traditional way because, not because [of becoming] UoT. You can't teach that way because of the students that you get, because you can't stand in front of them and lecture anymore." *Lecturer 7*

Concerns were raised by participants as to the ability of students to cope with the Dental Technology programme, if a UoT is understood to be demanding of higher levels of conceptualisation in the curricula. A strongly expressed view was that if the current student body experienced difficulty in succeeding in a practically focused, vocational programme, then they would not have much chance of succeeding in a

more conceptually constructed curriculum. Participants note concerns that the shift to UoT brings with it a higher level of theoretical engagement and that this has the potential to increase the difficulties experienced by prospective graduates in practical applications.

"So you're doing the student a disservice because you are giving him an expectation, so he's gonna [going to] come out and be very clever and have all the theory of it but he won't be able to do it." *Lecturer 2*

"So basically, our student is coming out, maybe more self-centred and more confident, however, lacking the skill and knowledge that they might have, to go out. And in my, in my opinion, Dental Technology is purely a skills degree or diploma."

Lecturer 4

"The bottom line for me, this is what I understand, if you are practically there [teaching] ninety five percent or ninety percent or even eighty percent of the time and what you're teaching is practically based, then we're not a UoT." *Lecturer 12*

A further concern raised was about the way in which teaching is being conceptualised for a University of Technology, in comparison with a technikon. UoT teaching was seen to rely on independent learning, whereby participants are required to spend less time in lectures, leaving students more time to develop their own identities.

"We've got to get them to understand and therefore the student contact hours are long and many others don't see us using that in the future." *Lecturer 11*

"We will probably spend less time with the students. You must remember, a degree student you're not, allow to spend that much time with them." *Lecturer 4*

As all three institutions that participated in the study are in the process of re-structuring their programmes, the concern about the appropriateness of a more conceptually-based curriculum, and a greater focus on independent learning, was seen to have been exacerbated by the prospective shift from offering a diploma to offering a professional degree. It should be noted that through this re-curriculation process, one of the institutions in the study does not intend to re-curriculate towards a professional degree, but rather towards a diploma that is in accordance with UoT qualification structure.

"Well, it is very much skills based [Dental Technology], there is a lot of theory and that we cover and there is some work that students can do on their own but the laboratory side can only be done in the laboratory. So the only place they can do it is in our laboratory and that means that students needs to be supervised, they need to be assisted." *Lecturer 11*

"If it's a diploma we call it like, Dental Technology like, we are producing a technician not a professional, it has mostly practical content. We have to introduce like, mostly like, scientific theoretical content. That's where it gets to a grey line because at the end of the day you want a person to be equipped more practically than theoretically." *Lecturer 6*

Some participants, however, recognised that there is a need for a greater conceptual coherence in the Dental Technology curriculum, as discussed in Chapter Six, and that this would serve the interests of the students. Participants are then faced with the task of incorporating a greater conceptual component to their programme, whilst still ensuring the competency of students for the Dental Technology industry.

"Most of us are buying into the professional degree because we are going to have a different student, [but] my argument is years we are not going to have a different student." *Lecturer 1*

Lecturer 8 below claims that the new programme will ultimately produce the same graduate as currently, namely a technician with no new competencies.

"And I think when they created [the new programme] they went away from the technikon concept, because they are called the university, but they are going to be trained to become a technician." *Lecturer 8*

Once again, participants were of mixed views about the type of student currently needed in the Dental Technology industry, as can be seen from the data quotes above. Few participants were of the view, as noted in Chapter Six, that there will be no change to the delivery of programmes, regardless of the way in which they are structured and the type of institution in which they are delivered. Indeed, some of the participants were clear that the changes in teaching approach being brought in as a result of the implementation of the 4 year professional degree would not be feasible and are not likely to be implemented.

"It can't change because we still have to do what we have to do. We still have the qualification and that student's is going to be this kind of person when they leave here. So you can't change, you can only change the name" *Lecturer 7*

"It's mostly practical, so it [the Dental Technology programme] may not be suitable for a university type of environment" *Lecturer 3*

"So it's a change in student that is coming in, at the same time the course design - there is nothing much you can do because as it is we are teaching only basics and the one thing that is unfortunate about is it that we have to use the real material used by the real patient" *Lecturer 6*

"It's a lot of work, the preparation [for the degree] but I think when it takes place there won't be a whole lot of differences from how we are delivering our lectures and stuff like that." *Lecturer 12*

"A [a four year Professional] Bachelor of Dental Technology degree, it's not going to help. Thank you very much." *Lecturer 4*

Whereas other participants were of the view that the vocational nature of the programme will not change, Wheelahan (2010) argues that vocational programmes that are entirely "competency based" have the potential to exclude students from access to powerful disciplinary knowledge. This, she argues, is because a complete focus on competency in particular workplace skills can result in a lack of conceptual knowledge, particularly in foundational disciplines. This lack of knowledge means that students have access to contextually specific applied knowledge only and not to the powerful underpinning knowledge systems which give the contextual knowledge meaning. Therefore, students are able to gain the specific knowledge related to Dental Technology practice but would not have the means to relate it to the general and principled structure and system of Dental Technology.

Wheelahan (2010) argues that providing access to only the practical vocational knowledge is a problem for social justice because it is only through access to the underpinning foundational knowledge that students can go on to produce new

knowledge and thereby build the discipline. Wheelahan (2010) also shows how access to powerful knowledge is necessary for social mobility. Bernstein (1999) states that society uses theoretical knowledge to construct new thoughts and ideas and this is why theoretical knowledge is socially powerful knowledge.

Wheelahan (2010) further highlights the importance of access to theoretical knowledge and suggests that all curricula should be structured to provide students with access to this theoretical knowledge. Young (2006) argues that while the workplace may require content specific knowledge, for growth to occur in an academic discipline, theoretical ideas need to be shared by members within a disciplinary community. This means that the growth and progression of a profession is related to educational progression, as education is the main route whereby most individuals are provided with disciplinary knowledge (Wheelahan 2010). With the views of Wheelahan (2010), Young (2006) and Bernstein (1999) it is of significance to the profession of Dental Technology that a majority of the participants saw a more conceptual focus in the Dental Technology programme as opening up a number of opportunities for student's social mobility and for the growth of the profession.

"We are excited about it and I think one hundred percent we can deliver."

Lecturer 5

"I think it will take some time because they, the old people in the profession, might not think the same way but there are lots of students who understand the thinking behind changing the current course into a degree form." *Lecturer 15*

"Not just for the students, Dental Technology has evolved as a profession, and you can't continue teaching in the traditional sense." *Lecturer 1*

It was recognised that the new degree programme may encourage more students to further their qualifications and that there could be greater dental technology research because the current University system was forcing academics into research.

"Getting our students more involved in theory and starting maybe [in] to research because we don't, us technicians, do that. We tend to say, remove ourselves from further education for research purposes because we are, we feel we are technicians, we work with our hands, we want to do the work and that's it, it's different as academics because now we have to." *Lecturer 14*

7.3 Work Integrated Learning

As participants had already articulated a strong affiliation to the Dental Technology industry, it was expected that participants believed that students need to experience the demands of the Dental Technology industry before graduating. Work integrated learning (W.I.L) was a discourse by which academics constructed the shift from technikon to UoT. W.I.L was seen by all participants as a significant component of the Dental Technology programme. Work integrated learning was one of the factors that participants recognised as providing a valuable contribution to the construction of Dental Technology students. Therefore the participants' comments on the system of work integrated learning were significant. Wheelahan (2010) explains that the ability to appropriately apply theories cannot be achieved in the classroom setting alone, and that students must learn in the workplace to be prepared for the workplace. Frequent reference was made by participants to the comparative differences in functioning in work integrated learning between the UoTs and technikons.

"Train people for work integration, so that can do the job. That was always the mission of a Technikon – so they can go out and do the work." *Lecturer 8*

"Three year technical diploma with a year's in-service training. That would produce the Dental Technician that I would like to have working in my laboratory."

Lecturer 2

The W.I.L structure in the technikon era was an aspect of the Dental Technology programme that was praised by most academics. In the history of Dental Technology discussed in Chapter Two, I reported on the re-curriculation of the Dental Technology programme, where at one point, students were compelled to experience a full year in industry before graduating as a Dental Technician. A few participants were also able to provide some history into the Dental Technology W.I.L programme.

"At one stage it was a two and a half year course, they would then go out for a year then they would come back for six months." *Lecturer 2*

"You spend six months at a lab like half a year, that's enough to equip you. You come back, when you come back you only have your, you do report writing for that time you were out and you do your research and you get your degree and when you get a job you just sail through." *Lecturer 6*

Due to the varying nature of the W.I.L programmes in each institution, students spend different amounts of time in industry. All institutions recognised a gap in their current W.I.L programme.

"So there is that gap because there are a lot of things that are an influence, such as the time frame of a job. you're [students are] used to receiving a job to do in four day, something at the lab you have to do in two hours." *Lecturer 6*

"So what do we currently have right now, in second year you do two weeks and in third year you do four weeks six weeks of in-service within the programme. And that is insufficient" *Lecturer 12*

The gap in the W.I.L programme was recognised by Lecturer 2 in terms of the student attitudes once they had completed a year of W.I.L training.

"Those students would come back and not only would they be a pleasure to teach but they would then also speak to the second or third years students. These guys are saying to you 'Listen to them because you need to know this, don't question it, you need to know it, do it' so it helped the whole thing." *Lecturer 2*

Work integrated learning, termed cooperative education in the Dental Technicians Act of 1979, was a key characteristic of technikon education but has been greatly reduced, perhaps with the change of institutional type. All participants clearly expressed that this reduction was detrimental to the Dental Technology programme, as well as for the students.

"It's too short, it's a totally, it's a farce. You can't go to a lab for a week and two weeks, you can't. It takes you - and you speak to any lab owner - it takes three months for you to be productive. The first three months you're in a lab you're totally, you're unproductive. Say what you like, that is a fact." *Lecturer 2*

"It only takes 3 months [to become competent], that first and second month, the third month the student is in." *Lecturer 6*

Lecturer 8 indicates that the SADTC currently prescribes that students erroneously spend 30 days, of W.I.L in a registered dental laboratory.

"Because the council does, only prescribes a thirty days [for W.I.L], we only monitor the thirty days." *Lecturer 8*

This is not to say that students do not engage with the industry for periods that exceed 30 days in the form of practical laboratory exposure. In contrast to Lecturer 8 above, the Dental Technicians Act under Section 11 no. 23 of the Register of Regulations states that "An approved institution in collaboration with the advisory committee, shall determine at what stage and for what period a student dental technician or student dental technologist must undergo practical laboratory exposure." The current duration of work integrated learning was greatly reduced. The Dental Technology programmes in all three institutions currently make an effort to ensure that students gain time in industry, even though they are no longer required to spend a formal year in industry.

"All our students do get a vast amount of practical and laboratory exposure, not in private practices as such, here by us as well." *Lecturer 7*

"All our students, basically, all our students from the second year work in laboratories. By the time they are in their third year they are almost employed." *Lecturer 8*

Although work integrated learning is associated more with technikons than with traditional universities, the participants in this study believed that the change from technikon to UoT should return focus to this aspect of the programme. Participants

indicated that they expected to see a further change in the amount of time that students will spend in industry. They were positive about this proposed change in the dental technology W.I.L structure in the UoTs.

"It's going to be extended instead [work integrated learning]; you know it will be like how universities are doing it. It's more of a university degree that they're going to. So instead of just having them [students] going up there for what? Three weeks, it's going to be months now. Like you get people say they're going for in-service and they're away from the institution for quite a number of months. That's how it's going to be done." *Lecturer 6*

"And now we've upped W.I.L to eight months, I think, I don't know if UoT has a problem with eight months saying that maybe it should be six months, but we've come to eight months, we actually would have liked a year but where do you fit in that year … and in industry that's a sufficient amount of time for you to actually learn something."
Lecturer 12

"I think it [extended W.I.L period] would produce better qualified technicians, because then people would be exposed to the industry for a longer time."
Lecturer 3

With regard to W.I.L in the Higher Education landscape, a 'new' funding formula was introduced in 2004 which meant that funding for work integrated learning aspects of the curriculum became difficult. Concerns had been expressed as to the uneven nature of the workplace experience in the diploma structures (Powell and McKenna 2006). The requirement was now that workplace learning had to be fully curriculated and assessed, and have credits attached to it if funding was to be accrued for these phases of the curriculum. This has not been uniformly adhered to in the past. There

were also a number of clearly specified requirements, including a specification that the institution take full responsibility for placing students in the workplace and monitoring their progress (Council of Higher Education 2004). This is of significance especially in Dental Technology as experience shared by one of the participants is evidence of how important it is for the programme to monitor students whilst in dental laboratories.

"I mean I know from my experience the lab they chose, I chose poorly and I went to lab but they didn't let me do work and when they did let me do work it was so minimal, it didn't count for anything" *Lecturer 12*

In addition to the change in the W.I.L structure, participants were aware of the CHE conditions towards placing and monitoring of students in the workplace, where they also shared their concerns and historical views on the matter.

"The new thing is that you cannot let the student go and find a lab of their own. We need to secure the lab and the lab needs to be accredited and registered with the SADTC and after that we supposed to come after every five years to check that the lab is still in running condition, we don't have enough manpower for that."

Lecturer 7

7.4 Technology in Dental Technology

As work integrated learning can be understood to incorporate work place based learning, it is a priority that the training institutions are adequately equipped with current technological developments in Dental Technology to simulate the workplace environment. This was seen as a contributing factor to the discourse of W.I.L for the participants, as their affiliation to industry also meant that the institutions should be on

par with industry technology and developments. As students gained experience in the laboratories, participants recognised that the fast-paced changes in technology could not be ignored by institutions.

"All our students do get a vast amount of practical and laboratory exposure, not [only] in private practices as such, here by us as well." *Lecturer 9*

"And then the other big thing which we mustn't forget is that modern technology in the last ten years, fifteen years has been radical" *Lecturer 11*

"We're integrating our theory with our technology, which is going to progress with our students." *Lecturer 4*

In order to fulfil such functions the institutions themselves should be at an appropriate standard to provide the students with the required training. One of the participants stated that the environment in which the students train must be of an acceptable standard. The participant also raised concerns about the state of the training environment in his/her institution.

"Look at the state of our labs now than probably when they started, and yes it's supposed to be maintaining and upgrading, for whatever reason there is; finances or we can't get people to do it, it's not good enough the way it is right now. We should be better maintaining it, students should be working in good environment even as a student" *Lecturer 12*

Barnett (1997) argues that one of the aims of Higher Learning is the development of a more questioning, critical engagement with the world. This has been made more difficult because of the super complexity of the modern era and consequent, changes

that have occurred in society, work and technology, resulting in individuals needing to draw on more complex knowledge. With the re-structuring of the Dental Technology programmes and focus of the UoTs as well as a changing student demographic, participants and the institutions saw the need to stay technologically relevant, as most students have more than a basic understanding of technology in this current era. It is therefore relevant that the vision and mission of all three institutions in this study is to strive towards technology innovation.

> "In fulfilling its vision, TUT will support its students to achieve their highest potential in a safe, enabling and conducive environment by:
>
> - Investing in state-of-the-art technology" (TUT 2016)

> "A preferred university for developing leadership in technology and productive citizenship.
>
> Our mission is to excel through:
>
> - Promoting excellence in learning and teaching, technology transfer and applied research." (DUT 2016)

> "To be at the heart of technology education and innovation in Africa."
>
> (CPUT 2016)

With the development of technology and access to it on a much wider global scale, as well as with the rise of the internet and social media open to students at a much younger age, the type of student entering academic institutions is likely to be different on all educational levels. It must be recognised that the technikon mode of delivery and access to knowledge was appropriate for teaching and learning at that time. The CHE document (Gillard 2004) acknowledges a changing higher education landscape in South Africa, and one of the objectives of the HEQSF is that "its programme

accreditation activities, will be conducted within the context of ongoing reform and restructuring, in order to produce a transformed higher education system of high quality which is able to address the complex knowledge development needs of South African society." (Gillard 2004: 6)

7.5 Summary

This chapter has discussed the challenges experienced by participants with students, and challenges they foresee in prospective degree students. Participants showed great concern about students' ability to cope with the current structure of the Dental Technology programme. They also expressed concerns about students being able to cope with the new four year professional degree. Another issue of concern identified in the data, was that participants feared the vocational nature of Dental Technology teaching was being lost as shifts in coherence were expected in the professional degree. The proposed change in the work integrated learning programme**,** however**,** was perceived as a step in the right direction according to participants, as it reinforced the practical competencies required by students.

Advancements and shifts are truly taking place in the dental technology industry, however the lack of discussion on these major issues and the vagueness by which participants addressed them is evidence of another emerging factor in this study. Dental technology academics are not fully aware of all these significant shifts, many may read about them or engage in some informal discussions on these issues but they have very little involvement with clinical and laboratory cases. Being an academic over being a dental technician has been shown to take participants away from their primary identities and work. The fact that these academics do not fully engage in the practice of dental technology is a further concern for them, as the emergence of UoTs will

cause them to drift further from the practice of dental technology. As these technological advancements have implications for dental technology education, academics should be more aware of what is happening in the industry and more critical of what affiliations they have with the industry. Not a mere catch up with people they know in industry but rather a professional collaboration with other fields in the dental industry. An evaluation of industry involvement by academics is needed.

With the support provided by institutions and an understanding of their roles, participants were in a position to provide the kinds of knowledge the UoTs aim to construct. Despite the concerns raised in this study, it was found that there is a large amount of effort by the academics to ensure that standards are achieved, maintained and that progression is happening in the teaching of Dental Technology. This is well summed up by the quote below and was reflective of the opinions of most academics interviewed.

"I've been an academic and I've been away and I came back as an academic because I love teaching the students. I've got no more satisfaction than the fact that I know that the student are passing … And that makes me proud." *Lecturer 9*

CHAPTER EIGHT: CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This study set out to explore the discourses by which Dental Technology academics construct their identities in a UoT and the discourses by which these academics construct the shift from Technikon to UoT. The study further explored the possible implications of these constructions for Dental Technology teaching and learning as well as the Dental Technology industry. The background to this study is discussed in Chapter Two. The main findings of the study have been discussed in Chapters Five, Six and Seven.

What was clear in the investigation is that discourses by which academics construct their identities are not independent of each other and exist in coherence to construct an individual identity. This chapter will synthesize the main findings of the study to answer the research questions.

8.2 Identity discourses in a UoT

8.2.1 The Dental Technology and academic communities

The findings of this study revealed that within the UoTs' academic constructions of their identities, are two main communities: the Dental Technology community and the academic community. This research established that for Dental Technology lecturers who are working in the UoTs, belonging to the Dental Technology community significantly dominated over them belonging to their academic community. The nature and significance of disciplinary communities in this study was that each community

has a source of authority. It was confirmed that the source of authority within the Dental Technology community is the Dental Technology industry, and within the academic community, the institutions in which academics work. The implications of such authorities, as the data suggests, is that these authorities play a role in the construction of identities. Previously, technikons and now UoTs give authority to Dental Technology academic identities. Therefore, a shift in institutional landscape has led to a shift in the construction of academic identities.

Dental Technology academics have seen the emergence of UoTs as contributing to instability in the construction of their identities. UoTs were further seen as bringing into conflict the identities valued in the Dental Technology and Academic communities. The conflict between communities was experienced by academics when the practices of being a dental technician or technologist were challenged by the practices of being an academic.

Previous constructions of academic identities within the technikons were perceived to be more closely related to the expectations of the Dental Technology industry. While the expectations of the Dental Technology industry of academics has reportedly largely remained the same, the emergence of UoTs has seen institutional expectations of academics change, where participants suggest that additional practices such as research, are now required of them to maintain recognition by the institutions.

With greater expectations of academics in UoTs, conflict between the Dental Technology industry and institutional needs is experienced. The implications of such may see a decrease in industry contribution by academics, although some academics may not fully agree with this and may wish to maintain the same level of industry relations. This is not to say that UoTs do not have an industry focus. It is the practices that academics must engage in at UoTs, however, that blur this industry focus and

participation in Dental Technology. Engaging in university workplace practices such as curriculation, research, staff development and upgrading of qualifications may see academics decreasing engagement with industry progression and practices. The history of Dental Technology, as well as the curriculum structure and planning in the technikons as discussed in Chapter Two, may have meant that dental technicians had largely been excluded from the knowledge production processes. One of the major shifts from technikon to UoT may be the challenging of academic identities as they have been understood in the technikons. Academics in UoTs are now playing a more significant role in the knowledge production process, whether it is through curriculation or research.

8.3 Shift from technikon to UoT

Through this study, it was seen that participants understood the shift from technikon to UoT in terms of valued knowledge and workplace practices. A significant factor in the transformation of Higher Education is the role regulatory bodies have played and continue to play in the structuring of South African higher education. These bodies such as the DoHET (formerly DoE), the CHE, SAQA and the HEQF (now HEQSF) provide structure and accreditation processes for Higher Education. Although only few Dental Technology academics referred directly to these bodies and their significance, this study found that the re-structuring and emergence of UoTs is largely under the guidance Higher Education bodies with a national directive. Through the data, it was found that the re-designation of UoTs presented a shift, as outlined by regulatory bodies, in the underpinning of programmes offered at these institutions. There is a definite relation between years of academic experience and attitudes towards dental technology training. Where it can be said that a majority of academics with more than

five years of teaching experience are more resistant to the shift brought about by the emergence of UoTs. Academics with five or less years of teaching experience demonstrated less resistance to the shifts of institutional requirements on academics teaching in a UoT. Although the study recognized this, it must be said that there are academics with many years of experience who have embraced, some with scepticism, the emergence of UoTs and the shift they bring. Of the five participants in possession of a Masters qualification, three are academics with less than five years teaching experience. Of the three academics with teaching related qualifications, all have above five years teaching experience.

8.3.1 Valued knowledge

The knowledge valued at the institutions was a key discourse whereby academics constructed the shift from technikon to UoT. The nature of the Dental Technology programme was discussed in Chapter One as being a vocational programme, where the valued knowledge in the programme is primarily underpinned by the practical needs of the Dental Technology industry. At the three institutions that offer Dental Technology the shift from technikon to UoT may be experienced in the re-curriculation process, where the programmes are anticipated to incorporate a stronger conceptual component to their curricula. Not all the academics in this study were in agreement with the anticipated knowledge shift in the Dental Technology programme. A few participants perceived this shift to challenge the current connectivity between dental technology teaching and the Dental Technology industry. Yet again, a majority of academics in this study were in full agreement with the introduction of a more balanced conceptual and contextual coherence in the programme. The demand for greater

abstract theoretical knowledge, which would be incorporated into the conceptual coherence of the programme, presents academics with the challenge and pressure to master more abstract knowledge and to build curriculum development expertise. A further challenge for academics is to ensure the introduction of this knowledge is coherently curriculated with the current theory and practical workplace based knowledge of Dental Technology.

8.3.2 Workplace practices

University workplace practices were found to be a discourse by which academics constructed the shift from technikon to UoT. Those discourses that were seen to be most significant in the data include the requirement for improved academic qualifications, mainly through research, and increased workload. The qualification requirements of academics in a UoT are thus a key issue by which academics construct the shift from technikon to UoT. According to participants the benchmark qualification required to lecture in UoTs is now a master's qualification, where research is tied to both institutional identity and institutional funding. Whilst in the technikons, industry experience was the benchmark requirement to lecture, which most Dental Technology academics had acquired prior to teaching. In an effort to develop academic staff competencies, individuals without the academic qualifications to teach have been encouraged by their respective institutions to obtain these qualifications. A few participants were responsive to these suggestions, and have obtained or are in the process of obtaining these qualifications, as well as additional qualifications outside the scope of Dental Technology but relevant to their academic teaching. Although Dental Technology academics acknowledged the need for higher qualifications than the diploma and B-Tech in Dental Technology, others had strong

resistance to furthering their academic qualifications. Those that expressed resistance related the reasoning to there being no professional relevance, as they saw it, for further academic qualifications in the Dental Technology industry. These participants were of the view that they would rather concentrate their efforts on the development of their practical competencies in Dental Technology. Obtaining further academic qualifications was seen to cause tension between the participants' academic and Dental Technology communities.

8.3.3 Research engagement

Within the institution, research engagement was mainly understood to be for qualification purposes and was seen as a discourse by which academics construct the shift from technikon to UoT. The data recognised research as mandatory for UoTs, therefore as an academic, it is required that one engages in some form of research. Generally, research engagement was seen as being beneficial to the growth of the Dental Technology industry but was found to be time consuming and in some cases not properly facilitated by the institutions. Further to this, a few participants did not see research engagement as contributing to their skills in their primary identity as a Dental Technicians. The data and literature verified that in South Africa, Dental Technology had a low research output, which was reflective of the industry worldwide, with the majority of research taking place in dental technology manufacturing companies and not in institutes of higher learning.

Muller (2009) suggests that academics with strong disciplinary discourses are more likely to produce research. Despite the strong disciplinary discourse by participants in this study it was found that this was not the case in Dental Technology. Where research was referred to in the data, it was primarily in terms of formal qualifications and not as an ongoing practice associated with the identity of being an academic. High

teaching loads in Dental Technology were highlighted as a justification for participants not being able to improve qualifications.

8.3.4 Workload expectations

The expectations of the institutions with regards to academic workload were seen to be a discourse by which academics construct the shift from technikon to UoT. A key characteristic of the Dental Technology programme, as articulated by the participants, was the high amount of contact time academics are required to spend with students due to the practical competencies students are expected to achieve. With the emergence of UoTs, an additional workload is expected, as previously discussed, in the form of research engagement and curriculum development activities. This shift on workload was understood to mean that academics would be spending less time in the classroom and more time on developing themselves[8]. Concerns were expressed that the practical competencies of the students may then be compromised.

Teaching students was understood to be a discourse by which dental technology academics constructed the shift from technikon to UoT. Through the data it was seen that the current students entering the programme are constructed as being under prepared for Higher Education. Participants' understanding of student-preparedness was focused on the profile of students that enter the Dental Technology programme, where they identified a difference in the type of student that the technikon aimed to graduate and that a UoT aims to graduate.

[8] The data around achieving postgraduate qualifications was almost exclusively about personal development rather than contribution to the development of the field.

Participants also expressed concern with respect to the entrance requirements for the Dental Technology programme. The concern with higher entrance qualifications in the new curriculum stems from the type of institution UoTs aims to be, where entrance requirements are expected to be higher than those currently in place as students will be required to engage with more abstract knowledge. Academics therefore understand that they would be required to undertake significant additional pedagogical work to incorporate abstract knowledge in the Dental Technology programme.

Furthermore, it was believed that the increased entrance requirements for a professional degree in Dental Technology would greatly restrict the number of entrants into the programmes. In spite of the frequent concern about having the 'right kind of student', however, the data also suggests that the academics were of the view that such students would be better prepared than the current students and therefore easier to teach. There was a view that the higher entrance requirements would bring a concomitant improvement in preparedness for higher education. The construction of student success was thus largely in terms of what students brought with them to the institution rather than emerging from the interplay of a number of experiences and events within the university itself.

8.4 Implications for Dental Technology teaching and learning

The literature on UoTs as discussed in Chapter Two as well as the data from this study acknowledge that there would be an increased conceptual coherence in programmes offered at UoTs. The focus on contextual coherence would remain but it would be accompanied by strengthening of the conceptual base of the curriculum. The data highlights the need for academics who can deliver a conceptually and contextually coherent academic programme. This shift was seen by some participants as a dilution

of disciplinary knowledge and these debates reflect the undefined role and uncertain significance of theoretical and conceptual knowledge in curriculum design in UoTs. There was a clear need for a theoretical conception of practice-based knowledge. In addition to understanding the shifts for teaching and learning it was recognised that participants need to keep up to date with the dental technology industry's technological advancements.

8.4.1 Delivery of Dental Technology knowledge

The implications for Dental Technology academics are their competency to deliver a Dental Technology programme that potentially requires greater conceptual underpinning. The shift in knowledge valued at UoTs has implications for teaching and learning in that there will be an almost equally strong focus on both theory and practice. In the study, 'theory' was often used as a term to indicate lectures in contrast to 'pracs', which are laboratory based practical cases. The use of the term 'theory' cannot be taken for granted as having a shared meaning and the implications of 'increased theory' for curriculum changes were thus not uniformly understood.

The data suggests the need for sound theoretical underpinnings to current teaching and learning practices in the Dental Technology programmes. It was seen that with a greater understanding of the theories of teaching, academics could significantly improve their practice.

With the introduction of UoTs there was general view that the change to UoT had initially been seen to be 'just a name change', the implications for academic identity were now being experienced in quite specific ways. Specific practices are required of academics by UoTs, to afford and maintain participants' recognition in the academic

community. By engaging in these practices the emergence of UoTs could see participants giving greater recognition to themselves as academics. The data also indicated, however, that this could potentially come at a cost to the primary identity as dental technicians. The tension between these two identities was experienced, as the data showed through the practices of being academics, which was not fully recognised as a need in the Dental Technology community. This tension between the identities could see participants engaging in greater depth with the kinds of knowledge they are expected to deliver in UoTs, but shifting away from extensive and necessary participation in industry practices.

There was also evidence that the purpose of the UoT was not settled and that a narrow focus on skills development was increasingly seen to be problematic, though it was outside of the scope of this study to interrogate this in much detail.

Summary

The efforts to improve academic staff competencies by institutions were not only directed at academic qualifications, but also at their practical competencies through staff development initiatives. Little was seen in the data generated in this study that related to intense staff development initiatives aimed specifically at preparing academics to teach in a UoT. It was claimed that beyond ad hoc workshops with voluntary attendance little was being done by institutions to prepare academics to teach in a UoT. The claim above was not investigated or verified with the institutions, however, it could possibly be linked to academics' lack of knowledge of the institutional activities. It was indicated by the academics that all institutions that participated in this study had induction programmes for new academics. The data showed however, that

participants did not believe that they had gained sufficient information and directive to effectively deliver the required content, and that most learning was done on the job.

The data also showed that although participants functioned in similar environments they were affected differently by the circumstances in which they worked. Where some participants were active in staff development, others did not attend such initiatives and found excuses not to. These initiatives included courses for teaching and learning run by academic support departments.

8.5 Implications for the Dental Technology industry

The strong affiliation with the Dental Technology industry due to the dominant identity of being Dental Technicians could be challenged as the practices of being an academic are brought more to the fore. The affiliation academics have with industry may come under threat as they make an effort to keep up with their commitments to their academic communities as a response to the pressures placed upon them by the academic institutions.

At the end of the teaching and learning process, it is the Dental Technology industry that will be required to absorb the UoT graduates. With the shift to be more research focused and to increase conceptual understandings in and outside of Dental Technology, accommodation for these graduates in the Dental Technology industry must be established. In the literature it was argued that with greater conceptual depth comes the ability to produce new knowledge, the ability to address unforeseen problems and the ability to add value to a field or profession. It is thus possible that graduates with a stronger theoretical base will be able to contribute in ways that previous graduates were less likely to. According to some participants, the Dental

Technology industry has recognised that there is a need for a different type of dental technician. A few other respondents, however, felt that the industry would not change to accommodate these graduates and that they would still be practising the vocational profession of Dental Technology as it has existed to date.

The data suggests that research engagement may be beneficial to the growth of the industry. Unfortunately current research in Dental Technology is not always viewed by industry and some academics as contributing to the industry. The lack of research growth in the Dental Technology industry is due to research not being emphasised as a need in the South African Dental Technology industry.

8.6 Recommendations arising out of this study

- Universities of Technology must have structured staff development programmes to adequately prepare academics for the shifting roles they will have to assume as academics in a new and developing Higher Education landscape.
- The dental technology programmes need curriculum development that respects the practical contextual coherence of the programme while enhancing the conceptual coherence, with a close focus on the structure of knowledge.
- A clear strategy to ensure meaningful stakeholder involvement in programme (including curriculum) transformation and development is needed.
- A transparent and clearly articulated communication process to sensitize academic staff in dental technology to their new responsibilities within the broader institutional transformative process is required.

- A supportive process to help these identified staff meet the requirements of their new roles would be needed.

Outside of Dental Technology the implications and outcomes of this study can be researched in other programmes offered at the UoTs.

8.7 Closing statement

This study analysed the discourses of Dental Technology academics across three UoTs. In this process key ways in which the shift in institutional designation affected the experiences of these academics were identified. The introduction of UoTs has significant implications for the discourses and practices of Dental Technology lecturers in their endeavours and pursuit to be academics in UoTs. The discourses by which the participants construct the shift from Technikon to UoT have encouraged staff to engage their academic identities with greater depth, understanding and knowledge of what it is to be an academic. It is unlikely that the strong affiliation to the Dental Technology industry will be lost, even with a shift on the focus of the curriculum to incorporate a greater conceptual coherence.

Institutional culture and academic identities are related at all times and through this study the perspective of academics was expressed. The many concerns raised through this study provide challenges for the curriculum and for industry, but there was a strong sense that collaboration between institutions, Dental Technology academics, Dental Technology students and the Dental Technology industry, is possible and desirable to all participants to engage in processes where their academic identities

within the UoTs are matured and where the quality of education will further the dental technology industry.

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Appendix A: Letter of informed consent

Letter of informed consent

Dear Participant

I am very grateful that you have agreed to participate in this study which is being conducted for my Master's in Technology. I am registered with the Department of Dental Technology at the Durban University of Technology and my supervisor is Dr Sioux McKenna**.** Should you wish to contact her at any stage during the project, her e-mail address is: s.mckenna@ru.ac.za. My co-supervisor is Mr Greg Bass, Deputy Dean of Health Sciences at Durban University of Technology, his e-mail address is: gregb@dut.ac.za.

Through the study**,** I am hoping to explore how Dental Technology academic staff are experiencing teaching at a University of Technology, and what they understand about their roles and responsibilities in the process of the institution becoming a University of Technology. Your responses will be treated confidentially and the issue of your anonymity will be discussed fully with you at our first meeting.

You have been selected for participation in this project because of your position as Dental Technology academic staff at a University of Technology. You will, however, be participating in your individual capacity. Any of your responses that are used in the dissertation will be attributed to neither you nor your institution and an anonymous number system will be used to reference all data. You are free to withdraw from the project at any stage without any negative or undesirable consequences to you. Your participation in this project is voluntary and no payment will be made to you. The information, views and opinions expressed during the project will be used for research purposes only and will not be released for any employment-related performance evaluation, promotion and/or disciplinary purposes. This interview will take approximately one hour of your time, and will take place at a date and time that is most convenient for you.

Once again, my grateful thanks in anticipation of your participation. Please sign the declaration below to acknowledge that you have read and understood the implications of your participation in this project. Please feel free to contact me or my supervisors with any questions or concerns.

Yours faithfully

Thobani Gumbi

E-mail: thobanigumbi@yahoo.com

Contact: 0716299653

DECLARATION

I…… (full name/s of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project. I understand that I am at liberty to withdraw from the project at any time, should I so desire.

Signature of Participant: _____ Date: _____

Appendix B: Semi-structured interview questions

1. How long have you been a lecturer?

2. Do you feel that there is a difference between a technikon and university of technology? (*Explore the participants' views on teaching in a UoT)*

3. What do you think are your main responsibilities as an academic in this institution? (*Explore the participant's view of her/his role as an academic.)*

4. Has your style of teaching /lecturing been affected by the institution shift from a technikon to UoT?

5. Do you feel it is important to have more theoretical knowledge in the Dental Technology diploma? (*Explore participant's view on contextual and conceptual coherence*.)

6. Do feel that students benefit more from highly qualified academics or more from teachers with industry experience?

7. What do you think about staff development? (*Explore whether teaching at a UoT has required lecturers to engage more actively in staff development. Get details of what staff development initiatives they have been part of and how they view these.)*

8. Have you been encouraged to improve your qualification? (*Explore whether the participant feels that there should be a need for them to improve formal qualifications.*)

9. Have you ever conducted any type of research? (*Explore whether participant feels that research is necessary in Dental Technology and if becoming a UoT has affected research in dental technology*)

10. Is work integrated learning (WIL) important in Dental Technology?

11. Do you personally feel you can supervise WIL? (*Explore whether becoming a UoT has made any difference to WIL or if they think it should?)*

12. Is research necessary in the Dental Technology profession?

13. How closely do you work with the Dental Technology industry? (*Explore whether the participant values links to industry as fundamental to the programme*)

14. Are you coping with what is now required of you as an academic at a UoT?

These questions were used as guidelines only.

Appendix C: Durban University of Technology Ethical Clearance

DURBAN UNIVERSITY of TECHNOLOGY

Faculty of Health Sciences

ETHICS CLEARANCE CERTIFICATE

Student Name	THOBANI LINTON GUMBI	**Student No**	20610265
Ethics Reference Number	FHSEC 023/11	**Date of FRC Approval**	26/09/2011
Qualification	M-Tech: DENTAL TECNOLOGY		
Research Title:	**An investigation into dental technology academics' discourses on the emergence of universities of technology in South Africa.**		

In terms of the ethical considerations for the conduct of research in the Faculty of Health Sciences, Durban University of Technology, this proposal meets with Institutional requirements and confirms the following ethical obligations:

1. The researcher has read and understood the research ethics policy and procedures as endorsed by the Durban University of Technology, has sufficiently answered all questions pertaining to ethics in the DUT 186 and agrees to comply with them.
2. The researcher will report any serious adverse events pertaining to the research to the Faculty of Health Sciences Research Ethics Committee.
3. The researcher will submit any major additions or changes to the research proposal after approval has been granted to the Faculty of Health Sciences Research Committee for consideration.
4. The researcher, with the supervisor and co-researchers will take full responsibility in ensuring that the protocol is adhered to.
5. ***The following section must be completed if the research involves human participants:***

	YES	NO	N/A
❖ Provision has been made to obtain informed consent of the participants	✓		
❖ Potential psychological and physical risks have been considered and minimised	✓		

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❖ Provision has been made to avoid undue intrusion with regard to participants and community	✓		
❖ Rights of participants will be safe-guarded in relation to: - Measures for the protection of anonymity and the maintenance of Confidentiality.	✓		
- Access to research information and findings.	✓		
- Termination of involvement without compromise	✓		
- Misleading promises regarding benefits of the research	✓		

[redacted] 5/12/2011

SIGNATURE OF STUDENT/RESEARCHER DATE

[redacted] 5/12/2011

SIGNATURE OF SUPERVISOR/S DATE

[redacted] 16/01/2012

SIGNATURE OF HEAD OF DEPARTMENT DATE

[redacted] 14/02/12

SIGNATURE: CHAIRPERSON OF RESEARCH ETHICS COMMITTEE
DATE

Institutional Research Ethics Committee
Faculty of Health Sciences
Room MS 49, Mansfield School Site
Gate 8, Ritson Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2900
Fax: 031 373 2407
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

9 April 2014

Mr T Gumbi
C/o Department of Dental Sciences
Faculty of Health Sciences
Durban University of Technology

Dear Mr Gumbi

An investigation into dental technology academics' discourses on the emergence of universities of technology in South Africa

The Institutional Research Ethics Committee acknowledges receipt of your Safety Monitoring and Annual Recertification report.

I am pleased to inform you that the study has been approved to continue.

Please note that ethical approval has been extended till **9 April 2015**; if the research is not complete within this time, you will be required to apply for recertification three months before the expiry date.

Yours Sincerely

[redacted]

Prof J K Adam
Chairperson: IREC

Appendix D: Cape Peninsula University of Technology ethical clearance

Cape Peninsula
University of Technology

HEALTH AND WELLNESS SCIENCES RESEARCH ETHICS COMMITTEE (HW-REC)
Registration Number NHREC: REC- 230408-014

P.O. Box 1906 • Bellville 7535 South Africa
Symphony Road Bellville 7535
•Tel: +27 21 959 6352 • Fax +27 21 953 8490
Email: danielso@cput.ac.za

30 May 2014
REC-230408-014-RA Level 01
H03Ext

Dental Sciences Department – Durban University of Technology

Dear Mr TL Gumbi

YOUR APPLICATION TO THE HW-REC FOR ETHICAL CLEARANCE

Approval was granted by the Health and Wellness Sciences-REC on 14 April 2014 to Thobani Linton Gumbi for ethical clearance pending corrections that have now been received and reviewed. This approval is for research activities related to an MTech: Dental Technology at Durban University of Technology.

TITLE: An investigation into dental technology academics' discourses on the emergence of universities of technology in South Africa.

Supervisor/Promoter: **Prof S Mckenna**
Co-supervisor/Promoter: **Mr G Bass**

Comment:
Approval will not extend beyond 30 May 2015. An extension should be applied for 6 weeks before this expiry date should data collection and use/analysis of data, information and/or samples for this study continue beyond this date.

The investigator(s) should understand the conditions under which they are authorized to carry out this study and they should be compliant with these conditions. **It is required that the investigator(s) complete an annual progress report with their application for an extension and a final report on completion of the study.**

Kind Regards

[redacted]

CHAIRPERSON – ETHICS RESEARCH COMMITTEE
FACULTY OF HEALTH AND WELLNESS SCIENCES

Appendix E: Tshwane University of Technology ethical clearance

Tshwane University of Technology
We empower people
10 Years
2004 -2014

Research Ethics Committee

The TUT Research Ethics Committee is a registered Institutional Review Board (IRB 00005968) with the US Office for Human Research Protections (IORG# 0004997) (Expires 9 Jan 2017). Also, it has Federal Wide Assurance for the Protection of Human Subjects for International Institutions (FWA 00011501) (Expires 22 Jan 2019). In South Africa it is registered with the National Health Research Ethics Council (REC-160509-21).

April 12, 2014

Ref #: REC2014/01/006
Name: Gumbi TL
Student #: 206102265 (DUT)

Mr TL Gumbi
Dept of Dental Sciences
Faculty of Health Sciences
Durban University of Technology

Dear Mr Gumbi,

Decision: Final Approval Reconfirmed

Name: Gumbi TL
Proposal: *An investigation into dental technology academics' discourses on the emergence of universities of technology in South Africa*
Qualification: M Tech Dental Technology, Durban University of Technology
Supervisor: Prof S Mckenna
Co-supervisor: Mr G Bass

Thank you for submitting the outstanding project document for ethics clearance by the TUT Research Ethics Committee (REC).

- **Durban University of Technology (DUT), Annual Ethics Recertification**
  - The TUT REC took note of the annual DUT Ethics Recertification letter (dated 9 Apr 2014).

The Chairperson of the Research Ethics Committee of Tshwane University of Technology reviewed the DUT Ethics Recertification letter on April 12, 2014. **Final approval** is reconfirmed. The decision will be tabled at the next REC meeting on May 19, 2014 for notification.

The proposed research project may now continue with the proviso that:

1) The researcher/s will conduct the study according to the procedures and methods indicated in the approved proposal, particularly in terms of any undertakings and/or assurances made regarding informed consent and the confidentiality of the collected data.
2) The proposal (inclusive of the applicable information leaflet/s, informed consent document/s, interview guide/s and/or questionnaire/s) will again be submitted to the Committee for prospective ethical clearance if there are any substantial changes from the existing proposal, particularly if those changes affect any of the study-related risks for the research participants.
3) The researcher will act within the parameters of any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.

Note:
The reference number [top right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants.

Annual review:

1. The formal ethics approval of all research projects need to be renewed on an annual basis.
2. The current ethics approval expiry date for this project is **June 30, 2015**.
3. No research activities may continue after the ethics approval expiry date indicated on the formal Research Ethics Committee approval letter.
4. The Research Ethics Progress Report (electronic copy available at the following website: http://www.tut.ac.za/Other/rninew/ResearchEthicsCommittees/Pages/default.aspx) constitutes an application for such ethics approval renewal and must be submitted to the REC by **May 15, 2015**.

Yours sincerely,

[redacted]

WA HOFFMANN (Dr)
Chairperson: Research Ethics Committee
[Ref#2014=01=006=GumbiTL]

Appendix F: Proof Reading Report

EDITING STATEMENT

NAME OF STUDENT: **Thobani Linton Gumbi**

STUDENT NUMBER:

TITLE OF DISSERTATION: **An investigation into Dental Technology academics' discourses on the emergence of Universities of Technology in South Africa**

INSTITUTION: Durban University of Technology

I have proof read this dissertation and made suggestions for corrections with regard to spelling, grammar, syntax, the format, referencing and the bibliography.

Gavin Walter Storrie
B A (Hons), U E D

Email: g.storrie@gmail.com

Tel: +44 1323 478236
Cell: +44 7845 585929

DATE: 22 August 2016

(Editing Experience: More than 30 years' experience as an English teacher and lecturer.
Three years' experience as a sub editor and English coach at Independent Newspapers in Durban.
I have edited more than 30 Masters and Doctoral theses.)