UNDERSTANDING ORAL HYGIENE KNOWLEDGE AND CURRICULUM ISSUES AT TRAINING INSTITUTIONS IN SOUTH AFRICA

A research report submitted to the Faculty of Humanities, School of Education, University of the Witwatersrand, Johannesburg, in partial fulfilment of the Degree Master of Education (by Dissertation).

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ABSTRACT

Higher Education is influenced by society and workplace demands, which affects the structure of curricula. The literature review exposed a lack of understanding of knowledge in the Oral Hygiene occupational field. This led to a call to understand which knowledge is most valued by the Oral Hygienist and how it affects professional development. This necessitated the examination of knowledge located in curricula. The aim of this study was to study the perceptions of South African Oral Hygiene lecturers and the organisation of knowledge in curricula, in order to learn about current attempts to professionalise the field. The study makes use of a qualitative descriptive design. The study population is based at two universities, consisted of full-time lecturers teaching Oral Hygiene. Data collection and analysis comprised three methods: semi-structured questionnaires to examine the lecturers' perceptions about knowledge; curriculum analysis gathering information about the curricula making use of a knowledge type analysis tool developed from the conceptual framework; and examination question analysis to assess the recontextualisation of knowledge from concepts or everyday knowledge of practice. The results show a comparison of lecturers' perceptions and the organisation of knowledge in the curriculum suggest that although it is clear that the lecturers aspire to professionalise the field, the curricula and their own research identities promote the preparation of practitioners with technical skills. This is shown (inter alia) in the following findings about both curricula: 'clinical applied knowledge' is highly valued (UNIV1-73% and UNIV2-53%) with a small amount of time spent on 'pure' knowledge (UNIV1-8% and UNIV2-12%). The point to be made here is, that an emphasis on 'Clinical Applied knowledge' suggests that a large amount of time is spent on covering procedures for practice, which in turn is an indication that the two curricula are inclined towards preparing students for an occupational model of practice. The lecturers' research identity focuses on knowledge borrowed from clinical practice. Lecturers use a unifying concept for practice and believe they are experts in clinical teaching. In conclusion, examining South African lecturers' current views of the Oral Hygiene knowledge base and studying its organisation within different curricula reveal that the knowledge most valued in the field is Clinical Applied knowledge with less emphasis on pure knowledge and knowledge applied from the sciences. This study highlights that lecturers aspire to professionalise the field, even though curricula promote the preparation of practitioners with technical skills.

Keywords: Oral Hygiene, knowledge, curriculum, professionalism

DECLARATION

I declare that this Research Report is my own unaided work. It is being submitted for the Degree of Master of Education (by Dissertation) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination in any other university.

_____

Glynnis Vergotine

Date: 17 March 2014

Place: Parktown

DEDICATION

I dedicate this Masters to my parents Luke and Susan Tertiens whose unwaivering love and belief in my abilities throughout my childhood and adulthood has allowed me to soar to these heights. I love you both.

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ABBREVIATIONS

ADHA	American Dental Hygienist Association
BOH	Bachelor in Oral Health
CHE	Council of Higher Education
GIS	Geographical Information Systems
HEQC	Higher Education Qualifications Council
HPCSA	Health Professions Council of South Africa
IFDH	International Federation of Dental Hygiene
NQF	National Qualifications Framework
OH	Oral Hygiene
OHASA	Oral Hygienist Association of South Africa
ORF	Official Recontextualising Field
PD	Pedagogic Device
PHC	Primary Health care
PRF	Pedagogic Recontextualising Field
SADA	South African Dental Association
SAQA	South African Qualifications Authority
UK	United Kingdom
USA	United States of America
WC	Western Cape

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CHAPTER 1 - GENERAL INTRODUCTION TO THE STUDY

1.1 Introduction

Societal and workplace demands have impacted on the nature of knowledge seen in curricula and in this way have affected the purpose of Higher Education (Muller & Young, 2013). Authors have examined the knowledge found in curricula, describing its form, structure and value for preparing knowledgeable citizens for the workplace (Shay, 2014; Muller, 2009; Maton, 2000; and Gamble, 2006). Keeping this in mind, I move to the central focus of this study, the occupation called Oral Hygiene and its knowledge base.

Dentistry and a number of dental auxiliary professions are associated with the provision of oral care. Dentistry is a profession that focuses on the overall management of the oral cavity. It is defined as:

> … the science concerned with the prevention, diagnosis, and treatment of diseases of the teeth, gums, and related structures of the mouth and including the repair or replacement of defective teeth. (Stedman's Medical Dictionary, 2013, online)

Dental auxiliaries evolved out of the field of Dentistry primarily as assistants to the dentist and are presently practicing as dental therapists, dental/oral hygienists, or dental assistants. This study focuses on one of these dental auxiliaries, namely dental/oral hygienists. Countries, mainly from the northern hemisphere, have named them 'Dental Hygienists', while in South Africa they are known as 'Oral Hygienists'. For the purpose of this study, the South African version is used. The American Dental Hygienist Association (ADHA) conceptualises Oral Hygiene as 'the study of preventive oral healthcare, including the management of behaviours to prevent oral disease and promote health' (Darby & Walsh, 1993, p. 25).[1]

[1] *This definition emphasises that Oral Hygienists have a greater inclination to the prevention of oral conditions rather than performing curative work as done by dentists.*

While Oral Hygiene started as a profession in South Africa thirty-five years ago, Oral Hygienists have been practicing internationally for one hundred years (Darby & Walsh, 2003). Over this period there have been many developments in the knowledge base and in the professionalisation of this group of dental professionals. These developments influence the way in which Oral Hygienists practice, and so this study explores the nature of knowledge found in South African curricula and how this knowledge impacts on ways of socialising students into the field.

1.2 Problem statement

The relationship between knowledge, curricula and professionalisation is not examined clearly in the Oral Hygiene literature. The literature does not provide adequate explanations of the knowledge base of Oral Hygiene or how its knowledge contributes to the strengthening of the profession.

There is a debate about whether Oral Hygiene is a discipline or a field of study as well as discussion about how far Oral Hygiene has developed as a profession (Cobban, Edgington & Compton, 2007). One could thus infer that the way in which knowledge is re-contextualized[2] in Oral Hygiene curricula may not be apparent. The disparity of opinions about the occupation and the uncertainty of how knowledge has been recontextualised, point to possible disagreement amongst Oral Hygiene lecturers regarding how curricula should look, what the knowledge base is and what socialisation path curricula needs to build.

Consequently, over the past fifty years, the debate has been on-going regarding whether Oral Hygiene can be viewed as a discipline and if it has moved closer toward being a profession through developing its theory and the field of practice (Cobban et al., 2007). Nonetheless, the body of knowledge in Oral Hygiene has not developed as with other disciplines. Cobban et al. (2007) raise an important point, they argue that Oral Hygiene,

[2] Bernstein (2000) describes three levels of knowledge production namely; Production, Recontextualisation and Reproduction. These will be discussed later in Chapter 3.

> … as a body we need to articulate forms of knowledge that are valued by dental hygiene practitioners, educators, researchers and leaders, and need to articulate ways that will be acceptable to develop and validate the knowledge used for practice. (p. 17)

This claim displays the importance of research in validating the knowledge used in the field. With more evidence-based research, the knowledge used in clinical practice can be related to the sciences. This makes lecturers important agents in this study, as they have to develop the knowledge base through their own research inputs as well as develop students who can identify with the latest evidence in the field. There has been a call from international Oral Hygiene researchers to analyse the knowledge base of the field and the process of its professionalisation (Darby & Walsh, 1993; Lautar, 1994; Gillis & Praker, 1995; Cobban et al., 2007; Hepnar, 2011). This analysis has implications for understanding professional knowledge and will provide a better understanding of the Oral Hygienists' professional identity more broadly.

It is important to understand the way in which Oral Hygiene lecturers in South Africa view knowledge for the field, how they work with knowledge in curricula, and what they believe is important for socialising students into professional practice. A lack of understanding of the knowledge project in the field could mean a further delay in developing the Oral Hygiene as a profession.

1.3 Aim

The aim of this study is to examine South African Oral Hygiene lecturers' perceptions of the nature of knowledge and the organisation of the knowledge base of Oral Hygiene curricula and to draw implications for current attempts to strengthen the status of Oral Hygienists.

Main research question

When studying the perceptions of Oral Hygiene lecturers and curricula, what can we learn about current attempts to professionalise the field? This research question is further divided into the following sub-questions:

1. In what way does the literature theorise the knowledge base of Oral Hygiene?
2. What are South African Oral Hygiene lecturers' perceptions of the field of knowledge?
3. How do South African Oral Hygiene degree programmes organise the knowledge base into curricula?
4. In what ways are these Oral Hygiene lecturers' perceptions aligned (or not aligned) to the organisation of knowledge in the curricula?

1.4 Rationale

There are two major concerns for oral health professionals working in South Africa. Firstly, dental service rendering is expensive, and in a country with a dual economy the people receiving dental treatment are wealthy, while the majority, who are poor, go without these much-needed services. Secondly, the oral health situation in South Africa displays a great burden of oral diseases and a shortage of dental professionals to manage this problem (van Wyk & van Wyk, 2004). The ratio of dental professionals to the population is approximately 1:10 000 (National HRH, 2013). The government advocates for the provision of primary oral health care through its national oral health policies (National Oral Health Strategy, 2005) and re-engineering of the primary health care model (National HRH, 2013). This puts the Oral Hygienist in an important position to provide the preventive oral health care needed by so many.

Oral Hygienists are trained in only four countries in Africa, with South Africa offering either a Bachelor's degree or a Diploma in Oral Hygiene at five institutions. This makes South Africa the country that provides training for the majority of Oral Hygienists in this region (Thorpe, 2006). The most pertinent knowledge for the field as seen through the different programmes locally has not been researched. As an Oral Hygienist with more than twenty-five years of experience in the field, as well as being a lecturer in Oral Hygiene for more than ten years and the researcher in this study, it is important that I highlight my view. I would agree with Edgington, Pimlott

and Cobban (2009) that training should focus on primary oral health care provision and prevention because of the much-needed services required by so many. This being said, I believe that the profession can only be strengthened if there is strong validation of its knowledge base and this would depend on the research produced in the sciences and recontextualised in curricula. Examining the South African lecturers' current views of the Oral Hygiene knowledge base and studying its organisation within different curricula will help to understand what lecturers regard as the most relevant knowledge. It may provide clarity on the role of an Oral Hygienist in South Africa, what they do in practice and how this relates to what students are taught.

Local educational research in Oral Hygiene examines the ways in which curricula and pedagogy influence student learning. The focus is on how knowledge relates to students' competence (Rayner and Gordon, 2001; and Erasmus, Luiters & Brijlal, 2005). Rayner and Gordon (2001) explore the transition from subject-based curricula to outcomes-based curricula, its bearing on clinical and thinking skills of Oral Hygiene students and show that curricula can make a learning pathway possible in the profession. According to their study a laddered approach to training with intermediate exit qualifications is possible. Pedagogy and assessment studies focus on theory-practice relations to look at how teaching and learning occurs and whether they enable students' learning of the practice (Du Bruyn, 2009; Sykes & Gugushe, 2007; Bhayat, Vergotine, Yengopal, & Rudolph, 2011).

As indicated before, Oral Hygiene lecturers have an important role to play in the development of the profession, and their perceptions are vital to this study. Lecturers have invaluable input in this arena through their involvement with curricula design, planning and implementation. This research enquiry may also be useful as a reflection tool for lecturers and can assist in curricula development in Oral Hygiene programmes. A distinction should however be made between lecturers' general perceptions of the knowledge base and how knowledge is demonstrated in syllabus designs and assessment tasks of specific courses.

In order to understand lecturers' general perceptions of knowledge and the curricula, an informal survey of their opinions was conducted. The results provide lecturers' observations and views about what they think are the most relevant knowledge for Oral Hygiene curricula and the profession. A more specific indication of lecturers' understanding of knowledge is demonstrated through an analysis of the curricula and assessment tasks given to students in key courses. Through these analyses this investigation intends to provide a systematic description of the knowledge that is foregrounded in curricula. Conducting this study will provide a clearer understanding of the nature of the knowledge base of Oral Hygiene.

1.5 Research Question

The main research question envisaged for this study was described earlier[3] and educational theories are used as a means to investigate this. Data on curricula design and final examination questions, together with lecturers' perceptions of the Oral Hygiene field are used to systematically describe Oral Hygiene curricula in two degree programmes in South Africa. So, the object of this study is two-fold: to analyse lecturers' perceptions of Oral Hygiene as a field of knowledge and as a profession, then to examine the knowledge base of the profession as it emerges from its organisation in curricula.

[3] The main research question from page 3 is 'When studying the perceptions of Oral Hygiene lecturers and curricula, what can we learn about current attempts to professionalise the field?'

1.6 Overview of chapters

Chapter 1 is an introduction to the dissertation; as you have just read, it describes the context in which the study is undertaken and explains the problems that lead to the research question. An outline of the purpose of the study includes its main aim and objectives leading into the main research question.

Chapter 2 is literature review. This chapter provides an overview of the Oral Hygiene literature and focus on the studies in the field that attempt to theorise the nature of Oral Hygiene knowledge, curriculum issues and how these are related to the identity of a professional.

Chapter 3 is the conceptual framework, which examines sociological studies of knowledge and more specifically of professional knowledge with a view to construct a frame for the study. The chapter describes the perspectives of educational sociologists and philosophers about knowledge development. The links between knowledge and curriculum are discussed and the concepts for analysis are developed.

Chapter 4 describes the study research design and methodology used and offers an explanation of the study design, population and its methods of data collection. The methods of analysis, the analysis process and the various tools used are also described.

Chapters 5 and 6 present the findings of the study and provide an explanation of the lecturers' perceptions through the analysis of the questionnaires. Chapter 5 provides an overview of the perceptions lecturers have of Oral Hygiene knowledge, their curricula and how they perceive the professionalisation of the field. The curricula of two institutions are analysed in Chapter 6, using criteria devised for the project to understand the knowledge base of each curriculum. Comparisons are drawn about the two curricula to emphasise differences and similarities in the organisation of the knowledge type areas in each of the programmes investigated. The analysis of

assessment documents allows for the further analysis the curricula by examining how knowledge has been recontextualised in final examination papers. This analysis looks at the knowledge types as well as whether the questions draw on concepts or on knowledge of everyday practice.

Chapter 7 provides a conclusion by discussing the main thrust of the study and reflecting on the research questions. Final concluding remarks point to the knowledge valued by the lecturers and its' organisation in the curriculum. The rationale for this study and its methodology are presented again and linked to the main aim of the study. Limitations and recommendations of the study are presented focusing on the research questions. And finally my answer to the main research question and sub-questions is presented.

CHAPTER 2 - LITERATURE REVIEW: THE ORAL HYGIENE FIELD OF PRACTICE

2.1 Introduction

According to internationally defined roles, the Oral Hygienist is an oral health educator, health promoter/advocate, clinician, marketer and researcher (Darby & Walsh, 2003). Oral Hygiene lecturers are expected to teach and develop specialised knowledge to ensure that students are well prepared for these diversified roles. As mentioned in Chapter 1 (p. 2), it is not clear how Oral Hygiene lecturers align their perceptions of knowledge to the curricula or how these relate to their views about the field of Oral Hygiene practice. This literature review addresses the first question of this research project, which reads as follows 'In what way does the literature theorise the knowledge base of Oral Hygiene?' When reflecting on the knowledge base of Oral Hygiene, a number of issues need to be addressed: a search for the best description of the knowledge base in the literature is necessary, and a judgement about whether this description of knowledge is systematic in understanding the types of knowledge the field consists of and the different roles students are prepared for.

The aim of this literature review is to provide an understanding of knowledge development in Oral Hygiene and its relation to professionalisation. This will allow one to see how knowledge relates to the identity of practitioners and its links to curricula. This review further examines the explanations of professional identity, and what the ideal Oral Hygienist going into practice is described as. Lastly, the review investigates curriculum issues in the field by searching for the knowledge that should be in place upon qualification and how curriculum content aligns with what is needed in practice. The review is divided into three sections: the Oral Hygiene field of knowledge, the professionalisation of the field and Oral Hygiene curriculum and educational issues.

2.2 The Oral Hygiene field of knowledge

Concepts like 'discipline', 'field of study', 'field of practice' and 'profession' are used in the literature to describe the state of Oral Hygiene knowledge. A number of authors describe the knowledge field of Oral Hygiene. They explain it mainly in terms of knowledge and knowing, and how knowledge influences professionalisation of Oral Hygiene today (Cobban et al., 2007; Cobban, Edgington, Myrick & Keenan, 2009; Darby & Walsh, 1993; and Lautar, 1994). These include a number of attempts to theorise the knowledge base of Oral Hygiene. Cobban et al. (2007) are particularly helpful for the task here as they draw a distinction between profession, discipline and field of study. Cobban et al. argue that it is important to understand the nature, scope and object of Oral Hygiene knowledge if we want to develop as a profession (Cobban et al., 2007).

The sub-sections, which follow, provide the assertions from the literature about Oral Hygiene knowledge. These include; an explanation of theory development, expanding the field of practice and links to the debates on professionalisation. The review then moves from knowledge development in Oral Hygiene to the state of curriculum development, which will be described later in this chapter.

2.2.1 Commencement of the knowledge debate

According to Darby and Walsh (2003) training for the occupation was started by Alfred Fones in 1913 in the United States of America. The next few decades saw an increase in the establishment of various tertiary institutions, with the accreditation of programmes being of paramount importance to Oral Hygiene at the time. This expansion of the field resulted in a worldwide introduction of diploma and degree programmes in the United States of America (USA), Canada, the United Kingdom (UK) and a number of other developed countries (Darby & Walsh, 2003). The first International Symposium on Dental Hygiene was held in 1970 in Italy and by the end of that decade various countries had hosted six international symposia.

The international conversation on knowledge in the field had started, focusing mainly on the functions of the Oral Hygienist and problems experienced within the field (Darby & Walsh, 2003). By the end of this period, the question of whether Oral Hygiene could be regarded as a discipline emerged. This was mainly because of the philosophical questions about knowledge development and professionalisation that were being raised in other occupations like Nursing at the time. Philosophers like Donaldson and Crowley (1978), Dickoff and James (1988a) point out that Oral Hygiene cannot be a discipline because concepts have not been developed from an Oral Hygiene perspective and that it is not enough to have application of other disciplines' concepts. This gave rise to the conversation about the knowledge base of Oral Hygiene throughout the 1980s. During the 1980s the First and Second National Conferences on Dental Hygiene Research in the USA focused on whether or not Oral Hygiene can be viewed as a discipline with a knowledge base of its own, and the need to develop an identifiable body of knowledge (Biller-Karlsson, 1988; Dickoff & James, 1988a; Bowen, 1988; and Reveal, 1988).

2.2.2 Defining concepts in Oral Hygiene

Various perspectives to understand the terms 'discipline', 'field of study', 'field of practice' and 'profession' in Oral Hygiene can be found in the literature. Biller-Karlsson (1988) uses Dressel and Mayhews' criteria for what counts as a discipline. They point out that 'a discipline should have an interpreting theory, which should be subject to logical taxonomy by its scholars'; 'the knowledge must be a basic science unto itself with techniques for testing'; it should also 'have stable outer limits which define the issues in one field as compared to another' (Dressel & Mayhew in Biller-Karlsson, 1988, p. 20). Biller-Karlsson (1988) notes that 'There is little order and depth in our literature ... our professional parameters are ill-defined' (p. 21). She suggests that Oral Hygiene is appropriate as a field of study and not as a discipline because it does not have a unique unifying theory. She explains that a discipline develops its own knowledge which can be viewed from its own lens and that a field of study employs a body of knowledge drawn from different disciplinary sources which are borrowed for the field and are then applied to the field (Biller-Karlsson, 1988). She argues that there is a lack of commonly understood methods of inquiry

and recognised techniques of testing, research and scholarship. Biller-Karlsson (1988) concludes that the knowledge used by Oral Hygiene draws heavily on knowledge from other dental and medical fields, making this a field of study and not discipline. She adds that diverse approaches to knowledge building have to be adopted, for example that 'our educators gain advanced degrees' and that there are 'commonly understood methods of inquiry and recognised techniques' (p. 21).

Bowen (1988) describes criteria for being a 'discipline', which are slightly different to that of Biller-Karlsson. Bowen uses Goodlads' criteria and firstly argues that a discipline represents 'a theoretical body of knowledge that is the product of science describing some specific aspects of the universe'. Secondly, 'a relevance to some social demand' and thirdly, it is 'a component discipleship or learning from a master in the practical setting' (Bowen, 1988, p. 23). Bowen (1988) indicates that Oral Hygiene is a developing discipline, and: that its theoretical body of knowledge has not met the above criteria. He suggests ways to strive towards becoming a discipline. Addressing the first criterion, Bowen indicates that in Oral Hygiene the research is haphazard and isolated; with this he suggests that 'we must begin to build the requisite body of knowledge that is linked to the theoretical framework of related disciplines, but that also embarks upon building new theories relevant to the prevention of diseases' (p. 24). This means that the knowledge is still undeveloped as it is borrowed from other disciplines and more importantly that its core task[4] has no new theory of its own. The second criterion is about relevance to societal needs. This means that research should be relevant to practice, and priorities for research should be set to link to the needs of the patient or communities. The third criterion is discipleship; Bowen (1988) suggests that having 'practitioners and lecturers act as disciples and mentors would provide the relevant theoretical foundations to develop confident knowledgeable practitioners who would not be so readily re-educated by other professions' (p. 24). This describes the importance of role models in the field, which would deter practitioners from engaging the knowledge of other professions and in this way strengthen the Oral Hygiene profession.

[4] *This is the prevention of oral diseases, which is in the form of both clinical procedures and education and promotive work.*

Bowen and Biller-Karlsson both argue that there are no concepts that unify the knowledge of Oral Hygiene and that knowledge still has to develop, thus making it impossible to be seen as a discipline. Bowen (1988) describes a field of study as a sub-discipline or an area of emphasis within the larger context of a discipline. In summary, Bowen regards Oral Hygiene as a developing discipline, while Biller-Karlsson (1988) sees it as a field of study. In the next section, I review the attempts to develop the knowledge base of Oral Hygiene.

2.2.3 Theory development in Oral Hygiene

Reveal (1988) concurs that 'it is critical for the dental hygiene profession to identify and validate concepts and theories specific to the discipline of dental hygiene' (p. 14). The second USA National Conference on Dental Hygiene Research in 1988 raised a number of questions regarding the knowledge base of Oral Hygiene. The objectives of this conference were to 'identify its body of knowledge'; understand 'how the body of knowledge is related to theory development'; clarify 'what the process of theory development is' and also to figure out 'how the field can collectively work toward theory development and identification of theories' (Reveal, 1988, p. 14). This conference led to the need to outline the knowledge base and to decide where Oral Hygiene knowledge is borrowed. To date, the literature does not provide evidence of how knowledge has been contextualised for Oral Hygiene or the process that brought about and unified these disciplines and fields. There may be various curriculum specifications from policy developers and associations but the research in itself show that it is complicated and that there is no agreement. The literature suggests that there is a search for the theoretical foundations of Oral Hygiene and this may have implications for the ways Oral Hygiene programmes conceptualise their different curricula.

Dickoff and James (1988c) argue that it is important to identify the concepts to be used to frame the activity of the Oral Hygiene practitioner; how concepts are used and with what kind of attitude they will be used. This was the first attempt to prompt the literature to identify concepts that unify Oral Hygiene knowledge across its diverse disciplinary bases. Identifying the concepts was the first step of knowledge

development and this gave rise to further debates on conceptual models. Dickoff and James mention three questions which need to be addressed namely 'what concepts are to be used', 'who will supply those suitably tested concepts to be spoken of as knowledge' and 'how and by whom are all these concepts to be used' (p. 17). Dickoff and James (1988c) hoped to create a way in which Oral Hygiene practitioners could be treated as professionals. They did not have an explanation for what constitutes the actual knowledge base.

The intense debates on knowledge and theory development from the 1980s allowed the 1990s to begin with proactive work on knowledge development in Oral Hygiene. In 1992, the American Dental Hygienists Association House of Delegates devised a Dental Hygiene theory development framework (Darby & Walsh, 2003). This framework defined four major paradigm concepts of Dental Hygiene (Figure 1), each identifying a vital area of interest. These concepts are as follows: the 'client' who is the receiver of Oral Hygiene care; the 'environment' which refers to the factors that impact on the client's accomplishment of good oral health; 'health or oral health' or ideas about the client's current state of health, and oral health and their interrelationship; and the 'dental hygiene actions' which are the interventions that the Oral Hygienist uses to promote good oral health for the client.

Darby and Walsh (2003) describe this Dental Hygiene theory development framework, which includes the idea of 'paradigm concepts' (see Figure 1). They argue that a 'paradigm' is a worldview held by a discipline, which shapes the direction of those belonging to that discipline. They further indicate that it distinguishes one discipline from another, and can be developed into multiple 'conceptual models'. These models are used to explain Oral Hygiene from different areas of interest and can be further broken into theories that will eventually be recontextualised into practice, education or research (Darby & Walsh, 2003).

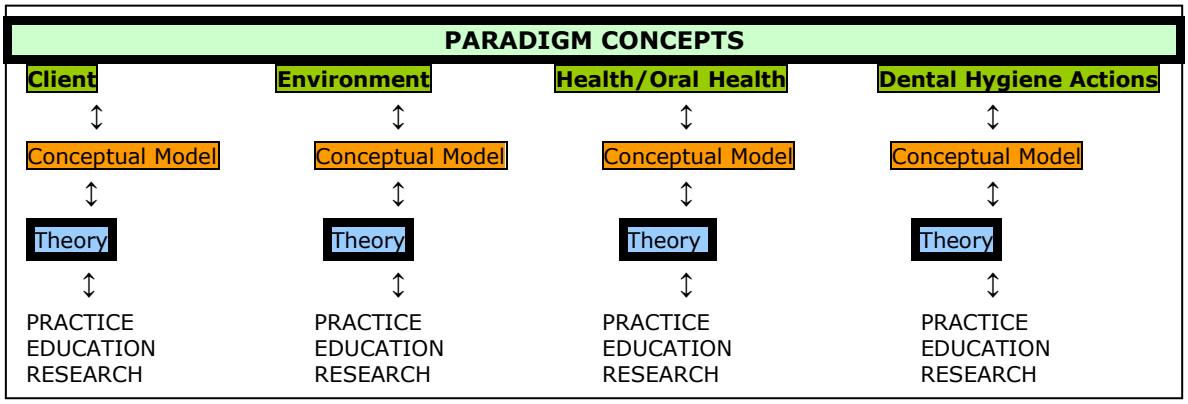


Figure 1 Dental Hygiene theory development framework. (ADHA, 1992 in Darby & Walsh, 2003)

This framework was created to encourage research, and with this develop unifying concepts that would bring it closer to being a discipline. Until most recently, only a few conceptual models have been developed for Oral Hygiene, two of these are described below.

- The 'human needs dental hygiene model' focuses on humans' perceptions of their own deficits, and their behaviours to fulfil their needs (Darby & Walsh, 1993). This conceptual model is intended to inform Oral Hygienists when they make diagnoses and respond to clients' needs. It is based on Maslow's human need theory and Nursing's human need theory. Darby and Walsh (1993) explain that this model goes beyond all demographical contexts; it uses humanist, client-centred approaches, links the oral cavity to the total person and can be used to motivate human behaviour. This model frames the four paradigm concepts in the following way: Firstly the 'client' who is perceived holistically and motivated by fulfilment of human needs. Secondly the 'environment' or the setting in which the client and Oral Hygienist find themselves. This includes the society, climate, geography, politics, economics etc., all of which are seen to enable and/or constrain the fulfilment, of the clients' needs. 'Health/oral health' is the third paradigm concept and is viewed as relative for different individuals and can be seen along a continuum from maximal health to maximal illness. The higher the human need fulfilment the higher the degree of wellness of the person. The last paradigm concept is the 'dental hygiene actions', or the interventions, which an Oral Hygienist performs to ensure that the clients' needs are met. Darby and Walsh argue that the

application of this model helps the Oral Hygienist to manage clients professionally in a client-centred rather than task-oriented manner (Darby & Walsh, 1993).

- The 'oral health-related quality of life model' described by Williams, Gadbury-Amyot, Bray, Manne and Collins (1998) draws on a number of models to reflect on the influence of biological, psychological and socio-cultural factors on health and oral health diseases. Williams et al. (1998) indicate that these influences are either modifiable or non-modifiable risk factors and that these affect clients' quality of life. It comprises six domains namely: Health/Preclinical Disease, Biological/Clinical Disease, Symptom Status, Functional Status, Health Perceptions, and General Quality of Life. There is a relationship between these domains and the characteristics of individual clients or populations. This model is foundational for assessing, planning, implementing and evaluating oral hygiene care (Williams et al., 1998). It frames the paradigm concepts in the following way: an Oral Hygienist should distinguish the needs of the client because of the environment within which s/he exists, and the client will identify their own health status and set goals to improve their own oral health. This analysis will inform the care provided by the Oral Hygienist for the individual (Darby & Walsh, 2003). Application of this model is intended to assist practitioners to identify needs and set goals when planning Oral Hygiene care (Keselyak & Gadbury-Amyot, 2001; Sato, Saito, Nakamura-Miura, Kato & Cathcart, 2007).

The above models show how the four proposed 'paradigm concepts' could be interpreted and how it influences professional interventions. The two models are similar as both foreground Social Science aspects, and factors that affect how the patient will be managed. The 'dental hygiene human needs model' looks at the clients' needs while the 'oral health-related quality of life model' looks at how outcomes shape quality of life. These models are intentional attempts to develop unique concepts for the field to advance the knowledge base in Oral Hygiene. They have since been incorporated into textbooks for use in curricula and as ways to improve the care provided for clients. A number of articles have been written to

assess their use in teaching and learning (Darby & Walsh, 2000; Keselyak & Gadbury-Amyot, 2001; Sato et al., 2007).

2.2.4 Expanding the Oral Hygiene field of practice

Despite the theoretical developments discussed above, many researchers argue that there is a lack of knowledge production within the field, and are asking for more purposeful knowledge development (Johnson, 2003; and Cobban et al., 2007). These researchers argue that there is still a need for testing of theories and for the development of PhD level training to improve the professional status of the field. Cobban et al. (2007) indicate that

> … if dental hygiene is to provide the service to society of which it is capable, a larger number of dental hygienists need to be prepared to conduct credible research that will form the knowledge for this emerging discipline. (Cobban et al., 2007, p. 20)

Cobban, Edgington, Myrick and Keenan (2009) use a different conceptual classification to understand the forms of knowledge that underpin Oral Hygiene. They examine the ways of knowing in Oral Hygiene using Carper's four patterns of knowing from Nursing. Fawcett, Watson, Neuman, Walker, and Fitzpatrick (2001) describe Carper's theory and show how knowledge is derived and indicate the importance of knowledge gained through clinical practice. They outline four patterns of knowing which are 'empirics', 'aesthetics', 'ethics' and 'personal knowing'.

'Empirics' is empirical knowledge that is publicly verifiable; it develops on the basis of empirical data (Fawcett et al., 2001), which is based on verifiable empirical studies. Cobban et al. (2009) note that in Oral Hygiene empirical knowledge development is at an early stage, but is steadily moving toward intentional theory development. Intentional theory development refers to researchers setting agendas on what to study in the field and to increase the publication of international and local research articles. This research agenda setting has been apparent in some countries like the USA and Canada. This form of knowing is most important to Oral Hygiene and can be linked to the statement by Cobban et al. (2007), in which they argue for the development and validation of knowledge for practice. The second pattern of

knowing is 'aesthetics'; this is the art and acts of practice. This knowledge is gained through personal experiences and is subjective in nature (Fawcett et al., 2001). Cobban et al. (2009) urge practitioners to use empirical knowledge with their practical knowledge to inform their aesthetic knowing. 'Personal knowledge', the third form of knowing, refers to the interpersonal processes between the patient and provider. It is about knowing how to be authentic with others. It is a pattern of knowing that practitioners develop by opening oneself, thinking, listening and reflecting, using examples and autobiographical stories (Fawcett et al., 2001). This way of knowing is valued by Oral Hygienists, as there is a greater focus on being client centred (Cobban et al., 2009). The fourth pattern of knowing, 'ethics' is concerned with ethical codes of the profession as well as moral reasoning about the proper management of clients. It includes descriptions of morals and values of practice, and it develops when practitioners analyse their own beliefs and values (Fawcett et al., 2001). Three of the four patterns of knowing are practice-based. The analysis by Cobban et al. (2009) calls for inductive practice-based knowledge development. Their analysis says very little about what it would mean, how it can be done, and most importantly which disciplines make up the empirical knowledge base of Oral Hygiene and how these inform the practice-based knowledge practitioners are expected to develop. This project investigates the type of knowledge lecturers develop and the recontextualisation of the disciplines and knowledge fields that inform Oral Hygiene curricula.

In sum, over the past fifty years questions about knowledge and its expansion in the field have been raised numerous times. There have been intentional attempts to develop the knowledge base and there has been some progress in this regard. The focus has mainly been on ways of knowing about Oral Hygiene rather than on the analysis of what knowledge types comprise the knowledge base of Oral Hygiene. Therefore, many feel that there is still work to do to ensure that Oral Hygiene becomes a more defined knowledge field.

2.3 Professionalisation and the link to the knowledge debate

Cobban et al. (2007) further explain the relation between knowledge (discipline) and a profession. According to these authors, 'a profession is concerned with the act of practice while a discipline is the way of knowing that is brought to practice' (p. 14). In other words a profession is about the daily activities performed, while a discipline is concerned with how formal knowledge influences what we do in practice.

2.3.1 The Oral Hygiene professional identity

The call for the identification and development of the Oral Hygiene knowledge base needs to be seen alongside the calls for alternative conceptions of identity, emphasising a shift from seeing Oral Hygienists as mere technicians to seeing them as knowledge workers (Biller-Karlsson, 1988; Dickoff & James, 1988c; and Reveal, 1988). In order to understand the identity debate, it is important to explain the difference between the terms 'technician' and 'knowledge worker'. An Oral Hygienist is regarded as a 'technician' when clinical procedures are performed without the necessary knowledgeable understanding of why procedures are done in a certain way. Dickoff and James (1988c) describe this as being a 'mere technician'. They describe a merely technical concept as follows,

> … one specified for use by someone who knows so little that the steps, items, explicit procedures, mechanisms, instrumentation, etc., are the only things to be specified in the concept and the only things noted in the doing. (Dickoff and James, 1988c, p. 42)

As 'knowledgeable worker' the Oral Hygienist understands why and how procedures are performed and has the evidenced-based knowledge to substantiate the ways of doing procedures. Dickoff and James (1988c) describe a highly technical concept as 'one specified with elaborate detail, precision, complexity, with elaborated details on variance' (p. 42).

Dickoff and James (1988c) argue that practitioners should be wary of considering the presumption that they be either mere technicians or knowledgeable workers. They argue for the pursuit of knowledge expansion, and that practitioners remain true to their acts of doing while being thoughtful about how and why they are doing

those acts. This is evident from the following statement, '… activity that is guided by thoughtfully used conception – may be the highest human enterprise' (p. 17). Dickoff and James (1988c) note that the development of key concepts is useful in framing the work of Oral Hygienists as knowledge workers.

Dickoff and James (1988a) suggest 'reflective resources' which will guide the actions of Oral Hygienists and in turn transform them into professional knowledge workers. They further illustrate that knowledge should be conceived of as reflexive ways of knowing and that this kind of knowing be related to inquiry and in this way Oral Hygiene actions should be concerned with knowledgeable doing. This philosophical look at concept/knowledge development is also pointing toward Oral Hygienists' professional identity of being a knowledge worker.

In the earlier discussion on whether Oral Hygiene is a discipline or a field of study both Bowen (1988) and Biller-Karlsson (1988) make links to the issue of professionalism, seeing it as an emerging profession. However, even though Oral Hygiene is emerging as a profession, globally there is still a struggle for its identity. Bowen (1988) describes the term 'profession' as 'linked to prestige, credibility and image as much as it is to autonomy, service and a scientific theoretical base' (p. 23). Lautar argues that in order to attain the status of a professional discipline the field of Oral Hygiene must include: systemic theory, authority, community sanction, ethical codes, and a culture (Lautar & Kirby, 1995). Clovis adds social values, specialised training, increasing selection and curricula requirements, high-level specialisation related to the prevention of oral disease; and a strong service orientation (Clovis, 1999). These authors all include an element of theory development, making knowledge an important aspect of professionalisation.

Research shows that although there has appeared to be much progress in moving towards a profession, the reality of Oral Hygiene practice is very different. Certain barriers to the attainment of status as a profession have been identified (Lautar & Kirby, 1995; Clovis, 1999; Luciak-Donsberger & Eaton, 2009; Kanji, Sunell, Boschma, Imai & Craig, 2011; and Cobban et al., 2007). These barriers include the underdevelopment of professional work, because in many countries Oral Hygienists

have a limited and defined scope of practice. Then there is the dominance of Dentistry, which controls legislation and accreditation in most countries making Oral Hygienists work under the supervision of a dentist. Most countries have only about 3% males in the profession, making Oral Hygiene mainly feminised in character, which weakens their authority in a highly patriarchal dental profession (Clovis, 1999; Lautar & Kirby, 1995; Cobban et al., 2007; Knevel & Luciak-Donsberger, 2009).

To further understand the identity of Oral Hygienists, Darby and Walsh (2003) describe two models of Oral Hygiene practice. In the 'Occupational model', Oral Hygiene is viewed as technical, where the Oral Hygienist is perceived as an auxiliary who performs duties under the supervision of a dentist. In this role, the Oral Hygienist provides less complicated and less valued services; the supervising dentist mainly makes decisions while the Oral Hygienist is accountable to the dentist. The 'Professional model' of Oral Hygiene on the other hand, views Oral Hygiene practice as knowledge based. Within this role the Oral Hygienist is responsible for decision making about the care being offered and is accountable to the client. The relationship with the dentist is much more collaborative and the services provided more complex. Darby and Walsh (2003) emphasise that these two diverse forms of practice guide Oral Hygiene education and clinical practice in completely different ways. Reveal (1988) argues that in order to be socialised into knowledge workers, Oral Hygiene lecturers should be able to convey concepts that will help students to understand their new practice. Lecturers should provide a form of discipleship in which students can be socialised into the profession (Bowen, 1988). So, with a weak research base, Oral Hygiene educators can only prepare students for an Occupational model. Thus, lecturers play a significant role in developing concepts and theories through research initiatives and this goes hand in hand with being mentors in the movement toward developing the profession.

There is some evidence about how Oral Hygienists' identity is perceived by lecturers in South African tertiary institutions. The literature on Oral Hygiene identity in South Africa relates to how others perceive them. Phakela (2007) shows that primary health care workers are uncertain about the roles of the Oral Hygienist; other authors who studied Oral Hygienists' attitudes to work and their qualifications

(Bhayat, Yengopal, Rudolph and Govender, 2008; Gordon & Rayner, 2004; Lukhozi, Hogue & Heever, 2012) found that there is a need to develop qualifications and professional status of the profession. Gordon and Rayner (2004) show that Oral Hygienists would want to have an expanded role in the dental team, and want to increase their professional qualifications beyond a Diploma. Lukhozi et al. (2012) surveyed public sector Oral Hygienists and dentists to find out whether expanded functions[5] for Oral Hygienists are in use in the public health service. They report that Oral Hygienists' use of these functions is limited and that dentists do not delegate these expanded functions to Oral Hygienists. These local studies on professional identity show similar findings as those reported in international studies by authors such as Lautar & Kirby, 1995; Clovis, 1999; Cobban et al., 2007; Knevel & Luciak-Donsberger, 2009.

One of the arguments of this study is that knowledge informs identity and the professionalisation of a field of practice. As I have shown, attempts have been made to define the patterns of knowing which will support professionalisation. In moving towards the 'Professional model' of Oral Hygiene practice, studies have focused on oral health promotion, disease prevention and self-care education, all of which are in line with the core task of the Oral Hygiene practitioner. Clovis (1999) and Lautar and Kirby (1995) argue that expanding the of scope of practice to include primary oral health care and restorative services will increase Oral Hygiene's value to society. Nonetheless, what is most crucial is the kind of knowledge that will inform identity. Knowledge development is dependent on the kind of research initiatives in the field and the efforts in the profession to develop the research base. It is expected that these changes will also influence the organisation of knowledge into the curriculum. I now turn to examine Oral Hygiene education issues that look into curriculum research in the field.

[5] *Expanded functions are additional clinical procedures that were included in the scope of practice for Oral Hygienists in 2000. These include performing local anaesthesia, placement of tissue conditioners, taking of a biological smear, and orthodontic functions. Gazette 34101 of 11 November 2011.*

2.4 Developments in Oral Hygiene education

Oral Hygiene educational institutions inform practice through their training and research. How lecturers within Oral Hygiene institutions view knowledge is also manifested in the organisation of curricula and influences practice. This section will look at curriculum developments for Oral Hygienists across the world, and its implications for professional identity.

2.4.1 Oral Hygiene training and qualifications

A number of studies describe links between Oral Hygiene training and curriculum (Sato et al., 2007; Johnson, 2003; Luciak-Donsberger & Eaton, 2009; Kanji et al. 2011; Hepnar, 2011). When investigating these activities, some countries stand out more than others. These are the more developed countries, which include the USA, Canada, UK, Japan, Korea, Australia, and some parts of Europe. Johnson's (2003) profile of nineteen countries where Oral Hygiene is practiced and shows that developed countries have the greatest number of registered Oral Hygienists. These countries have been training Oral Hygienists for longer and have extended curricula when comparing with less developed countries.

There are a number of different educational models used for entry to practice across the world (Johnson, 2003). These range from two-year 'Diploma' programmes, three-year 'Diploma' or 'Baccalaureate' degrees, and four-year 'Baccalaureate' degrees with a few countries offering Masters Degrees. According to Johnson (2003) most of the entry-level programmes offered internationally are the two to three year 'Diploma' or 'Associate Degree'. Smith (2011) advocates for more advanced education for society to value the profession and indicate that:

> An associate degree no longer assured that dental hygienists would prosper in our global, knowledge-based economy. Professions had to be educationally competent to earn societal trust and recognition. As a whole, dental hygienists were generally less educated than practitioners in occupational therapy, physical therapy, physician assistant, and audiology. (p. 37)

Mostly developed countries offer 'Baccalaureate' and 'Master's Degree' programmes instead of only 'Diploma' programmes (Johnson, 2003). Kanji et al. (2011) also indicate that 'Diploma' programmes focus on a clinical practice model and limit the opportunity to develop beyond the traditional clinical role. The traditional clinical role was regarded as being more 'technical' (refer to page 19). Whereas, the Baccalaureate programmes use broader academic models, and are intended to prepare students for expanded roles and to develop critical thinking and evidence-based decision making[6] (Kanji et al., 2011). This would therefore include expanded clinical functions and other internationally defined roles mentioned at the beginning of this chapter (refer to page 8) and thereby develop a more diverse oral hygienist. Not many countries have specific Oral Hygiene Masters level degrees and students are compelled to complete Masters in other disciplines. There is currently only one doctoral programme internationally, with some countries under possible development. This is of concern to many as it has an effect on the quality of research, consequently limiting theoretical knowledge development (Cobban et al., 2007; Luciak-Donsberger, 2003; and Forrest & Spolarich, 2010).

As indicated earlier, the conversation on knowledge development, curriculum issues and professionalisation has mainly been documented in developed countries. To put this research project into the South African context the local education situation is provided here. Oral Hygiene qualifications have been awarded in South Africa at five universities for over thirty-five years. Three universities offer the qualification as a two-year Diploma, while the other two institutions offer it as a three-year Degree. There is a scarcity of publications about the organisation of knowledge in the curriculum, how it differs in either the diploma and degree programmes, or the ways South African Oral Hygiene lecturers view knowledge, or deal with Diploma/Bachelor degree-based curricula and how they perceive the identity of practicing Oral Hygienists.

[6] *It is not clear which are the expanded roles Kanji et al. (2011) refer to, and whether these roles will depend on disciplinary knowledge from the sciences. Their notion of 'critical thinking' and 'evidence-based decision making' refer to the student being able to critically appraise the literature and apply their conceptual knowledge to the practice.*

This shift from the Diploma towards the Baccalaureate degree qualification is seen in many countries including South Africa (Johnson, 2003; Kanji et al., 2011 and Luciak-Donsberger, 2003). Curricula in South Africa are being aligned to international trends as seen in the newly accepted qualification the Bachelor degree in Oral Hygiene. This new curriculum development has been accredited by various national bodies; namely the South African Qualifications Framework (SAQA); the Health Professions Council of South Africa (HPCSA) and the Council of Higher Education (CHE)[7]. This means that Diploma programmes will eventually not be offered in South African training institutions.

Studies indicate that the longer the training of the practitioner, the more likely that they would use research more practically (Öhrn, Olsson & Wallin, 2005; Johnson, 2003, and Clovis, 2000). Öhrn et al. (2005) indicate that two years of basic training does not encourage the use of research by practitioners. This could be one of the contributing factors for the recent moves from diploma to degree programmes in most countries across the world (Johnson, 2003). However, the development of research within the profession is vital for enhancing the practice of Oral Hygienists and also for expanding the knowledge base of the field.

Further postgraduate study and a need to clarify the research agenda for the field are thus necessary. Without postgraduate qualifications there are no pathways for developing leaders, lecturers and researchers (Hepnar, 2011). Forrest and Spolarich (2010) argue that a research infrastructure is required to ensure the development of the knowledge base. They describe five essential and inter-related elements of research infrastructure that are common to other professions and that Oral Hygiene needs to embrace. These include; a critical mass of researchers (and this would include postgraduate qualifications), research priorities that produce clinically relevant knowledge, communication systems that promote linkages among researchers and increase access to research findings, funding mechanisms to support research and finally the demonstrated value for research and its

[7] *Two-year Oral Hygiene Diploma programmes in South Africa have to be upgraded to three-year Bachelor's degree programmes. This is as a result of changes in the National Qualifications Framework; Oral Hygiene would be placed on level 7 as a professional Bachelor's degree (Council of Higher Education Framework for Qualification Standards in Higher Education, 2011)*

relationship to practice (Forrest & Spolarich, 2010, p. 11). In the next section, I examine the curriculum issues raised in the Oral Hygiene literature.

2.4.2 Oral Hygiene curriculum content

Earlier in this chapter, I showed that the conceptual foundations of the field are underdeveloped; there is a struggle to develop a theoretical knowledge base in the field and this impact on curriculum development. The curriculum debates have been about standards, quality of teaching and assessment methods. The section below focuses on the need for curriculum change, kinds of curricula offered, the kind of knowledge taught and finally the way in which the curriculum prepares learners for practice.

The traditional role of the Oral Hygienist has broadened since the inception of the profession, from being solely clinicians doing limited technical functions like scaling and polishing teeth. In this day and age, there is a move toward being a knowledge worker with many other roles and responsibilities (Darby & Walsh, 2003). With these changes content has been added to Oral Hygiene curricula, resulting in a very dense curriculum (Hepnar, 2011). Critics argue that the focus of student preparation has remained technical in many curricula and that students are not adequately equipped to work in other settings[8] as defined in their new roles (Hepnar, 2011; Cobban et al. (2009).

In many countries, Oral Hygiene curricula are mainly outcomes-based, centering on key competencies for Oral Hygiene (De Wald & McCann, 1999; Blitz & Hovius, 2003; Knevel & Luciak-Donsberger, 2009). When comparing the differences in various curricula, the literature suggests that longer programmes provide more clinical time, support the use of critical thinking and research and expand emphasis on clinical and managerial skills (De Wald & McCann, 1999; Knevel & Luciak-Donsberger, 2009). A student completing a longer programme, it is argued, will be more equipped clinically, will have the necessary understanding to think critically, will

[8] Other settings include working for corporate companies as sales and marketing experts in oral health care, or in public health institutions doing oral health promotion, or policy development.

make better use of research and become a lifelong learner (Kanji et al., 2011; Rowe, Massoumi, Hyde & Weintraub, 2008; Forrest & Miller, 2001).

> A Baccalaureate educational programme itself is preparing students for careers extending beyond private practice. The additional time in the curriculum for coursework and experiences in areas other than the learning of clinical dental hygiene skills gives students opportunities to increase their depth and breadth of knowledge. (Rowe et al., 2008, p. 406)

So the emphasis is on fewer practical training whilst learning, and includes other knowledge types for further professional development besides clinical practice. The hope though is that students are taught to practice with conceptual understanding so that they can critically appraise their practice.

With the varied curricula across the international Oral Hygiene arena, the International Federation of Dental Hygiene (IFDH) requested that its education committee draw up curriculum guidelines. This gave rise to international curriculum standards for Oral Hygiene by Blitz and Hovius (2003) in which they proposed curriculum guidelines for two-, three- and four-year programmes. They advocated certain standards for curriculum models that should guide the design of programmes such as:

- The 'Oral Hygiene process of care', which is a concept used to make diagnoses and treatment plans in the management of patients. Blitz and Hovius deem this 'process of care' as a unifying concept that is very important for inclusion in curricula.
- 'Evidence-based Oral Hygiene education' is a standard that refers to how theoretical knowledge should be reflected and taught within a programme. The idea here is that a curriculum should ensure that knowledge is well researched.
- 'Competencies that is defined and listed'. This criterion speaks to the fact that curricula should take a specific form, for example in this case they are promoting outcomes-based curricula.
- The final curriculum standard listed by Blitz and Hovius is 'collaboration with other health professionals'. This expresses a theory vs. practice debate, saying that practitioners should practice in a particular manner and this is how it should be taught in curricula. (p. 59)

With these standards Blitz and Hovius (2003) want to see the 'Oral Hygiene Process of Care' as an important unifying concept, and that research is an important part of the curriculum. They also advocate for the professional development of Oral Hygienists into knowledgeable workers. They suggest that these curriculum guidelines can be used as models by countries when developing Oral Hygiene training programmes (Blitz & Hovius, 2003). Blitz and Hovius split knowledge into seven content areas namely; General Education, General Sciences, Biomedical Sciences, Dental Sciences, Dental Hygiene Sciences, Vocational practice and Areas of special interest. Reflecting on these content areas raises a number of questions about the emphasis of the curricula (addressed later in Chapter 3, p. 39-40). The content areas are outlined with relevant knowledge for two-and three-year programmes (see Table 1 below).

Content areas	**Content in two-year programme**	**Content in three-year programme**
General Education	Sociology	Sociology
	Psychology (patient motivation, child development and pain management)	Psychology (patient motivation, child development and pain management)
	Oral, written and electronic communications	Oral, written and electronic communications
General Sciences		Statistics, interpretation of data, application of data into practice, evaluation of current scientific literature, self-assessment skills, peer-assessment skills, practice management skills
Biomedical Sciences	Anatomy, Physiology, Chemistry, Biochemistry	Anatomy, Physiology, Chemistry, Biochemistry
Dental Sciences	Tooth morphology, head, neck and oral anatomy, oral embryology and histology, Oral pathology, Radiology, pain control, dental materials, dental caries, non-carious tooth wear	Tooth morphology, head, neck and oral anatomy, oral embryology and histology, Oral pathology, Radiology, pain control, dental materials, dental caries, non-carious tooth wear, Dental epidemiology, Paedodontics, orthodontics, psychopathology, administration of local anaesthesia
Dental Hygiene Sciences	Oral Health education, preventive and nutritional counselling, health promotion, patient management and comprehensive clinical dental hygiene, services for special needs patients, community oral health, medical and dental emergencies, legal and ethical aspects of hygiene practice, infection and hazard control management, intraoral photography, implant care.	Oral Health education, preventive and nutritional counselling, health promotion, patient management and comprehensive clinical dental hygiene, services for special needs patients, community oral health, medical and dental emergencies, legal and ethical aspects of hygiene practice, infection and hazard control management, intraoral photography, implant care. Teamwork, quality systems, for patient care, clinical self-evaluation, cultural competency, variety of patient groups, cooperation with other health groups
Vocational practice	Professional practice, ethics, legislation, team dentistry, safe practice, quality care	Professional practice, ethics, legislation, team dentistry, safe practice, quality care.
Areas of special interest		Hospital dentistry, restorative, special needs, dental hygiene education, public health, orthodontics, Paedodontics

Table 1. Oral Hygiene content for 2- and 3-year programmes (Blitz & Hovius, 2003)

In the curriculum guidelines of Blitz and Hovius they reveal Dental Hygiene sciences as the main content area for the Oral Hygienist. All other content areas can be regarded as knowledge that has been borrowed for the field. They have split the

clinical scope between three knowledge areas namely: Dental Hygiene sciences, Dental sciences and Areas of special interest. It is important to question whether the aim of preparing students is for them to be technical or knowledge workers, this would be clear from seeing where knowledge has been borrowed. If content areas include knowledge from mostly Dental sciences or Dental Hygiene sciences, a curriculum would be focused more on the clinical aspects, directed more at techniques and procedures. When a link is made between these content areas and the conceptual models namely the 'human needs model 'and the 'oral health quality of life model' (p. 14), a curriculum would frame the clinical practice in larger discipline areas, albeit, mainly in the social sciences. The Blitz and Hovius curriculum guidelines encompasses the four paradigm concepts, as most of the content areas seem to focus on all the aspects of the paradigm concepts mentioned in Figure 1 (p. 15). Even though Blitz and Hovius (2003) mention that the 'process of care' should be included in curriculum models, they do not include it specifically in the outline of the models. This is possibly because lecturers would include it in the Dental Hygiene sciences content area. When reflecting on these curriculum guidelines by Blitz and Hovius, one could ask whether it provides adequate clarity on the content to be found in curricula. It offers little information on content selection of each area, how it should be paced, and how much time should be spent on topics. These questions leave an opportunity for further investigation of curricula within the field.

2.5 Conclusion

To conclude Chapter 2, a number of points can be made about the literature in the Oral Hygiene field. First, the studies reviewed draw a distinction between Oral Hygiene as a 'discipline' or 'field of study'. The evidence is that Oral Hygiene can be regarded as a 'field of study' and not as a 'discipline', as it is still developing its knowledge base. The literature review has shown that the knowledge base of the field has not been interrogated enough with only a limited number of contributions describing its content areas. There are more studies on ways of knowing about the field than there are about the knowledge base and its theoretical underpinnings. In the absence of more clarity on its knowledge base, it is not clear how to judge the

curriculum standards the field advises curriculum developers to follow.

Second, the literature shows that to become a profession, conceptual development of its knowledge base is essential. A number of authors discuss the link between knowledge development and professional identity. This leads to a debate about whether Oral Hygienists be regarded as knowledgeable workers or as mere technicians and how curricula reinforces these identities. When analysing the constraints that Oral Hygiene has for becoming a profession, the literature shows that there are a number of barriers that hinder this development. Notwithstanding, there are moves to introduce Bachelor Degree programmes instead of Diplomas and Blitz and Hovius' curriculum guidelines suggest content areas that are regarded as important for practice. To gauge the perceptions of lecturers, it would be important to assess whether they are researching new knowledge and applying disciplinary knowledge to the study of techniques associated with the field. There is limited exploration of the theoretical foundations of Oral Hygiene curricula and the nature of knowledge within them. No analysis of this sort has been done locally on a specific programme, or on how lecturers organise and recontextualise knowledge in their curriculum.

The following claims can be made which will form a basis for what needs to be analysed by this study. The *first claim* is that the knowledge debate in the field of Oral Hygiene is about ways of knowing about the field and falls short of the types of knowledge included in curricula. The *second claim* is that it is important to investigate the development to professionalise, in particular how Oral Hygiene lecturers in South Africa understand where knowledge has been borrowed from and what they recognise as concepts and theories that have been developed within the field. The *third claim* is that it is essential to examine how Oral Hygiene lecturers select and organise knowledge into the curriculum, what and how knowledge is borrowed from disciplines and from practice. Put differently, in order to understand the Oral Hygiene knowledge base, an investigation of the nature of the knowledge found in various curricula is needed. With these claims in mind, this research project can be justified and moving to educational concepts will help to clarify a conceptual framework for this study.

CHAPTER 3 - ORAL HYGIENE KNOWLEDGE THROUGH STUDIES ON PROFESSIONAL KNOWLEDGE

3.1 Introduction

While the background is set and a description of the context of the research question has been outlined, there is a need to explore its significance from a broader theoretical lens. The literature review provides insight to the main claims about Oral Hygiene as a field of study. The conceptual framework will endeavour to provide various conceptual tools to be used when analysing the relation between knowledge, curriculum and identity (professionalisation). This will allow for better understanding of how the Oral Hygiene knowledge field can be studied.

3.2 Current knowledge debates in Higher Education

The current knowledge debates in Higher Education and professionalism (Shay, 2014; Muller & Young, 2013) will be described before outlining the conceptual tools of this framework. Understanding the debates within Higher Education is important to this study as it provides the context in which Oral Hygiene training belongs. It also addresses the main issues of knowledge in relation to practice and the identity of professionals.

One of the chief concerns emphasised by Muller and Young (2013) is the purpose of Higher Education. They describe a dispute between 'disciplinary knowledge' and 'relevant skills and knowledge' (Muller & Young, 2013). They argue that there is a breakdown of the social contract between the university and society. This is as a result of the blurring of disciplinary knowledge to make place for knowledge that is more relevant for society, politics and the marketplace. Shay (2014) agrees with this, and stresses that there are global concerns that Higher Education is failing to produce knowledge workers. One explanation she brings is that 'there is a widening gap between the needs of a knowledge society and the kinds of curricula which

Higher Education has to offer' (Shay, 2014, p. 142). Shay mentions that the kind of knowledge found in curricula is influenced by what is important to the market place or societal norms and does not necessarily fit with the aims of Higher Education, which is knowledge development.

This dilemma that Higher Education finds itself in is further aggravated by contestations about knowledge as indicated by various authors (Bernstein, 1999; Muller, 2009; Wheelahan, 2010). Shay claims that 'there are different kinds of knowledge, not all forms of knowledge are equal and these differentiations have significant implications for curricula' (Shay, 2014, p. 141). Differences in knowledge promote the type of professional emerging from Higher Education. In order for universities to develop knowledgeable citizens, students must be given access to disciplinary knowledge, which allows them to have an inquiry stance about their practice (Morrow in Shay, 2014). This inquiry stance is similar to the claim made by Dickoff and James (1988b), who advocate for Oral Hygienists to be knowledgeable workers. Wheelahan (2010) emphasises that students need to have epistemic access, if they are to gain social access. Understanding the knowledge located in curricula is therefore central to this discussion.

The knowledge debates affecting the Oral Hygiene field are manifested in the development of knowledge and professionalisation of the field. These include technician vs. knowledge worker (as seen in the literature review p. 19), the expansion of the knowledge base and professional development which focuses on producing Oral Hygienists who are knowledge workers, yet curricula are still technical in nature (p. 26). Oral Hygiene is borrowing knowledge from different disciplines and using it in practical application of care (pp. 28-29). With this understanding of the debates within Higher Education and knowledge in Oral Hygiene there is a need to shift toward outlining a comprehensive description of the conceptual tools required to analyse knowledge in this study.

There are various studies that describe professional knowledge and occupations (Abbott, 1988; and Freidson, 1994), but these are not addressed in this study. The conceptual tools in this framework focus on the nature of knowledge and

understanding curriculum, and include Bernstein's work on Horizontal and Vertical discourses, knowledge structures (1999) and the Pedagogic Device (2000); Muller's 'occupational knowledge types' (2009), Shay's description of Higher Education, 'curriculum differentiation', specifically 'genericism' (2013), and finally the distinction between 'knowing that' and 'knowing how' by Winch (2010). These concepts form the analytical framework to study the Oral Hygiene knowledge base, its relations to curriculum development and its implications for the professionalisation of the occupation. This conceptual framework will assist in recognising the development and nature of Oral Hygiene knowledge, which comprises its structure, strength and how it is used within the profession.

3.3 Understanding professional knowledge

A number of central conceptual tools are used to characterise the nature of Oral Hygiene knowledge. The work of the above theorists explicates different dimensions of knowledge that are important for understanding the Oral Hygiene knowledge base. To explore the structure of Oral Hygiene knowledge this section includes Bernstein's (1999) work on knowledge discourse, Maton and Muller's (2007) work on generalisation of knowledge and Muller's (2009) occupational knowledge distinctions.

Bernstein distinguishes between two knowledge discourses, namely horizontal and vertical discourse (1999). He draws from various theorists, as seen from the following quote,

> Bourdieu refers to these forms in terms of the function to which they give rise; one form creating symbolic, the other mastery. Habermas sees one form as constructing what he calls the 'life world' of the individual and the other as the source of instrumental rationality. Giddens, following Habermas, sees one discursive form as the basis for constructing what he calls 'expert systems'. These `expert systems' lead to a disembedding of individuals from their local experiential world, which is constructed by a different form. (p. 158)

The distinction between horizontal and vertical discourse helps Bernstein to produce a new language of description (a theory) of two knowledge forms (1999). He explains that horizontal discourse draws on knowledge that is common to all, known as 'everyday' knowledge. This knowledge is useful, functional and relevant for specific contexts and therefore is not generalisable. Bernstein describes horizontal knowledge as segmentally differentiated and not distributed equally, while it is also functional and usable. Horizontal knowledge is contrasted with vertical discourse, which is regarded as 'formal' specialised knowledge, transmitted in disciplines. This type of knowledge is context independent, integrated, coherent and explicit. It is hierarchically organised and systematically structured, with specialised bodies of knowledge using a specialised set of concepts and ways of evaluating texts (p. 159). Vertical knowledge forms have strong rules, which regulate access, transmission and evaluation of verbal and practical written texts. Formal education makes use of vertical knowledge, and its main function is to regulate access to vertical knowledge, ensuring that it is transmitted and evaluated consistently across different contexts. Vertical knowledge is integrated hierarchically according to meanings of specialised symbolic structures and not by context as in horizontal discourse.

Bernstein (1999) divides vertical discourse further into two types of knowledge structures, namely horizontal knowledge structure and hierarchical knowledge structure. This division is useful for understanding the key differences between the specialised bodies of knowledge or disciplines within vertical discourse. While considering the nature of differences between knowledge structures, Maton and Muller (2007) show that Bernstein does not differentiate the two along a continuum. They examine whether newly emerging theories are subsumed or integrated into past theories. This suggests the degree of generalisability of a theory. The notion of generality of theory is important when distinguishing between disciplines of knowledge. Maton and Muller (2007) develop these ideas when they provide an explanation of why the two knowledge structures are different, using the concepts 'verticality' and 'grammaticality'.

In ‘horizontal knowledge structures’ the development of knowledge is arranged by adding new theoretical approaches that compete for the meaning of social phenomena (Bernstein, 1999). This can be seen in the Humanities and Social science disciplines. Maton and Muller (2007) add that in horizontal knowledge structures it is expected that one will see change and contestations over the meanings of social phenomena, concepts and terminology when referring to ideas. Even though the same terms may be used, theorists often make opposing assumptions, which could result in the criteria of knowledge claims differing. The ways horizontal knowledge structures develop remain an accumulation and not the integration of knowledge. Maton and Muller (2007) explain ‘verticality’ as the degree to which the development of the knowledge base is characterised by subsumption and integration into overarching and generalising propositions. Maton and Muller (2007) provide an example from the field of Sociology, which has no universal propositions, which means that the discipline does not have foundational claims on which it can build new ones. In the absence of foundational claims, the discipline of Sociology develops accumulatively, with more and more debates giving rise to new and competing explanations and theories.

On the other hand, in ‘hierarchical knowledge structures’ there is integration of meanings into overarching concepts and theories, which aims to widen the knowledge base (Bernstein, 1999). He indicates that theories are hierarchical, with precise terminology, based on evidence, highly specialised and shared by all. This is found in Natural science disciplines like Physics or Anatomy, which have universal propositions that are broad, true and strongly supported by empirical evidence. These form a foundation for new claims to be developed. Maton and Muller (2007) describe ‘grammaticality’ as the degree to which the forms of knowledge exhibit an explicit syntax or codification. Strong codification gives rise to empirically precise descriptions of facts. When the grammaticality of a discipline is strong it can provide stable, precise and accurate descriptions of facts (e.g. Physics). When grammaticality is weak (Sociology), the relations between the different descriptions of facts cannot be settled by empirical research and are therefore subject to disputes and constant disagreements (Maton & Muller, 2007).

In Oral Hygiene, knowledge is derived from different disciplinary sources. Content areas (Blitz & Hovius, 2003) such as Dental sciences and General sciences are particularly formed from hierarchical and horizontal knowledge structures. The curriculum content distinctions drawn by Blitz and Hovius (refer to pp. 28-29), for example, show that Dental sciences draw on knowledge from Chemistry and Physics. General Education and General Sciences draw on knowledge from Sociology or Psychology, which is a collection of theories, as one theory is not building on the other. This makes the knowledge structure of Dental sciences more 'hierarchical' and General sciences more 'horizontal'. This study will show the sequence and weighting of disciplinary knowledge (or the different types of knowledge) and the recontextualisation of knowledge from the vertical and horizontal discourses.

3.4 The relationship between knowledge and professionalism

According to Abbott (1988), knowledge informs identity and the professionalisation of a field of practice. This section describes the relations between knowledge and professionalism by looking at how they are depicted in different disciplines.

Muller (2009) draws on Bernstein's knowledge distinctions, i.e. 'knowledge structures' and applies it to professional knowledge. He also draws on various writers (Biglan, 1973a and 1973b; Kolb, 1981; and Becher, 1989 in Muller, 2009) whom have classified knowledge in different disciplines and describe aspects of professional identity in different occupational fields. The typology of disciplines Muller proposes (based on Biglan's work) classifies knowledge into four types: 'hard-pure', 'soft-pure', 'hard-applied' and 'soft-applied' (Biglan in Muller, 2009). According to Muller (2009) Becher expands Biglan's four-fold typology and describes the academic culture of each knowledge type, calling them academic tribes where 'each tribe has its own intellectual values, its own cultural domain and its own cognitive territory' (Muller, 2009, p. 211). However, these distinctions are not empirical categories, they are theoretical categories and my challenge is to develop a tool that will help to recognise key words within the curriculum documents which

can be associated with the knowledge type distinction made here. Muller's typology of knowledge is presented in Table 2 below.

Disciplines	Occupational fields e.g.	Disciplinary distinctions (Biglan)	Type of knowledge (Becher)
Pure sciences (Natural sciences)	Physics	hard-pure	Cumulative; concerned with universals; impersonal; value-free; clear criteria for knowledge verification and consensus over significant questions
Humanities and pure social sciences (Social sciences)	Psychology	soft-pure	Reiterative; holistic; concerned with particulars; personal; value-laden; dispute over criteria for knowledge verification and obsolescence; lack of consensus over significant questions
Technologies (Science based professions)	Engineering	hard-applied	Purposive; pragmatic; concerned with mastery of physical environment; applies heuristic approaches; uses both qualitative and quantitative approaches; criteria for judgment are purposive
Applied social sciences (Social science based professions)	Teaching	soft-applied	Functional; utilitarian; concerned with enhancement of semi-professional practice; uses 'case' studies and case law to a large extent

Table 2 Muller's typology of knowledge adapted from Muller (2009) and Hoadley (2010)

This depiction of knowledge types seen in Table 2 describes 'hard-pure' knowledge types such as Natural sciences as 'abstract' and 'universal' sciences. The Natural sciences include disciplines such as Physics, Chemistry, Geology and Biology. In these disciplines the nature of knowledge is cumulative, it has clear criteria, is largely value-free and there is consensus about its theories. The knowledge is therefore highly codified. The 'soft-pure' knowledge type deals with particulars and their research is context specific. They include the Humanities and Social sciences. Social sciences include various disciplines such as Sociology, Psychology, Anthropology, Economics, Political Science, History and Geography. The knowledge in these disciplines is value-laden and there are many disputes over beliefs with a lack of consensus over significant questions (Muller, 2009). The level of codification is low. 'Hard-applied' knowledge types include science-based professions or technologies, for example, Engineering. Their knowledge draws on high-level propositions and there is a high-level of agreement about claims and arguments. Their research is aimed at mastering the physical environment. Their methodological approach employs both qualitative and quantitative methods of enquiry. Only parts of knowledge that are derived from 'hard-pure' disciplines achieve codification. 'Soft-

applied' knowledge types inform the social professions, for example, Social work and Teaching. Here knowledge is functional and is concerned with semi-professional practice. The level of codification is very low and its knowledge base consists mainly of 'soft-pure' disciplines (Muller, 2009). Knowledge that is 'applied' from 'soft-pure' disciplines is comprised of low-level propositions and there is a low-level of agreement about claims and arguments.

This discussion can be linked to Bernstein's' sociological analysis of vertical knowledge (refer to p. 34). Bernstein shows that in 'hierarchical knowledge structure' there is a wide knowledge base, robust conceptual knowledge and integration of these concepts, while in 'horizontal knowledge structure' conceptual development is not strong as new theories cannot be integrated but become an accumulation of conflicting ideas. When associating Biglan's knowledge types to Bernstein's knowledge structures, the 'hard-pure' and 'hard-applied' knowledge types draw primarily on 'hierarchical knowledge structure', while the 'soft-pure' and the 'soft-applied' knowledge types draw mostly on 'horizontal knowledge structure'. The knowledge bases of Oral Hygiene are drawn from various disciplines including Education, Nursing, Biomedical sciences, Psychology and Sociology and others (Cobban et al., 2007); it forms what Bernstein calls a 'region' (which will be described in the next section) and comprises 'hard', 'soft' 'pure' and 'applied' knowledge types.

With this in mind, I reflect on the proposed curriculum guidelines, designed by Blitz and Hovius for Oral Hygiene (as seen in Table 1 in the literature review, p. 28). They outline different content areas with a short description of the content knowledge expected to be included in each content area. A number of issues can be raised from these guidelines. First, the guidelines given by Blitz and Hovius do not state the content knowledge to be borrowed from the disciplines. This means that their guidelines do not suggest which content areas should be prioritised and so knowledge recontextualised 'soft-pure' or 'soft-applied' knowledge types will differ across programmes. Second, the curriculum proposed does not explain the ratio of propositional knowledge and 'applied' knowledge. Third, the curriculum guidelines include content knowledge from various disciplines under one content area such as

Dental Sciences and Areas of special interest. In other words, that curriculum does not differentiate content knowledge according to knowledge types. Four, some of the content knowledge they have included under General Sciences cannot be regarded as specialised disciplinary knowledge and can rather be classified as generic knowledge (refer to Shays' discussion to follow). Finally, there is an emphasis on techniques and it is unclear in what ways a curriculum programme should relate the techniques to their disciplinary base. In order to address some of these points, I draw on the knowledge typology discussed and classify the content knowledge included in the proposed curriculum.

Table 3 below shows how the concepts discussed above can be used to identify the knowledge types that comprise the Oral Hygiene region. This table is an expansion of Table 1 and uses the proposed curriculum guidelines (Blitz & Hovius, 2003) to place content knowledge in line with different knowledge types (Biglan in Muller, 2009) and knowledge structures (Bernstein, 1999). Oral Hygiene can be regarded as a region, with combinations of knowledge types drawn from especially 'pure' and 'applied'. This can have an effect on the recontextualisation of curricula. Curriculum developers could make varying choices from the different knowledge types and as a result some programmes will enable while others will constrain the preparation of knowledge workers. A programme with less emphasis on 'pure' knowledge will prioritise techniques used in practice (clinical knowledge) and will neglect the conceptual and principled bases of the occupation.

Table 3 shows that a large amount of the content knowledge proposed in the Blitz and Hovius curriculum guideline falls under the 'applied' knowledge types. Biomedical sciences comprise knowledge from 'hard-pure' (presumably with some combination of 'hard-applied' too) and Dental Sciences combine 'hard-pure' and 'hard-applied' knowledge types. According to Bernstein's knowledge structure classification, Sociology and Psychology are horizontal knowledge structures; Anatomy and Physical science are hierarchical knowledge structures.

Content areas from Dental Hygiene exemplars (Blitz and Hovius)	Content knowledge for a three-year degree (Blitz and Hovius)	Knowledge types (Biglan in Muller)	Knowledge structures (Bernstein)
General Education	Sociology	Soft-Pure + Applied	Horizontal
	Psychology (patient motivation, child development and pain management)	Soft-Applied	Horizontal
	Oral, written and electronic communications	Soft-Applied	Horizontal
General Sciences	Statistics, interpretation of data, application of data into practice, evaluation of current scientific literature, self-assessment skills, peer-assessment skills, practice management skills	Soft-Applied	Horizontal
Biomedical Sciences	Anatomy, Physiology, Chemistry, Biochemistry	Hard-Pure + Applied	Hierarchical
Dental Sciences	Tooth morphology, head, neck and oral anatomy, oral embryology and histology, Oral pathology, Radiology, pain control, dental materials, dental caries, non-carious tooth wear, Dental epidemiology, Paedodontics, orthodontics, psychopathology, administration of local anaesthesia	Hard-Pure Hard-Applied	Hierarchical
Dental Hygiene Sciences	Oral Health education, preventive and nutritional counselling, health promotion, patient management and comprehensive clinical dental hygiene, services for special needs patients, community oral health, medical and dental emergencies, legal and ethical aspects of hygiene practice, infection and hazard control management, intraoral photography, implant care. Teamwork, quality systems, for patient care, clinical self-evaluation, cultural competency, variety of patient groups, cooperation with other health groups	Soft-Applied Hard-Applied	Hierarchical / Horizontal
Vocational practice	Professional practice, ethics, legislation, team dentistry, safe practice, quality care.	Soft-Applied Hard-Applied	Horizontal
Areas of special interest	Hospital dentistry, restorative, special needs, dental hygiene education, public health, orthodontics, Paedodontics	Soft-Applied Hard-Applied	Hierarchical/ Horizontal

Table 3 Oral Hygiene knowledge bases in relation to knowledge theories

Considering how these distinctions affect professionalisation, 'hard-pure' knowledge types can be distinguished easily as they are more interdependent with a greater sense of connectedness. This allows for increased collaboration in teaching, research and the development of their knowledge base (Muller, 2009). While 'soft-applied' disciplines have a lowered interdependence they do not build on each other's work, which leads to less stability in the knowledge produced. They spend more time on teaching and less on research. The 'applied' disciplines focus on producing practitioners with greater practical knowledge and this impact negatively on research outputs (Muller, 2009). To summarise, 'hard' knowledge types has a tradition of updating knowledge along a strong social and cultural base, which leads to the development of a solid sense of identity in practitioners. However in 'soft'

knowledge types the disciplinary core is unclear and it has a simpler social base, which creates a weaker sense of professional identity (Muller, 2009, p. 211).

Muller draws a further distinction about knowledge fields and indicates that disciplines merge to form 'regions' usually to support professional practice. These regions may keep their specialisations or their knowledge base may be recontextualised (Muller, 2009, p. 213). According to Muller and Young (2013), the internal relations of knowledge in a region relate to external concerns. They indicate that in regions the internal symbolic order merge with external orders which are practical in nature. In Shay's description of regions, she indicates that they face both ways - that means inward toward the disciplines and outwards towards the fields of practice (Shay, 2013). 'Regions' provide a number of distinguishable features:

i. they involve more than one discipline
ii. their internal instability[9] makes it discontent
iii. their organisational form is weaker as they are vulnerable to pressures from within and forces from the outside
iv. they construct specialised identities projecting knowledge as a practice in some context. (Muller & Young, 2013, p. 132)

As Oral Hygiene contains these features, it can be regarded as a region. Oral Hygiene draws on different types of knowledge, pure scientific (Natural and Social) and applied scientific knowledge in order to guide a specific mode of practice in a specific context. Muller (2009) distinguishes between scientific and applied knowledge as seen in the following extract:

> Scientific knowledge grows by the evolution of ever more abstract and general propositions; this is its epistemic destiny, so to speak. Applied knowledge grows through an accretion of practical solutions to particular problems. Of course it can be, and is, retrospectively rationalised in terms of its scientific generalizability. But its raison d'etre is procedures that work; science's is principles that are true. (p. 208)

Applied knowledge relies on procedures that proved useful in practice whereas science relies on propositional knowledge that proved true (Muller, 2009). This can

[9] *'Internal stability' is not characteristics of all regions, e.g. In Medicine there is continua of strengths.*

be related to the discussion by various authors within Oral Hygiene, that it has a practice-oriented side and a theory-research side (Cobban, 2007; Walsh, 1991). According to Muller (2009) Dentistry can be classified broadly as a 'hard-applied', science-based profession. Oral Hygiene on the other hand has a greater focus on the preventive and promotive aspects of oral health care (Darby & Walsh, 1993) or on 'soft-applied' knowledge, is also clinical in application and draws on 'hard-applied' knowledge too. Both Dentistry and Oral Hygiene would have both 'hard' and 'soft' disciplinary knowledge, however their curricula is recontextualised in different ways, emphasising one or other combination of the 'hard', 'soft', 'pure' or 'applied' knowledge.

The discussion which follows looks at Winch's work on the relation between 'knowledge that' and 'knowledge how' in learning a practice and will help to show how the applied aspects of professional knowledge can be further differentiated. It also helps to describe how knowledge types relate to each other; how the one is dependent on the other.

3.5 Theoretical (pure) knowledge vs. practical (applied) knowledge

The following discussion stems from the debate in the literature review on technician vs. knowledgeable worker. Winch's (2010) work on theoretical and practical knowledge provides a description of how theory underpins knowledge of practice, which helps to emphasise the relationship between the disciplines that inform Oral Hygiene knowledge and how they are put into practice. Winch makes the following statement in this regard:

> When the competent practice of an occupation depends on the ability to apply such systematic knowledge from one or more disciplines to workplace judgement and action, the occupation may be characterised as either 'technical' or 'professional'. (Winch, in press)

Winch argues that in order to do something practically (knowledge how) one has to have the propositional knowledge (knowledge that) that is true. 'Knowledge that' and 'knowledge how' can both be found in 'hard' and 'soft' disciplines. However, propositional knowledge has to be systematically organised so that our judgements

or actions can be successful (Winch, 2010, p. 104). So, to be a knowledgeable worker, systematic propositional knowledge has to be in place.

Winch (in Muller & Young, 2013) describes two kinds of 'know how' integral to systematically organised knowledge, which supplement 'knowing that'. The first is 'knowledge of inferential relations between propositions' which relates to understanding existing knowledge. This includes being able to reason about factual knowledge and ideas, principles and techniques. The second is 'knowledge of the procedures in assessing, testing and acquiring new knowledge' or the judgements which have to be made to produce new knowledge. Knowledge is required of researchers and is central to knowledge development.

In order to understand how Oral Hygiene theory is put into practice, one has to consider how practical knowledge fits into the broader theoretical framework of the profession. Winch stresses the importance of distinguishing between various kinds of practical knowledge, and indicates that if this is not done, 'knowing that' is often reduced to 'knowing how'. This discussion leads us to what is commonly called practical knowledge. For example, the way in which theory informs clinical procedures. Winch argues that there are various kinds of 'know how', or 'practical abilities', which relate to conceptual content in different ways (Winch, in press). He distinguishes them as; technique, skill, transversal abilities, project management abilities and occupational capacity. 'Technique' is the way in which a task or procedure is performed. A 'skill' is when a task is carried out in contextually relevant conditions. These two types of 'know how' can be likened to the clinical abilities of practitioners, with a 'technique' being a specific procedure done in the field e.g. doing a scaling procedure. However with a 'skill', Winch says that one would require knowing how to apply the technique[10] while having a particular character[11] when doing it.

[10] Having a 'skill' means application of a technique using judgements about the context in which the procedure is performed.
[11] The characteristics required to perform a 'skill' would include care, values and morals, etc.

The next forms of practical ability I focus on can be equated to what Shay (2012) regards as generic skills. Shay argues that a generic mode, which Shay calls 'pseudo-practical' (2012, p. 15), is not embedded in specific practices. It includes mainly general abilities such as critical thinking, problem-solving, global citizenship, becoming a professional, and professional communication (Young, 2008). Beck and Young (2005, p. 192) indicate that genericism has consequences for identity, specifically when a curriculum has weaker ties to the acquisition and production of knowledge in universities and stronger links to practice in the 'real world'. When looking at whether curricula include generic skills a clearer understanding of genericism is important. Bernstein (2000) describes generic skill as a new concept of 'work' and 'life'.

> This is where a skill, task, area of work undergoes continuous development, disappearance or replacement . . . Under these circumstances it is considered that a vital new ability must be developed: 'trainability', the ability to profit from continuous pedagogic re-formations and so cope with the new requirements of 'work' and 'life'. These . . . it is hoped, will realise a flexible transferable potential rather than specific performances. Thus generic modes have their deep structure in the concept of 'trainability'. (p. 59)

Here, Bernstein (2000) criticizes the use of generic knowledge in Higher Education, as it does not develop specialized disciplinary knowledge; instead it is useful for developing identities suited for the workplace. Thus allowing the capacity to perform a task / function 'meaningfully' rather than 'relevantly'. Muller (2009) indicates that the more specialized a discipline becomes the less transferable its knowledge is. While generic knowledge can be said to be more easily transferable. Nonetheless, generic knowledge does not allow for vertical mobility in a vocation as it does not comprise the highly specialized knowledge required for a professional identity. Shay (2012) uses the concept of genericism as one of four concepts (the other three are theoretical knowledge, practical knowledge and professional / vocational curricula) in her investigation of four curricula types in higher education. She describes the different types of identities which the curricula are trying to evoke. As the search for a professional identity in Oral Hygiene is still continuing, the extent of the use of genericism in various curricula will be interesting to see.

Winch places more value on generic knowledge (in press). He calls it transversal abilities, which means certain abilities used in work contexts e.g. planning, co-

ordinating, communicating and evaluating. Winch indicates that these abilities are relevant to a profession's claim to autonomy in the workplace and allows one to work without supervision. In order to work without the supervision of a dentist one would need to have the propositional knowledge which is linked to the procedure and do it with character. The project management abilities make use of 'transversal abilities' so that an individual can apply principles and techniques across time and contextual conditions. Finally, occupational capacity encompasses all the varieties of professional 'know how' described above (in press, Winch). At this level of knowledge development, there is a focus on civic responsibility and how an occupation relates to societal and intra-occupational aims. The implications of these distinctions are that various types of 'know how' influence decisions on the content that is included in a curriculum, how it is taught and assessed. Winch speaks of two types of occupations and what needs to be included in a comprehensive professional curriculum. The first type of occupation associates with the internal aims of the occupation, while the second is concerned with external factors such as its civic dimensions (in press, Winch). In Oral Hygiene, this would mean either a greater focus on the 'techniques' of clinical procedures and/or the 'skills', which is the role the occupation, plays in the prevention of disease through health promotion. The particular focus an occupation would emphasise, remains in the hands of lecturers at the various institutions involved in curriculum planning and design (as discussed below).

This discussion thus reflects on the debate about the technician vs. the knowledgeable worker. It shows that students need to learn propositional knowledge (in the form of facts, principles and reasons for techniques) drawn from both 'soft' and the 'hard' disciplines. They also need the first type of 'know how' or inferential work with propositional knowledge. Lastly they need to acquire a variety of practical 'know how' including specific transversal abilities and occupational capacity. How this is selected in curricula is an empirical question, which in this thesis is examined in two different higher education institutions. In summary, this section focused on the relations between theoretical and practical knowledge in an occupation and how this informs the curricula at two institutions. The various kinds of 'know how' identified by Winch are important. This work helps to understand

practical knowledge more deeply, its important inferential role and the variety of ways it relates to context.

3.6 The relationship between knowledge and curriculum

To understand the selection and organisation of knowledge into the curriculum, Bernstein (2000) provides a symbolic model (the 'pedagogic device') with which to explore and understand the processes that transform academic knowledge into curricula knowledge (Figure 2). The 'pedagogic device' is a hierarchical model, which describes and defines the process by which 'unthinkable', new, knowledge converts to 'thinkable', educational knowledge, within three specific fields. The 'Field of Production' represents the creation and production of new knowledge within the institutions that control and authenticate knowledge down to the institutions that 'manipulate' and convert knowledge within the 'Field of Recontextualisation', passing it down to the institutions that receive and transmit knowledge within the 'Field of Reproduction' (Bernstein, 2000). In Higher Education institutions all three of these processes are happening.

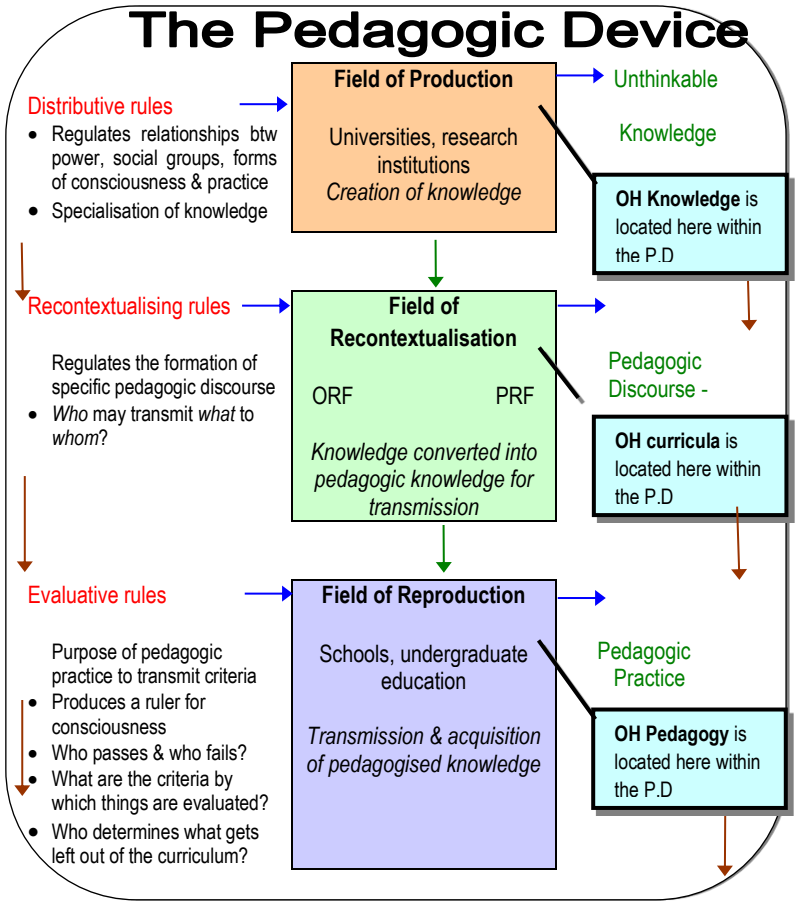


Figure 2 The Pedagogic device adapted from Bernstein (2000, p. 37) and Luckett (2010)

In institutions where Oral Hygienists are trained, new knowledge in Oral Hygiene is being produced through academic research. It is also where new knowledge is re-organised into the curriculum, and where Oral Hygiene knowledge is taught and

assessed. In other words to some extent Oral Hygiene lecturers hold these three identities and this important to take into account when analysing their perceptions of the field.

The Pedagogic Device is governed by three regulating and interrelated rules, namely: 'distributive rules, recontextualising rules and evaluative rules' (Bernstein, 2000), which are in themselves hierarchical as one rule is derived from the other. The distributive rule regulates the power relationships between social groups (Singh, 2002, p. 573). Here new knowledge is being produced, which is often specialised and controlled by a few. The recontextualising rules regulate the formation of specific pedagogic discourse. Here the 'thinkable', formal knowledge is converted into pedagogic discourse. Governments and education departments promote this. In Oral Hygiene locally this process is regulated by the CHE, SAQA, and the HPCSA. Accreditation has to be sought from each of these bodies to offer an Oral Hygiene programme. According to Singh, 'the evaluative rules constitute specific pedagogic practices' and are therefore 'concerned with recognising what counts as valid acquisition of instructional and regulative texts' (2002, p. 573).

The key idea relevant for my task here is that Oral Hygiene curricula re-contextualises knowledge from the academic field and from the practice. As knowledge in Oral Hygiene has 'pure' (hard and soft) and 'applied' (hard and soft) aspects, knowledge is borrowed applied from concepts and from everyday knowledge of practice. The task will be to explain the relation between the different types of knowledge in the curricula of the programmes that are to be investigated, including their sequence and the time allocated to them. In addition, the evaluative criteria transmitted in examinations about the knowledge to be acquired will also be investigated.

When considering Bernstein's recontextualising field closely, this field is further divided into two sub-fields, the official recontextualising field (ORF) and the pedagogic recontextualising field (PRF). 'The ORF includes the specialised departments and sub-agencies of the State and local educational authorities together with their research and system of inspectors' (Bernstein in Singh, 2002, p. 576). In

the Oral Hygiene field in South Africa, government institutions like SAQA, HEQC and HPCSA perform this, while internationally there are organisations like the American Dental Education Association (ADEA). The PRF includes university departments with their research and specialised media like journals and publishing houses (Bernstein in Singh, 2002). Agents from within the PRF select and organise knowledge according to the principles of specific pedagogic discourses or texts from various knowledge bases (Turner-Bisset in Singh, 2002). This, according to Singh (2002) is an attempt to regulate discipline specific pedagogic identities. This means that what is included in a curriculum is controlled by the distinctive focus of each institution, or according to international trends. In South Africa this is performed by the Health Sciences Faculties of the five training institutions offering qualifications in Oral Hygiene, as well as by organisations like the International Federation of Dental Hygiene, the American Dental Hygiene Association or the Oral Hygiene Association of South Africa and international or local journals and textbooks. When the PRF is well insulated from the ORF, agents in the PRF have more autonomy over the pedagogic discourses and practices. The specific institutions in which Oral Hygiene is taught have power over the relation, selection, sequencing, pacing and evaluation of valid knowledge. Consequently with this, they control the knowledge and convey identity in the field (Singh, 2002). Although the task here will not include formal policy analyses, the analysis of the lecturers' survey and the curricula of similar courses across two different programmes will demonstrate similarities and differences that exist between the programmes and by implication institutional autonomy with the PRF.

This study is focused primarily on Bernstein's 'Field of Recontextualisation' and 'Field of Reproduction', as it looks at how knowledge is recontextualised and reproduced.[12] It will therefore be useful to see how academic disciplines (hard and soft-pure) and clinical knowledge (hard and soft-applied) from the professional field are represented and sequenced in the curricula of the degree programmes under study. This can be interrogated by looking at how the lecturers from the different

[12] Recent discussion points to 'double recontextualisation' (Barnett, 2006 and Horden, 2014). This notion suggests that disciplinary knowledge in curricula is recontextualised from the general sciences into a general course in a degree (for example) Anatomy and once again into applied knowledge more specific to professional and clinical courses of the field of knowledge.

institutions select knowledge, what they consider as the main knowledge resources, whether core courses are similar, and how knowledge is sequenced across the different programmes. In addition, what knowledge type is transmitted in examinations will be used as a resource from which to draw implications about the ways Oral Hygiene lecturers convey to students what is important for them to acquire. All of these findings will be obtained from the survey and from the analysis of the curriculum documents (see Chapters 5 & 6).

3.7 Conclusion

The current debates in higher education have helped to understand where Oral Hygiene is positioned in terms of knowledge, curriculum and identity in South Africa. The link between knowledge development and professionalisation has been analysed in this chapter using various conceptual tools. Understanding how knowledge is differentiated and being able to map it according to a conceptual framework assists one to look at the knowledge base described in Oral Hygiene curricula.

Bernstein and Muller's accounts of knowledge development present a view that can help explore the structure of knowledge within Oral Hygiene. It allows one to analyse whether knowledge has horizontal or hierarchical structure (Bernstein, 1999), whether the field borrows knowledge from 'hard', 'soft', 'pure' or 'applied' knowledge (Muller, 2009) and which combination of these is dominant. The distinctions that can be drawn from these concepts allow one to make associations about the level of professionalisation within the field.

Oral Hygiene is regarded as a 'region' because it merges knowledge from various disciplines to support practice (Shay, 2013; Muller & Young, 2013). There is a focus on 'hard-applied' and 'soft-applied' knowledge, which indicates a reliance on procedures that are useful in practice but also the importance of empirical research to establish the reasoning behind them. This leads to further discussion on the different kinds of practical knowledge and the importance of inferential knowledge in both theoretical and practical knowledge. A description of knowledge within

curricula helps to understand that professional knowledge faces both 'inward' and 'outward' (Shay, 2013; in press Winch). Winch (in press) argues that in order to be a knowledge worker, systematic theoretical knowledge has to be in place. He also describes different kinds of practical knowledge, which can be further split into two, namely inferential relations that are relations between ideas and several kinds of 'know how'. His emphasis on differentiating between 'technique' and 'skill' brings forward the importance of applying theoretical knowledge into practice. It emphasises that when an oral Hygienist makes judgements s/he should be able to draw inferentially from theoretical and a variety of practical knowledge. Shay's account of genericism allows one to look at how knowledge in curricula has expanded to include more than the disciplinary knowledge.

CHAPTER 4 – RESEARCH DESIGN & METHODOLOGY

4.1 Introduction

To validate the reasoning behind the research process undertaken during this study, a description of the research methodology and design is provided. Miller and Brewer describe methodology as a 'set of rules and procedures to guide research and against which claims can be evaluated' … 'These rules and conventions give the researcher a structure of enquiry and a set of rules of inference' (Miller and Brewer, 2003, p. 192). In order to make inferences about the data resulting from this study I describe the rules and procedures that structure the enquiry for this research project. Mackenzie and Knipe (2006) mention numerous definitions of 'methodology', and claim that it is the 'overall approach to research linked to the paradigm' (p. 197).

As an introduction to this chapter, it would be worthwhile to reflect on the main research question (refer to p. 3). The central aim of this study is to explore lecturers' conceptions of Oral Hygiene as a field of knowledge and a profession, and to examine the knowledge base of the profession as revealed from its organisation in the curriculum. This chapter aims to explain the methodology, research design and methods used by the study to interrogate this aim. The particulars of the research design and methodology applied in this project include a description of the following aspects: type of research design, selection of the study population, sampling methods, research techniques used, ethical considerations and limitations of the study. Descriptions of the field as explained in the literature review and the conceptual framework will further expound on throughout this chapter showing its relationship to the study design.

4.2. Research paradigm and design

4.2.1 The research paradigm for the study

A research paradigm otherwise known as the theoretical framework is important as it 'influences the way knowledge is studied and interpreted' (Mackenzie & Knipe, 2006, p. 194). Cohen, Manion and Morrison (2013) provide a simplified definition of a paradigm and describe it as the 'philosophical intent or motivation for undertaking a study' (p. 38). Thus, one can regard a paradigm as the philosophical foundation that guides the researcher in deciding on which research methods are appropriate for the study. Numerous research paradigms are described in the literature including the following: Positivism, Constructivism, and Social Realism.

Positivism, referred to as "scientific method' is based on rationalistic, empiricist philosophy. Positivism is known to rely mainly on quantitative propositions to verify hypotheses (Ponterotto, 2005). Positivists' aim is to test theories through observations and measurement to make predictions and to control the world around them (Mackenzie & Knipe, 2006).

The Constructivist paradigm assumes that 'reality is a multi-layer, interactive, shared social experience that is interpreted by individuals' (McMillan & Schumacher, 2006, p. 315). In order to understand reality, we construct patterns of meanings of events and processes around us and make interpretations about these patterns (McMillan & Schumacher, 2006; Creswell, 2003). This means that Constructivists believe that knowledge is in the mind of the knower, which has to be interpreted by individuals. In this case knowledge would be different in every context.

Social realists claim that even though knowledge is socially produced there is still 'the possibility of rational objectivity in knowledge' (Moore, 2007, p. 30) and that different types of knowledge are structured differently and allow for different levels of accuracy. Chapter 3 in this study provides a description of these differences and their relevance to Oral Hygiene knowledge. Social realists argue that disciplinary knowledge is important knowledge in curriculum, thus one of their goals is to

explain its structure, and the way it influences the internal coherence of a curriculum (Young, 2008). Young and Muller (2010) indicate that;

> Knowledge is structured, in part independently of how we acquire it and knowledge fields differ in their internal coherence, their principles of cohesion, and their procedures for producing new knowledge. (p. 6)

Social realists believe that the Constructivist paradigm is flawed as it confuses the conditions in which knowledge is produced with the knowledge product (Rata, 2012). Rata argues that Social realists believe that 'the objectivity of the truth claims in any given discipline depends upon the procedures with the disciplinary institutions themselves … to test the discipline's generative principles, conceptual framework, content, and methods' (Rata, 2012, p. 57).

This study draws on these philosophical claims and selected the Social Realist view of curriculum to inform the investigation of two curricula (see below). This view will help to understand the knowledge valued for the Oral Hygiene field, by examining lecturers' views about the field and the organisation of knowledge in the respective curricula (or its coherence).

4.2.2 The study design

The study design describes the research methods used in this study. A research 'method' referred to the 'systematic modes, procedures or tools used for the collection and analysis of data' (Mackenzie & Knipe, 2006, p. 197). This research project makes use of a qualitative descriptive study design to explore the knowledge base of the Oral Hygiene field.

Cohen et al. (2000) indicate that descriptive research methods 'set out to describe and to interpret what is' (p. 169). Descriptive studies embrace many approaches to the collection of data, but each approach depicts the present position of a given situation (Mallick & Verma, 2005). Descriptive research goes beyond the structured collection of facts and opinions; it also involves comparing the data collected and the possible relationships that can be seen from the data. The focus of qualitative

descriptive research is the 'discovery of meaning' and involves interpretation of meaning of what will be described. This process is criticised because of subjective judgments and superficial impressions by the investigator of a situation. Mallick and Verma (2005) suggest that the researcher should ensure that plans are carefully structured before they are adopted. Structuring in this sense includes the following: recognition and definition of the educational issue to be studied, a clear statement about the kind of data required, the formulation of a clear hypothesis with the relevant questions which frame the research, and the selection and description of the subjects and research tools used in data collection. This study does not postulate a hypothesis; it is concerned with the understanding of the relationship between knowledge, curriculum and identity in the Oral Hygiene profession, taking into consideration the perspectives of the research participants.

The study makes use of two case studies. A case study is defined as 'an in-depth exploration of a bounded system (e.g. activity, event, process or individuals) based on extensive data collection' (Creswell in Creswell, 2012, p. 465). The type of case study introduced in this project is a multiple instrumental case study. According to Creswell (2012), this type of case study focuses on a specific issue and uses multiple cases to describe and make comparisons so that one gains insight on the issue. The case studies in this project will develop an in-depth understanding of the knowledge base of two curriculum programmes using three data collection tools and different methods of analysis and interpretation (which will be described later in this chapter). In this study I also made use of some quantitative analysis of the data in order to make interpretations about patterns in the data. This included tallying the number of hours certain topics were covered in the curriculum as well as tallying the mark allocation in examination questions.

4.2.3 Rationale for choosing the research design

The aim of this study is to explore lecturers' conceptions of Oral Hygiene as a field of knowledge and a profession, and then to examine the knowledge base of the profession as revealed from its curriculum organisation. The literature review highlights that there are numerous debates about knowledge in Oral Hygiene and

that there is a debate about the knowledge to be included. The perceptions of Oral Hygiene lecturers in South Africa are important as the literature shows the field of Oral Hygiene depends on knowledge, concepts and theories, which it borrows from other disciplines and fields of knowledge. Even though this is so, lecturers' opinions of professionalisation of the field and the quality of the curriculum have not been subject to systematic research. The understanding of the Oral Hygiene knowledge base also depends on the investigation of the nature of the knowledge found in various curricula. The findings of this kind of investigation will help to provide clarity about the state of the field. This way of looking at the aim assisted me in deciding upon the selection of research design and methodologies used in the project. The choice of research design, using qualitative descriptive methods is important and including lecturers' perceptions will contribute, I believe to the understanding of the knowledge debate and how lecturers position themselves in this debate. Identification of knowledge types how they are organised in the curriculum and what assessment tasks emphasise is integral to this aim. This analysis, to which I refer to as a curriculum analysis, will allow me to examine the extent to which lecturers' perceptions are aligned with what occurs in the curriculum. In sum, employing qualitative descriptive methods will show how the results from each analysis tool are aligned or misaligned to one another.

4.3 Research Population, Sampling and the Setting

South African tertiary institutions offer training for Oral Hygiene for more than thirty-five years. Nationally an approximate seventy-five students complete a Diploma or degree in Oral Hygiene per annum. Training of Oral Hygienists executed chiefly by registered Oral Hygienists with only a few Dentists, Anatomists, Microbiologists and Pathologists (and a few other Specialists) involved. Approximately forty-five lecturers at five tertiary institutions are involved in Oral Hygiene training; of this number, more than twenty-five lecturers are full-time employed while the remainder teach on a part-time basis. This number includes only those lecturers with qualifications in Oral Hygiene. There is no researched indication of the demographic profile of lecturers teaching Oral Hygiene in South Africa. Thus,

clarity about the demography of the lecturers at the various universities included in this study was necessary. The study also collected data on the lecturer's ages; qualifications, positions held at the various institutions; teaching experience; research interests and their teaching and curriculum involvement.

The population under study is full-time Oral Hygiene lecturers teaching at two universities that offer a Bachelors programme in Oral Hygiene in South Africa. These institutions are included in this study as their programmes had students in each of the three years of the degree. One other university offering a degree could not be included in the project as they had only one group of students in the first year at the time of the study. The two other universities were offering the Diploma in Oral Hygiene and were still in the accreditation process toward offering the degree at the time of this study. The two universities included, were given the labels UNIV1 and UNIV2 in order to conceal their identity and to ensure their anonymity.

The study makes use of a purposive sampling method (also known as purposeful or judgmental sampling), which is a type of non-probability sampling. Purposive sampling described by Cohen et al. (2013) as a process where one will:

> … handpick the cases to be included in the sample on the basis of their judgement of their typicality or possession of the particular characteristics being sought. In this way, they build up a sample that is satisfactory to their specific needs. (2013, p. 156)

McMillan and Schumacher (2006) describe the use of purposive sampling methods and indicate that its application will improve the use of the information obtained from a small sample. The researcher makes a judgement about the subjects used in the study – s/he needs to decide which subjects will provide the best information to suit the objectives of the study (McMillan and Schumacher, 2006). As this study uses the purposive sampling method, the following three criteria for selecting the final sample were applied:

- Five years or more of teaching Oral Hygiene
- Involvement in curriculum development
- Being employed to teach on a full-time basis

Thus, the size of the sample in the study is nine lecturers, of which the majority had more than fifteen years of experience in teaching Oral Hygiene, all were involved in design and implementation of curricula and were employed on a full-time basis. Even though the sample is small, McMillan & Schumacher (2006) argue that the purposive sampling method is powerful and logical because it allows for the in-depth analysis of experts in the field.

4.4 Research strategies

To answer the research questions, three data collection techniques were utilised:

- Questionnaire – survey of lecturers' perceptions about the field
- Curriculum information – curriculum analysis tools
- Assessment information – final examination question analysis

4.4.1 Survey of lecturers' perceptions about the field

The first data collection technique is the use of a questionnaire (see Appendix 6). Because of the small sample in the project, it was possible to make use of a semi-structured questionnaire, which includes both open and close-ended questions. Cohen et al. (2000) indicate that questionnaires have several questions and response modes. Creswell (2012) describe the various types of questions included in questionnaires; open-ended questions do not have response options so the respondent supplies their own answers to the questions. This allows the respondents to give their own views about an issue. In close-ended questions, the researcher poses a question and provides predetermined response for the respondent to complete (Creswell, 2012). The close-ended questions can include dichotomous, multiple choice or rating scales. The questionnaire devised for this study consists of twenty-three items, which includes five open-ended questions and eighteen closed-ended questions (of which three are rating scales and one is a ranking order question). The rating scale used is the Likert scale; as 'it provides a range of responses to a given question or statement' (Cohen et al., 2000, p. 253).

The questionnaire for this project comprises the following themes namely; demographic information, lecturer's views about knowledge included in the field of Oral Hygiene and perceptions about the development of the profession. The questionnaire was intended to locate the lecturers' teaching and research activities. I also classified the lecturers' qualifications, research activities and what they perceive as the most important knowledge borrowed for the field in each of the curriculum programmes. These classifications were based on specific conceptual distinctions borrowed from Bernstein and Muller (Discussion to follow in chapter 5).

Questionnaires were hand delivered or emailed to the two universities, which each full-time lecturer from each institution was requested to complete. The demographic information in the questionnaire requested the lecturer's age, their position in the workplace, qualifications and experience in teaching, research and teaching interests. The second theme, the lecturer's views about knowledge in Oral Hygiene examines the resources the lecturers use, specifically their textbooks of choice, lecturers' perceptions on whether Oral Hygiene has a distinct specialisation, where they believe knowledge is borrowed from, what they regard as the most important modules are, which concepts are key in the modules they teach and finally their involvement in curriculum design. The third theme, the lecturer's perceptions of the development of Oral Hygiene as a profession, examines their perceptions on what lecturers believe a qualified professional should be like, the roles of the Oral Hygienist and which model of practice is most evident in South Africa.

4.4.2 Curriculum analysis tools

The second data collection technique used in the study is an analysis of curriculum documents, specifically the rulebooks of the two degrees. The curriculum document analysis provides a broad overview of the organisation of knowledge covered in the intended curriculum at the two institutions. This includes the coverage of knowledge in the modules offered and its sequencing and progression across the three years of the degree. This analysis deals with the intended curriculum of the two programmes and not the enacted curriculum. It includes a circumscribed analysis of the examined curriculum (see below). It is important to emphasize therefore that throughout this

study when the researcher makes claims such as the knowledge in the curriculum 'draws on' or 'covers', these refer to the intended curriculum.

The two rulebooks provide an overview of each degree. Both institutions provide an outline of the structure of the modules offered in each year of study. The rulebook from UNIV1 provides a breakdown of each module, broadly stating the purpose and contents of each module included in the degree and the specified time allocated for lecturers, tutorials and practical sessions. One example from the UNIV1 rulebook is a module called Comprehensive patient management 171. The rulebook states that the credit value is 2 credits and that the module is offered in semester 2. The rulebooks describe the topics to be covered by the module as follows – 'The purpose of the module is to: embed communication skills required during patient management; and facilitate an understanding of the patient's psycho-social dimensions that may influence health-related behaviours and customer demand.' (UNIV1 rulebook, p. 268). The description also includes the contact time, which is 1 practical per week, 1 other per week, and 1 discussion per week.

UNIV2 rulebook is much more descriptive of the outcomes and the contents. It provides a more detailed account of the topics included in each module covers. It also shows the contact hours (i.e. lectures, practical and tutorials) as well as the assessment and the self-study time required to complete the module. One example from the UNIV2 rulebook is a module called Clinical Practice I. The rulebook states that the credit value is 20 credits and that this is a year module. The rule books describes the topics to be covered by the module as follows – 'the history of the oral hygiene profession, the definition of oral hygienists and the application of this definition in the SA context, the scope of practice of hygienist in SA, introduction to ethics in dentistry, etc.' (UNIV2 rulebook, p. 85). The description also includes the contact time with the lecturer - 90 hours, assignments and tasks – 20 hours, tests and examinations – 10 hours, practical sessions – 40 hours, self-study – 40 hours, total learning time – 200 hours. The different methods of assessment and percentages are also indicated.

In the study, I used rulebooks and not specific course outlines. This is because rulebooks specify the content in each module relatively well (see examples of pages from each rulebook in Appendix 5) which enabled me to access data on all the modules included in the degree and to construct a broad description of the degree as a whole. This study did not investigate specific modules outlines, as it examined the whole curriculum of the two programmes. Thus, I was able to choose a tool that allow for a birds-eye view of the organisation of knowledge in Oral Hygiene.

Two analysis tools were used for this analysis. The first is based on content-based curriculum guidelines and the second on a conceptual analysis of knowledge types. With the Blitz and Hovius guidelines analysis tool, I compared the specified contents in Table 1 to the topics specified in the rulebooks of all the modules offered in the two curricula (for more detail see below in 4.5). The second analysis tool, the conceptual analysis of knowledge types was used to classify the topics the modules included in the two curricula according to knowledge types following Müller's distinctions (Biglan in Muller, 2009) between 'hard', 'soft', 'pure', 'applied' knowledge types (for more detail see 4.5 below). These knowledge types, which Becher and Biglan developed as ideal types, include aspects such as the structure of knowledge recontextualisation, but also broader social and cognitive aspects of the culture of knowledge work (p. 211). Amongst these aspects are degrees of consensus between cultural styles and cognitive styles, and differences in teaching, research and supervision activities. My research does not cover all these aspects of academic culture. Its main focus is curriculum recontextualisation. As explained on pages 36-37 the concept of knowledge types and the distinctions drawn by Becher and Biglan refer to ideal knowledge types and empirical research cannot cover all of the aspects of these types. (See Table 2 on page 37, for alignment of other conceptual distinctions made in this thesis)

4.4.3 Assessment task analysis tool

The third data collection technique used was conceptual mapping of the examination questions following Winch's (in Muller & Young, 2013) distinction between theoretical and practical knowledge and Muller's analysis of the four knowledge

types. These two sets of concepts helped me to examine how knowledge is recontextualised in final examination questions (for more detail see below in 4.5).

With the three data sets described above I could compare and assess whether there is alignment in the knowledge perceived as significant for the field and how knowledge is organised in curricula and examination questions.

4.5 Data collection and analysis

The project initiated in 2012. Primary data collection included using the piloted[13] questionnaires while secondary data collection included the collection and review of the rulebooks and final examination papers.

In the first phase of the study, I hand delivered or emailed fourteen questionnaires to the full time Oral Hygiene lecturers at the two training institutions offering a Bachelor's degree in Oral Hygiene. Of the questionnaires sent out, 64% (N-9) responded. I then collated all the data into an Excel spreadsheet in order to tally the responses according to the following themes: firstly, demographics about the lecturers; secondly, lecturers' views about how they perceive the knowledge and their curricula; thirdly, lecturers' views about the professionalisation of Oral Hygiene.

To complement the responses from the questionnaires about the lecturers' research interests and to gain a better understanding of each respondent's research activities another search for each of the respondents' published work was completed. I searched the literature using various methods such as: asking the respondents for their publication titles or going onto search engines to retrieve published articles by each respondent. The use of only peer-reviewed publications in this analysis shows an indication of the lecturers' research proficiency and preferred knowledge type. The twenty-one titles found in this search included titles from areas like Health

[13] *Three lecturers with five years or more experience from two of the other institutions willing to participate piloted the questionnaire. All revisions were included and the final questionnaire was completed.*

promotion, Pytomedicine, Education, Clinical assessment, Geographical Information Systems (GIS), Clinical, and Epidemiology. The search for these research titles is tentative as it represents what I found at the time and may not be what may be available presently. It is also not a complete representation of research published at the two institutions, as not all the lecturers responded to the questionnaire in this study. The research publications were analysed by classifying them according to Muller's knowledge distinctions of 'hard', 'soft', 'pure', 'applied' knowledge types. I was able to tally the publications according to these knowledge types and separated them according to each institution (see Table 5, p. 71).

In the second phase of the study, I collected all relevant curriculum documents from the two institutions. I was not able to acquire all the documents when collecting the questionnaires. Subsequent visits and emails to the lecturers aided me in receiving all the necessary curriculum documents. The data from the curriculum documents informed the production of the broad overview of the curricula in the two institutions.

The data analysis of the two curriculum analysis tools is described below. With the Blitz and Hovius guidelines analysis tool, I compared the specified contents in seven content areas to the topics specified in the rulebooks of all the modules offered in the two curricula, this I did by making judgements from my own understanding of the field. Using Table 1 and the rulebooks, I looked at the content areas suggested by Blitz and Hovius in their guideline for a three-year degree. I compared their content areas to the description of topics in the rulebooks to see which modules contains the contents specified in the guideline and then mapped each module under the most likely content area. For example, in UNIV1 the module called Oral Biology contains topics such as 'Biology and Pathology of the oral cavity required as pre-knowledge for clinical courses' and I thus placed the module under Biomedical sciences (Appendix 1 provides all the modules' topics and how they were placed in each content area). I inserted the contact time spent on the topics of each module and recorded the sequencing of each module. I placed all of the modules on a graphic diagramme to illustrate the placement of the modules across the various content areas (see Figure 8 in chapter 6). Where modules included topics from more than

one content area, they were placed in more than one content area. One can see this from the arrows pointing to the modules, which are placed in different content areas. Specifying the time allocated for coverage of topics in the different content areas helped me display which content areas were given more importance in each of the two curricula.

The second analysis tool, the conceptual analysis based on knowledge types assisted in classifying the knowledge types of the modules included in the two curricula. Key terms were sourced from the rulebooks of both degrees, which were used to place topics into one of the four knowledge types. The use of key terms is important. I used the tool to identify and order the data collected for this dissertation into empirical typologies of four types of knowledge-natural sciences, social sciences, clinical applied knowledge and generic knowledge. The use of key terms helped to classify the content description of topics in the various modules as specified in the rulebooks according to its knowledge type. Examples of the knowledge type and key terms from the rulebook can be seen below:

- Natural sciences - Anatomical structures, Cell function, Microorganisms
- Social sciences - Human development, Community, Epidemiology
- Clinical applied knowledge - Clinical practice, Dental education, Oral diseases
- Generic knowledge – Finances, Professionalism, Ethical issues

There were instances where I had to make a distinction where topics included dental procedures or techniques and thus placed them into Clinical Applied knowledge. Table 11 in chapter 6 depicts a more comprehensive list of the terms from the rulebooks inserted under each knowledge type.

I met with four lecturers and telephoned four lecturers on various occasions to verify certain decisions about the placement of topics according to the knowledge types. The purpose of the meeting was to ask them where they think certain topics fit best, and whether the topics listed in the rulebook are taught as ‘pure’ knowledge or mostly ‘applied’. I also asked them how much of time they thought was spent on the various topics in each module they were involved in. Where this information was not accessible, I again relied on my own knowledge of the topics by making use of the

key terms from the table above to make the judgement (Appendix 2 provides the topics and includes which knowledge type they were placed under).

I mapped each module under one of the following knowledge types - 'hard-pure', 'soft-pure', 'hard-applied', 'soft-applied', 'clinical applied' and 'generic' knowledge types. I inserted the contact time spent on the topics of each module and recorded the sequencing of each module across each year of study. The modules that include topics, which draw on more than one of the knowledge types, were placed in accordingly. One can see this from the arrows pointing to the modules, which are placed in different knowledge types. I then tallied the time allocated for coverage of topics across the knowledge types per year. Specifying the time allocated for coverage of the different knowledge types helped me display which knowledge type is given more importance in each of the two curricula (refer to Appendix 3). A more detailed description of the method used to classify the topics into knowledge types, with examples is provided in chapter 6.

The third phase of the study was an analysis of final examination papers, of which three were sourced from each institution. This was with the view to make general comments about the knowledge types foregrounded in the examination. I requested lecturers to provide the final examination question papers across modules and the different years. As examination documents are sensitive documents, I was able to source only a few papers from the lecturers. It is important to take into account that the overall assessment of a student includes many other assessment types such as clinical examinations and assignments etc.

The questions of each final examination paper were placed in a table (see appendix 4). The table includes the question papers that were used in the analysis, the module offered, the knowledge types under which the module was classified in the curriculum analysis, each question in each of the six modules was stated as well as the number of marks allocated to the question.

The analysis of the questions first examined whether the question relied on 'hard' or 'soft' knowledge type. All boxes in which questions covered either the 'hard' or the

'soft' knowledge type were ticked and then tallied. Because the analysis was intended to examine how knowledge is recontextualised, it was important to specify the nature of application each question required. I explicitly looked to see whether the questions are assessing knowledge from concepts or from everyday knowledge of practice and whether or not the questions require the student to make inferences about facts. A more detailed description of the method followed to classify the questions and examples of questions are provided in chapter 6. Tallying of marks for each question helped me to demonstrate how knowledge was recontextualised in these question papers. No differentiation was made about the depth and complexity of the inferential analysis required by the questions.

Using the data collected from the questionnaire as well as the curriculum documents provided a formal description of the courses offered for the degree as a whole, as well as the relations between the courses. Analysing the curriculum material and the examination question papers for the specific courses helped to clarify the knowledge base that underpins these two Oral Hygiene curricula. With this data analysis the objective was to see how knowledge production occurs within the profession, how knowledge is classified and organised in the curricula, in what ways it is aligned or not to the lecturers' position in the field and what implications can be made about the state of professionalisation of the Oral Hygiene field.

4.6 Ethical considerations

The principle of informed consent, according to Cohen et al. (2013, p. 77) 'arises from the subject's right to freedom and self-determination'. This gave the lecturers in this research project the autonomy to decide whether they wanted to participate in the study or not. To protect the lecturers' rights, the researcher had to respect their refusal to participate.

The Wits Education Ethics committee approved the project and the Protocol number is: 2012ECE045. Each of the two Higher education institutions training Oral Hygienists granted permission to undertake the research. The researcher made a

request to each full time lecturer for permission to participate in the research project and to complete the questionnaire. The researcher ensured that the participants that identities would be protected, this was ensured through providing giving fictitious names for each institution. Each of the universities was asked permission to make use of curriculum documents and past final examination questions papers with memoranda. In addition, the researcher asked the participants for permission to publish or present the findings of the study at conferences.

4.7 Limitations

In my view, some of the constraints under which the research was undertaken were that the study population of Oral Hygiene lecturers in South Africa is small. Only two of the five institutions were eligible to be included in the study, as the rest had not yet started the degree programme. Some lecturers were not available and not all fourteen granted permission to participate, which made the sample even smaller. The study was an overview of the two curricula and does not represent all the knowledge covered in the entire curriculum for two reasons. First, the details included in the rulebooks do not provide an absolute confirmation of what knowledge is valued. Lecturers will recontextualise knowledge when they teach and the knowledge they value is made more explicit. Second, the final examination papers selected are not representative of all assessments undertaken in each curriculum.

CHAPTER 5 - ANALYSIS OF THE PERCEPTIONS OF THE LECTURERS

5.1 Introduction

The aim of this chapter is to describe the lecturers' general perceptions of the knowledge base of the field, how they view their Bachelor's degree curriculum and what their views are on practicing Oral Hygiene as a profession. The questionnaire addressed the following themes: firstly, demographics on age, qualifications and experience as a lecturer; secondly, views about where knowledge in the field comes from, the resources from which they obtain their own knowledge and how they perceive the contents of their curricula; and finally, their views about the identity of practicing Oral Hygienists.

5.2 Demographic data analysis

The first section of the chapter provides an overview of the respondents and the experience they have in the field by looking at their age, teaching expertise and research interests. At the time of the study the age distribution was as follows: one lecturer was between 22 and 35 years of age, two were between 36 and 45 years, three of the lecturers were between the ages 46 – 55 years old and the final three were over 55 years of age. Figure 3 shows the age differences of the respondents and this demonstrates a high level of maturity of this group. More than half (6) of the lecturers are over 45 years of age with few young staff members in this area of expertise. Internationally there is a concern that the numbers of experienced lecturers are decreasing and researchers are afraid that this can have a serious effect on the development of the knowledge base as fewer lecturers would have the necessary skills or qualifications (Coplen, Klausner & Taichman, 2011).

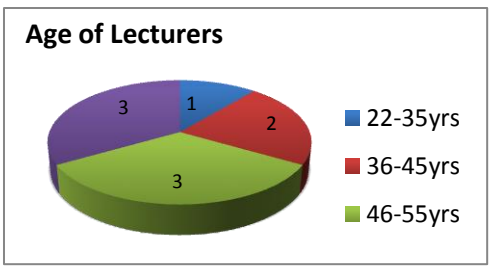


Figure 3 Age ranges of respondents

As seen in the literature review the Oral Hygiene field is still striving toward professionalisation (refer to pages 19-20). This is especially so in the area of qualifications, where there is an international shift toward creating degree programmes instead of Diplomas (Johnson, 2003).

All the respondents from the two institutions had completed a two-year Diploma in Oral Hygiene; this can be attributed to the fact that the most basic qualification needed to practice was the Diploma in Oral Hygiene. The degree was offered at only two institutions for many years and did not include the institutions under investigation. Currently South African institutions do not offer postgraduate degrees in Oral Hygiene. This makes career pathway development difficult and forces Oral Hygienists to seek qualifications outside of the field. All the respondents indicated that they completed further qualifications in various disciplines outside of the field after the completion of their foundational Oral Hygiene diploma.

Table 4 below shows the percentage of respondents with different further qualifications after completing a Diploma in Oral Hygiene. These include four postgraduate diplomas, four Masters Degrees and one who completed a PhD. The Masters degrees were obtained from different disciplines and included the following: Masters in Science (Dentistry), Masters in Social Science (Geography), Masters in Education and a Masters in Public Health. The one PhD obtained was in Pytomedicine, which is a field of Science. These lecturers' postgraduate qualifications are similar to others across the world (Coplen et al., 2011), with Oral Hygienists doing post-graduate qualifications in other fields. This absence of postgraduate training in the field contributes to the problem of low publications, which in turn impacts on evidence-based knowledge development.

Highest qualification earned	N	Discipline in which qualification done
Diploma or Certificate	-	-
Degree	-	-
Honours/Postgraduate Diploma	4	• P/G Diploma Oral Hygiene (N - 1) • Education (N - 3)
Master's	4	• Education (N - 1) • Social Science (N - 2) • Natural Science (N - 1)
Doctorate/ PhD	1	• Natural Science (N - 1)

Table 4 Highest qualification earned by the respondents

These lecturers are working in Higher Education, and their training and qualifications in Education are important. More than half indicated that they had completed a qualification in the field of Education (see Figure 4). These qualifications were mainly postgraduate education diplomas such as a Certificate in Education, Diploma in Higher Education, Diploma in Adult Education, as well as one Master's degree in Education. These qualifications prepare graduates for their teaching role as future Higher Education educators; its emphasis is not on research and knowledge development.

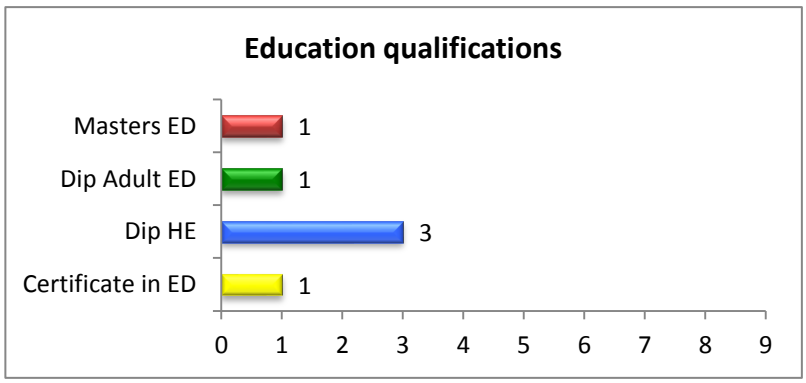


Figure 4 Education qualifications of lecturers

The lecturers' experience in teaching students in the field is as follows: eight of the respondents had been lecturing for more than fourteen years. The longest being thirty-six years and the shortest period two years, with a mean of nineteen years of teaching. In trying to ascertain what had prepared them best for teaching students in the field, a list of options were given. Respondents were asked to rate what factors influenced their teaching most, such as their qualification in Oral Hygiene or Education postgraduate qualifications or their practice experience (see Figure 5).

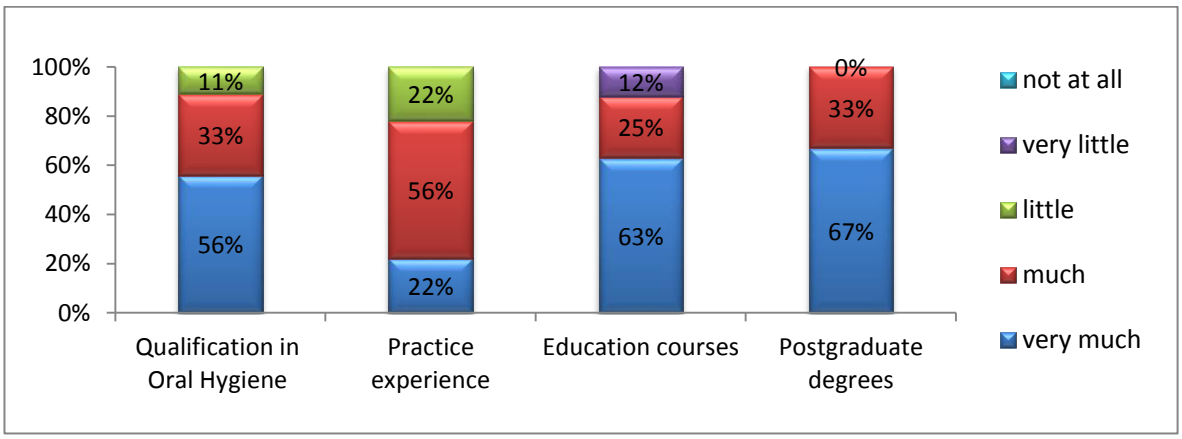


Figure 5 Factors that influence lecturers' teaching.

They rated their qualification in Oral Hygiene (56% - very much, 33% - much and 11% little). The other postgraduate degrees contributed very much (67% and much 33%) in assisting in their teaching. Experience as a practitioner also aided quite favourably in their teaching (22% - very much, 56% – much and 22% - little), with no one saying very little or not at all. Education qualifications rated slightly lower (63% - very much, 25% - much and 12% - very little). The lecturers rated their postgraduate qualifications the highest in preparing them for teaching students, with education courses (63%) and their Oral Hygiene qualification (56%) following closely. They did not rate their practice experience as highly (22%) as the previous items. This shows that they value their qualifications more than they do their experience as a practitioner. Their areas of teaching expertise were as follows: all felt that they have expert knowledge on clinical areas in the curriculum, while 44% felt knowledgeable on topics from the Social sciences such as Communication and Community Dentistry.

When looking at the research accomplishments of these lecturers, many of them publish articles and present their research at conferences. The articles reported here include only work published by the respondents; any publications by other staff at the two institutions were omitted. As indicated in Chapter 4, the researcher self-searched the literature for peer-reviewed research publications from the respondents over the past fifteen years. The twenty-one articles found include titles from areas like Health promotion, Pytomedicine, Education, Geographical Information Systems (GIS), Clinical, and Epidemiology. Table 5 below shows the publications[14] classified according to Biglan's (in Muller, 2009) disciplinary knowledge types 'hard', 'soft', 'pure' and 'applied' knowledge.

Of the published articles UNIV2 contributed ten articles (48%), and UNIV1 contributed eleven (52%) all titles have been excluded from this table to ensure anonymity of the respondents. The title of the article and the abstract was used to make a judgement on whether the research would be placed in a particular knowledge type. These were divided according to the classification of knowledge

[14] *All publication titles and authors were omitted to ensure anonymity of authors.*

types the table shows the following: 52% of the titles can be classified as 'soft-applied' knowledge, 43% as 'hard-applied' knowledge, 5% as 'hard-pure' knowledge and no titles as 'soft-pure' knowledge.

Hard	Soft	Pure	Applied
	X		X
	X		X
X			X
	X		X
X			X
X			X
X			X
X		X	
X			X
	X		X
X			X
X			X
	X		X
X			X
	X		X
	X		X
	X		X
	X		X
	X		X
	X		X
X			X

Table 5 Classification of articles according to knowledge specialisations

The institutional differences regarding the knowledge types shows that UNIV1 has published more 'hard-applied' titles (64%) while UNIV2 has more 'soft-applied' titles (80%). The respondent, who had completed her PhD in the pure sciences field, published the 'hard-pure' article. These results demonstrate that knowledge production by these lecturers is predominantly 'applied', with the one institution

having more 'hard' and the other more 'soft' science publications. The nature of the empirical investigations of these research publications indicates that they are mainly surveys and case studies. Six of the investigations are focused on teaching of Oral Hygiene; they do not focus on practice or the development of conceptual knowledge for practice. The research articles that draw on concepts from the Natural sciences were classified as 'hard-applied' knowledge. Examples from the list in Table 5 are as follows; '*In Vitro* bacterial activities associated with smokeless tobacco products on the SA market' and 'Contamination potential of toothbrushes with streptococci, enterobacteriaceae and candida albicans.' Both of these articles rely on knowledge from Microbiology. A few other articles were also classified as 'hard-applied' but their focus is more on the effects of techniques, products and materials used in practice. Examples of these are as follows; 'Whitening efficacy of three over-the-counter oral rinses' and 'Effectiveness of four manual toothbrushes in a cohort of patients undergoing fixed orthodontic treatment in an academic training hospital.' These examples show that there are two indications for classifying the articles as 'hard-applied' knowledge. Later in Chapter 6, I describe the distinctions between different forms of 'applied' knowledge.

Furthermore, it is interesting to note that the spread of qualifications of the different lecturers vary according to their research activities and on what influences their teaching interests. Their most recently acquired qualification was classified according to it being 'hard-applied', 'soft-applied', 'hard-pure' or 'soft-pure' degree.

Table 6 shows that lecturers who have qualifications in Social sciences teach and publish research in the social sciences; and this is similar for Clinical qualifications (e.g. Advanced Diploma in Oral Hygiene) and Natural science qualifications (e.g. Masters in Science Odontology). It therefore appears that lecturers identify themselves according to the specialist knowledge areas in which they have completed postgraduate qualifications as their teaching and research interests are aligned.

Latest qualification	Teaching expertise / interests	Publications
Diploma Higher Education (Soft-applied)	Orthodontics	None
PhD Science (Hard-pure)	Clinical, prevent, community dentistry, Epidemiology	Soft - applied (2) Hard-pure (1) Hard-applied (4)
Masters in Education (Soft-applied)	Special patients, preventive oral health	Hard-applied (3)
Masters in Public Health (Soft-applied)	Oral Health promotion, clinical practice, research	Soft-applied (8)
Masters in Arts (Soft-applied)	Special patients, clinical practice, applied research, preventive oral health	Soft-applied (4)
Senior Onderwys Diploma (Soft-applied)	Clinical, special patients, pathology, biology	Hard-applied (2)
P/G Diploma Higher Education (Soft-applied)	Special patients, community dentistry, Psychology	None
Advanced Diploma Oral Hygiene (Hard-applied)	Periodontology	None
Masters in Science Odontology (Hard-applied)	Clinical	Hard-applied (4)

Table 6 Respondents' most recent qualifications and links to teaching interests and research

This section focuses on the lecturers' identities in relation to the 'Production field' (Bernstein, 2000). It reveals their perspectives toward knowledge production and displays how they influence the field both locally and internationally. The analysis shows that 'applied' knowledge is used more readily over 'pure' disciplinary knowledge.

5.3 Lecturers' perceptions on curricula and knowledge

Moving away from the 'Production field', the second section focuses on the curricula; how much input these lecturers have on the development of the Bachelors' degree curricula in the institutions in which they work, and what they felt constituted the knowledge base of the Oral Hygiene degree. Lastly it looks at what they regard as the most important modules and conceptual underpinnings of the curricula. All of the lecturers indicated that they were very involved with curricula planning, design and

implementation at various levels. This suggests that the lecturers see themselves as participating in both the production and re-contextualising fields (Bernstein, 2000).

The lecturers' inputs in curricula development vary, and they are involved in different tasks as shown in Table 7 below. Five design particular courses or modules while four are involved with the development of the entire Bachelor's degree programme.

Curricula development tasks
Designing the study guide for Oral Hygiene students for Orthodontic module
Plan, design, implement preventive course
Plan, design, implement
Development of the Bachelor Oral Hygiene Degree from conception to implementation
Different levels
Responsible for programme offered
Curricula reviews - Semester and annual curricula discussions, Planning of degree programme curricula
Developed a module
Planning of Preventive Oral Health as subject

Table 7 Lecturers' inputs in curriculum development

The respondents were then asked if they believe that Oral Hygiene has a distinctive specialisation in comparison to other dental professions. Eight lecturers indicated that Oral Hygiene has a distinctive specialisation, which was prevention and health promotive, with only one person responding that it was the same as Dentistry, and one person did not answer.

To get a sense of the respondents' perceptions of the Oral Hygiene knowledge base, the following questions focused on where the knowledge was drawn from, which modules they felt were important, and what concepts are emphasised in the curricula. In the question regarding which knowledge Oral Hygiene draws from, respondents were asked to rate the following knowledge areas[15] using a 1 – 5 rating scale. The scale was as follows: 1-very much, 2-much, 3-little, 4-very little and 5-not at all. The 1 and 2 ratings were counted together as high when borrowing knowledge for the Oral Hygiene field.

[15] *Based on the findings in the literature review, especially the Oral Hygiene knowledge development project, the researcher selected these knowledge areas and classified them accordingly.*

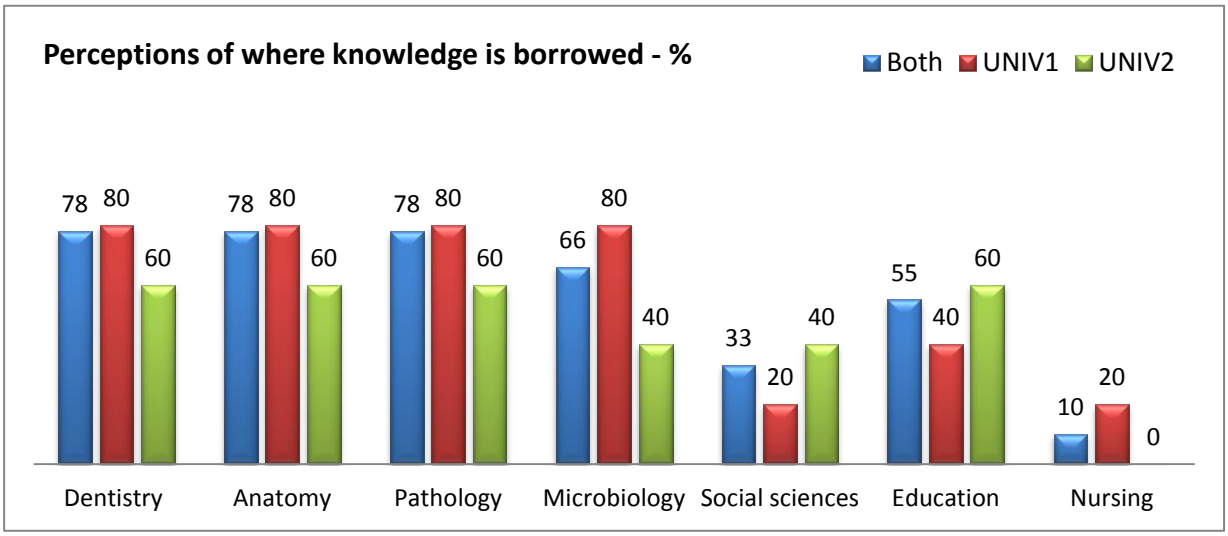


Figure 6 Lecturers' perceptions of where knowledge is borrowed

Figure 6 above shows that 78% of the respondents rated the proportion of knowledge drawn from Dentistry (region[16]) Anatomy (hard-pure) and Pathology (hard-applied) as high. 66% of the respondents indicated that much knowledge was borrowed from Microbiology (hard-applied). When they referred to Social science disciplines, 55% rated Education (soft-applied) as high and 33% rated Social sciences[17] (soft-pure) as high. Very few respondents (10%) selected Nursing, suggesting that the majority of them do not see it as contributing to the knowledge base. This indicates the respondents' perspective that Oral Hygiene curricula draw primarily from Clinical and the Natural sciences.

When comparing responses from the two institutions, both UNIV1 and UNIV2 showed that more knowledge is borrowed from Dentistry (region) and the Natural sciences (hard-pure) rather than the Social sciences (soft-pure and soft-applied). Respondents in UNIV1 (80%) however felt this more so than UNIV2 (60%), with UNIV1 showing a stronger association to the 'hard-pure' and 'hard-applied' disciplines while UNIV2 borrows more knowledge from 'soft-applied' disciplines, specifically Education (60%). None of the respondents from UNIV1 felt that knowledge came from Nursing, while UNIV2 (20%) indicated that it did. When the respondents were asked which of the courses in the curricula were the most

[16] *Dentistry is regarded as a region because it draws on knowledge from various disciplines (p. 41)*
[17] *Psychology and Sociology were combined in the results as Social sciences*

important, 45% responded that all courses were important; while 55% felt prevention and clinical courses were important. At UNIV1 60% felt the clinical courses were most important while at UNIV2 50% felt they were and the other 59% felt all were important. The respondents were then asked what they felt were the less important courses; one respondent from UNIV1 indicated First aid and another indicated Academic competency, while one from UNIV2 indicated it was the Languages (Xhosa and Afrikaans). Those respondents (55%) who felt that the clinical courses were most important were the same ones who felt that the courses with the generic skills were less important.

In order to understand which resources lecturers used to develop their own knowledge in the field and which resources they used for teaching, they were given various options to select from. These included textbooks, journals, conferences, the Internet, and dental companies. A 1 – 5 rating scale of 1-very much, 2-much, 3-little, 4-very little and 5-not at all, was again provided to indicate the extent to which they used the various resources.

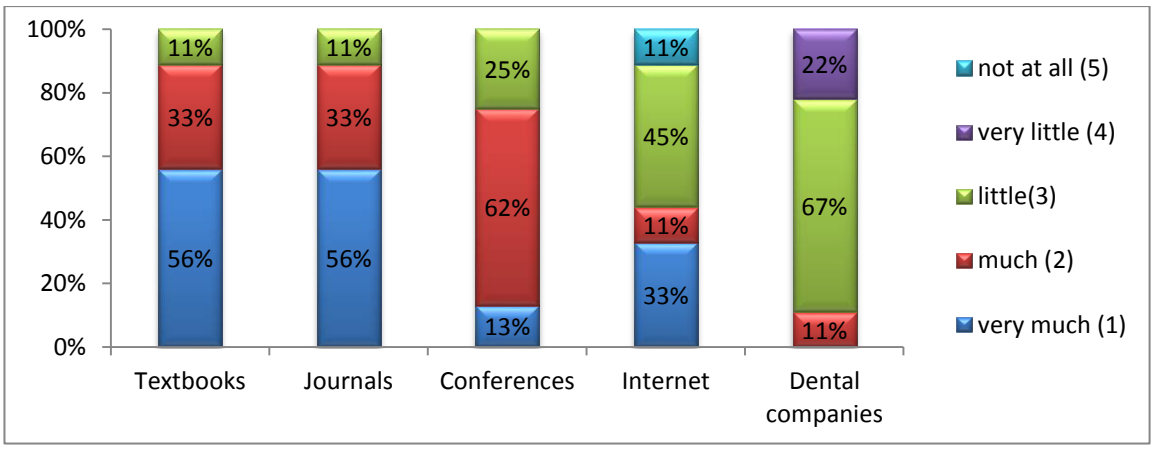


Figure 7 Sources from which lecturers select knowledge

Figure 7 shows the resources that all the respondents selected as 'very much' to 'not at all' for acquiring knowledge. 89% use Textbooks and Journals, 75% indicated that they use Conferences, while 44% use the Internet 'much' to 'very much'. Dental companies are less likely sources used; with 89% indicating that they use it 'little' to 'very little'. At UNIV2, all the respondents use Textbooks and Journals, with 75% indicating Conferences as 'much' to 'very much'. All the respondents indicated that

they use Dental companies' very little. 80% of the respondents from UNIV1 indicated they use Textbooks and Journals 'much' to 'very much', while 80% indicated that they use Dental companies very little. The textbook most commonly used by the respondents is the Clinical Practice of the Dental Hygienist by E. Wilkins, which all indicate they use. This textbook covers the clinical procedures of practice for an Oral Hygienist. It describes medical and dental conditions from the outlook of an Oral Hygienist and focuses on how to manage patients. It provides some of the latest evidence-based research regarding best practice on procedures and practices within the field. This textbook is highly regarded internationally as the textbook of choice for Oral Hygienists and unifies practitioners from across the world. Of this group 44% use this textbook exclusively while the rest use various other supplementary books too. At UNIV1 supplementary books are used by 40% while at UNIV2 100% use other textbooks as well as the E. Wilkins textbook. This textbook can be said to act as a knowledge stabiliser as it is used by so many for the clinical courses in the degree.

To find out whether the curriculum emphasises central concepts, two different questions were asked. The first was to elicit whether a specific concept, the 'process of care' was being taught. This concept is considered central in the oral health care management of a patient and is described by Darby and Walsh (2003) as a model for assessment, diagnosing, planning, implementing and evaluating care. A second question aimed to elicit the concepts from the lecturers they think is key to the various courses they are responsible for. Regarding the concept the 'process of care' all lecturers indicated that it is included in their courses. Most indicated it is taught theoretically and practically (85%) while others indicated it is mostly taught practically. Regarding which concepts are included in the courses they teach, the lecturers mentioned a variety of concepts including; 'periodontium', 'patient management', 'patient evaluation', 'behaviour change theories' and 'communication theories'. The responses point to the possibility that the lecturers are familiar with the 'process of care' which is regarded as part of clinical procedures. The other concepts mentioned, are in various modules across the curricula, which not all lecturers are involved with. Regarding concept usage, UNIV1 respondents described more 'hard-applied' concepts such as 'periodontium', 'diseases', 'patient

management' and 'therapeutic treatment' while UNIV2 described more 'soft-applied' concepts such as 'health and wellness', 'communication' and 'behaviour change'. The two institutions use the 'process of care' in their curricula with UNIV1 inclined towards more practical teaching of the concept. This concept can be regarded as a unifying theory for practice.

5.4 Perceptions about the identity of practicing Oral Hygienists

The final section in the questionnaire dealt with how lecturers view the role of practicing Oral Hygienists in the profession and its link to the professionalisation of the field. Regarding which role they believe is the most important for the Oral Hygienist; they were provided with the internationally defined roles of an Oral Hygienist. Lecturers were asked to rank these roles from 1 being the most important to 5 as the least important role. The highest ranked role by the respondents was that of clinician first followed by health promoter, while advocate was third and practice manager/marketer was fourth. The role of researcher was rated the least important role. This finding is consistent with the lecturers' earlier view that preventive and promotive functions are the key purposes in the identity of the Oral Hygienist.

The literature describes two models of Oral Hygiene practice (seen in Chapter 2, p. 21); the respondents were asked to indicate which they felt was the most commonly used form of clinical practice in South Africa. The first model is the Occupational model, where an Oral Hygienist is viewed as a mere technician, performing duties under the supervision of a dentist (seen on p. 19). The second model, the Professional model on the other hand, views an Oral Hygienist as a knowledge worker, assessing needs, making diagnoses, plans, implementing and evaluating Oral Hygiene care (p. 21). 66% of the respondents (80% at UNIV1 and 75% at UNIV2) indicated that qualified Oral Hygienists still practice according to an Occupational model while the rest indicated that there are some instances where hygienists are given the responsibility to practice according to a more Professional model.

When asked what type of qualified hygienist they would like to produce almost all the respondents indicated similar ideas e.g.

> "a professional who is knowledgeable, suited for periodontal or own practice"; "a person with a Degree in Oral Hygiene"; "Competent and confident professional for both private and public arenas"; "a professional who is knowledgeable, caring, ethical and lifelong learner"; "hygienist that can bring change in our society"; "a professional and lifelong learner"; "A qualified Oral Hygienist that demonstrates excellent knowledge and skills competencies in all the different aspects within the scope of practice as stipulated by the HPCSA, a person who guards and respects ethical standards in practice and will always promote and contribute to the development of the oral hygiene occupation"; "a professional who responds to the needs of the communities they serve"; "The OH should understand his/her role in improving oral health in SA, should have a clear idea of the disease/health profile, the SA approach to improving health and oral".

These quotes suggest that the lecturers believe that students should know why they perform certain functions and Oral Hygienists should have a high level of professionalism, which includes ethical and clinical practice. Many also indicated that service to community is important and they should be responsible to the communities they will serve. These expressions from the respondents illustrate that as lecturers they would like to produce knowledgeable workers.

5.5 Conclusion of questionnaire analysis

In conclusion, the results from the questionnaire provide us with an overview of the perceptions of nine South African Oral Hygiene lecturers about the state of knowledge of the field. It conveys how they identify with knowledge reproduction and its recontextualisation. To understand Bernstein's 'production field' we look at the demographic data of the lecturers. We can see that the lecturers have the necessary years of experience teaching in the field and that their Oral Hygiene qualification is in line with their view that their main role is a clinician. It may also explain why they feel confident about clinical knowledge in particular. Even though there is a concern that lecturers in the field are ageing, the issue that 'there is no

postgraduate pathway' is more important as knowledge advancement will languish because of it. From the classification of their qualifications, research activities and teaching interests it is evident that these are aligned according to different knowledge types. The research activities at the two institutions show that the focus at UNIV1 is 'hard-applied', whereas UNIV2 is more 'soft-applied'. The *first claim* from this analysis is that the 'field of production' in Oral Hygiene in South Africa emphasises 'applied' knowledge. The lecturers are research active and their postgraduate research is located in disciplines that are not directly related to Oral Hygiene.

When moving to the 'field of recontextualisation', more specifically the lecturers' perspectives of the curricula, we see that lecturers foreground specific disciplinary knowledge types. They view Dentistry as an important part of the curricula at both institutions. This refers to the value they place on clinical courses, and this suggests a link to the technical nature of the knowledge.[18] The responses by the lecturers show that they think that Oral Hygiene knowledge depend more on knowledge borrowed from 'hard-pure' and 'hard-applied' knowledge types than on 'soft-pure' and 'soft-applied' knowledge types. The responses from UNIV1 show a focus on 'hard-pure/applied' knowledge types. UNIV2 indicates that 'hard-pure/applied' knowledge types are important and they accentuate the use of 'soft-pure/applied' more so than UNIV1. The lecturers' perceptions of the knowledge base of both curricula are more focused on 'hard-pure' and 'hard-applied' with 'soft-pure', while 'soft-applied' disciplinary knowledge types influencing the curricula at UNIV2 more. The *second claim* made from this analysis is that the lecturer's value different knowledge types and this reflects the level of autonomy they have in curriculum design at the two institutions. This will also influence how the knowledge is recontextualised in each curriculum.

Remaining in the 'field of recontextualisation' and when considering the teaching resources in the field, it can be claimed that the use of the same textbook over many years may signal that the clinical knowledge of the field is relatively stable. There is

[18] *As described by Winch in Chapter 3, pages 42 - 43*

the use of a unifying concept known as 'the process of care' across the different clinical modules in both the curricula. The *third claim* highlights that the clinical knowledge offered in the curriculum appears to be similar as far as the use of an internationally recognised textbook and a unifying concept seen in both curricula.

From their responses about what occurs in practice, the lecturers believe that Oral Hygienists function according to an occupational role and practitioners have little authority in the workplace, yet, they are hopeful that the new Bachelor's degree will make a difference in producing more knowledgeable workers. So, there are attempts by some lecturers to nurture Oral Hygienists into becoming knowledge workers rather than mere technicians. The *fourth claim* is that these lecturers value a 'professional model' of practitioners becoming knowledgeable workers rather than becoming mere technicians.

CHAPTER 6 - ANALYSIS OF THE CURRICULUM DOCUMENTS

6.1 Introduction

The aim of this chapter is to understand how the knowledge base of Oral Hygiene is organised and classified in the curricula of two South African degree programmes. The analysis in this chapter provides a more detailed indication of the lecturers' understanding of Oral Hygiene knowledge as demonstrated in the overall curriculum design and more specifically through analysis of assessment tasks of key courses.

In the analysis of the curriculum documents, I address a number of questions. To do this I reflect on the research questions, the claims made in the literature review and the conceptual framework as well as the main perceptions of the lecturers. I explore how the Oral Hygiene programmes organise the knowledge base into their curricula, this includes the content areas and the types of knowledge covered in the curriculum, and how knowledge is spread and sequenced. This chapter is important for understanding the organisation of knowledge in the curriculum, and will be crucial for analysing its alignment to lecturers' perceptions (seen in Chapter 5). Finally, I investigate what the two curricula show regarding the development to professionalise the field of practice; more specifically in what ways the curriculum is aimed towards developing knowledgeable workers.

6.2 Overview of the two curricula

Oral Hygiene is a profession nested within the Allied Health Sciences; local training for a qualification in the field has to be approved by the HPCSA, HEQC and SAQA (refer to pages 25). Guidelines and criteria are set by these bodies to ensure that curricula in all tertiary institutions meet specific outcomes for the profession. The HPCSA also prescribes that students complete a specified number of clinical hours in their training. Oral Hygiene degrees are thus generally expected to be similar in their outcomes and content.

UNIV1 offers the Bachelor of Oral Hygiene (BOH) degree on a full-time basis over three years. This degree is offered over 90 weeks with a total of 2683 contact hours, and meets 384 SAQA credits. It has thirty-four modules that build on each other, with fourteen modules offered in the first year of study, eight modules during the second year and twelve modules (three are electives)[19] during the third year. By choosing electives, students specialise in an area of interest, such as Orthodontics, Public Oral Health or Periodontology.

UNIV2 offers a Bachelor in Oral Health degree (BOH)[20] that is presented full-time over three years. This degree is offered over approximately 90 weeks with a total of 2611 contact hours, and meets 435 SAQA credits. It consists of a total of thirty modules (four are electives). In the first year of study, eleven modules are offered (two are electives). These electives allow students to learn an indigenous language (Afrikaans or Xhosa) for more effective communication in practice. The second year offers ten modules, and the third year offers nine modules (two are electives). Table 8 provides an outline of the curricula of the two programmes; showing how they differ in terms of their number of modules, contact hours, credits and electives.

	UNIV1	**UNIV2**
Number of modules	34	30
Number of contact hours	2683	2611
SAQA Credits	384	435
Electives	3 (3rd year)	4 (1st and 3rd year)

Table 8 Outline comparing the two degree programmes

This outline provides a basic impression of the two curricula and does not provide any information about the organisation of the Oral Hygiene knowledge base in each of the curricula. This analysis below allows for a deeper comparison of the way the two universities organise the knowledge of the degree into a curriculum programme. More broadly, the analysis will contribute to an understanding of the knowledge base of Oral Hygiene.

[19] Each curriculum has electives which students can select from, e.g. The UNIV1 curriculum has 34 modules but 32 modules are required for fulfillment of the degree. The UNIV2 curriculum has 30 modules and 28 modules are required for completion of the degree. For this discussion and analysis I will describe all the modules offered at both institutions.

[20] The institutions have named the degree differently, according to their own preference but still in line with local and international standards.

6.3 Analysing the two curricula

Two different classifications are used to analyse the curriculum of the two universities. The first is a set of international curricula guidelines for a three-year degree developed by Blitz and Hovius (2003). I use the guidelines as a tool to show how modules from the two programmes fit within the expected guidelines as set out by the International Dental Hygiene Federation (seen in Chapter 2, p. 28). The second is a classification of knowledge types, which I developed from the conceptual framework, and which I argue helps to identify the knowledge base of Oral Hygiene.

6.3.1 Curriculum mapping tool from Blitz and Hovius

In 2003, Blitz and Hovius (2003) proposed a set of curriculum guidelines (seen in the discussion on pp. 28-29). The guidelines were proposed as an example that could be recontextualised by countries when developing their specific Oral Hygiene training programmes. In what follows, I provide a description of the two curricula, based on the three-year programme guideline provided by Blitz and Hovius (see Table 9).

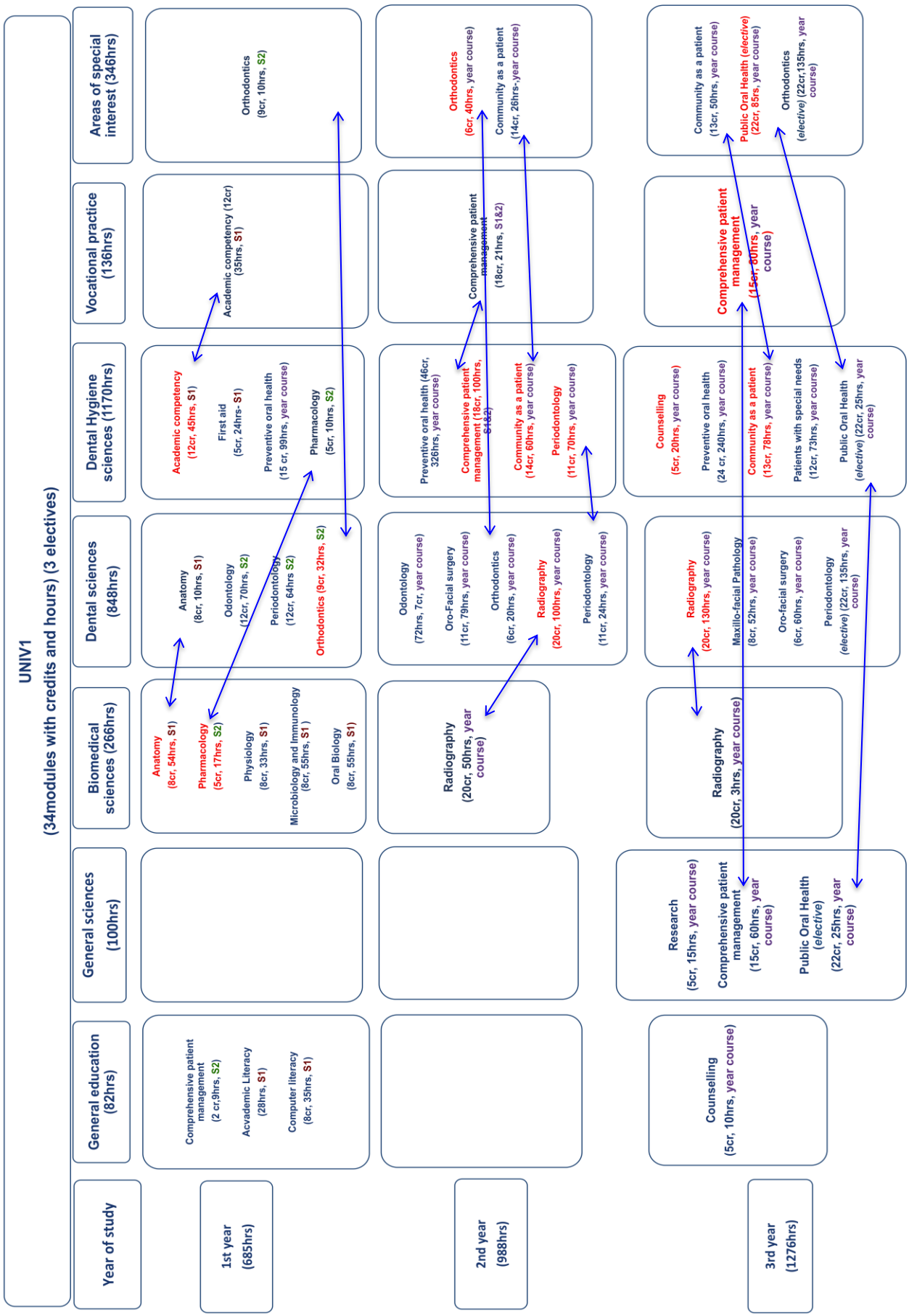
Content areas	**Content in three-year programme**
General Education	Sociology
	Psychology (patient motivation, child development and pain management)
	Oral, written and electronic communications
General Sciences	Statistics, interpretation of data, application of data into practice, evaluation of current scientific literature, self-assessment skills, peer-assessment skills, practice management skills
Biomedical Sciences	Anatomy, Physiology, Chemistry, Biochemistry
Dental Sciences	Tooth morphology, head, neck and oral anatomy, oral embryology and histology, Oral pathology, Radiology, pain control, dental materials, dental caries, non-carious tooth wear, Dental epidemiology, Paedodontics, orthodontics, psychopathology, administration of local anaesthesia
Dental Hygiene Sciences	Oral Health education, preventive and nutritional counselling, health promotion, patient management and comprehensive clinical dental hygiene, services for special needs patients, community oral health, medical and dental emergencies, legal and ethical aspects of hygiene practice, infection and hazard control management, intraoral photography, implant care. Teamwork, quality systems, for patient care, clinical self-evaluation, cultural competency, variety of patient groups, cooperation with other health groups
Vocational practice	Professional practice, ethics, legislation, team dentistry, safe practice, quality care.
Areas of special interest	Hospital dentistry, restorative, special needs, dental hygiene education, public health, orthodontics, Paedodontics

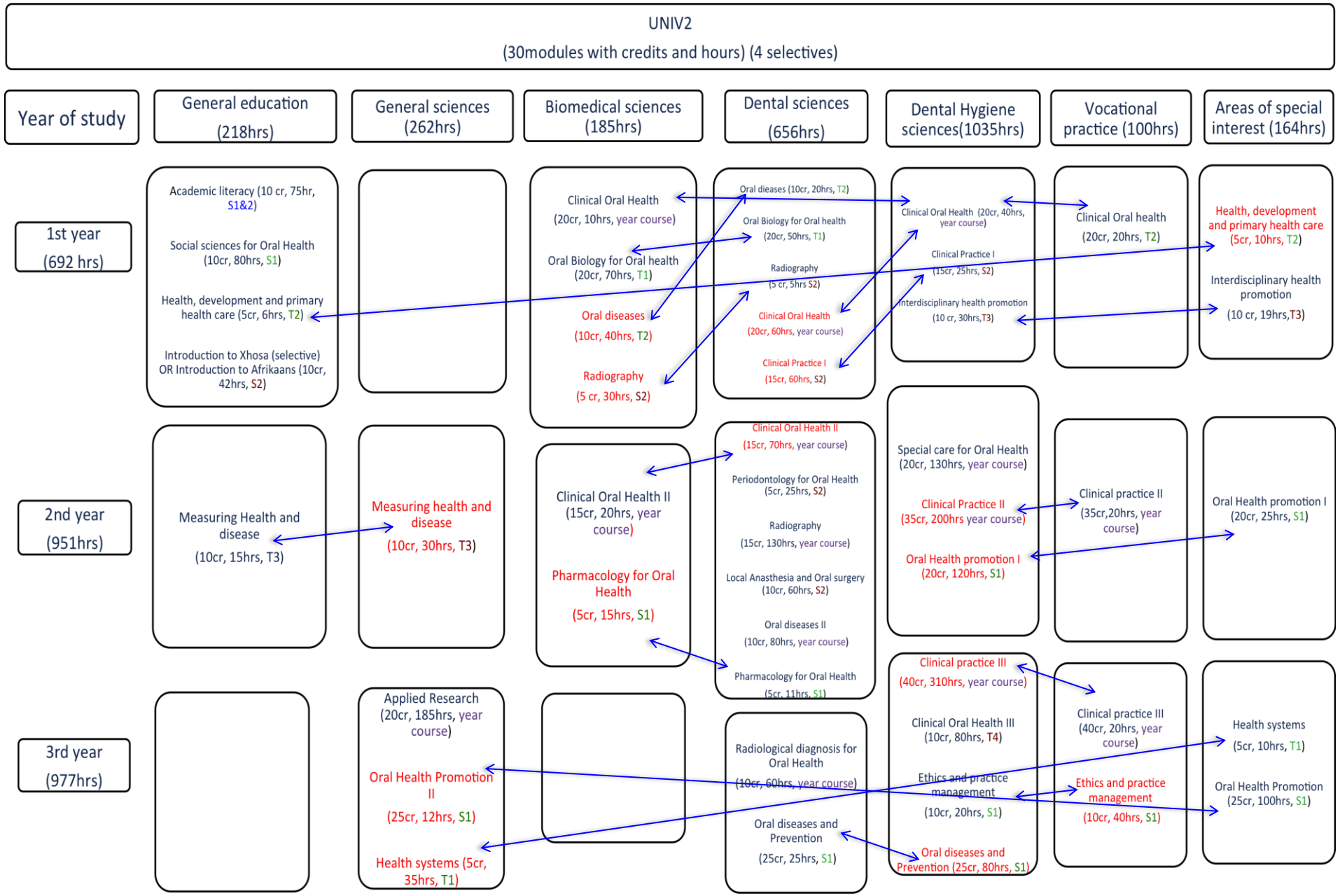
Table 9 Oral Hygiene content for three-year programmes (Blitz & Hovius, 2003)

In this analysis I compare the specified contents in Table 9[21] (Blitz and Hovius guidelines) to the topics specified in the rulebooks of all the modules offered in the two curricula. I then map each of the modules from the degree programmes under the most likely content area listed by Blitz and Hovius. In this analysis I use 'module' to refer to the courses in the degree and 'topic' for the specific description of the module in the rulebook. Blitz and Hovius use 'content area' and' 'content' and I follow these terms when I refer to their curriculum guideline (as per Table 9 above). There are some instances where a module is placed in more than one content area because the modules cover contents of more than one content area. Appendix 1 includes a brief description of each module's topics and the content area into which I mapped the module. I also scrutinise the contact time spent on the topics of each module. Where a module straddles more than one content area, I requested the lecturers to confirm the time allocated for the topics that fall under that content area.[22] Finally, I record when the module is taught in each year, which gives an indication of how the content areas are sequenced in each of the curriculum programmes. This process of curriculum mapping can be seen diagrammatically in Figure 8 below.

[21] I have placed Table 9 here as a matter of ease for the reader. This Table is really the same as Table 1 but shows the contents for a three-year curriculum only.
[22] There were some cases where this was not possible and I had to make a professional judgement about the time. This only occurred for no more than 20% of the modules.

Figure 8 Mapping of modules using the Blitz and Hovius (2003) curriculum guidelines




UNIV2
(30modules with credits and hours) (4 selectives)
Year of study
General education (218hrs)
General sciences (262hrs)
Biomedical sciences (185hrs)
Dental sciences (656hrs)
Dental Hygiene sciences(1035hrs)
Vocational practice (100hrs)
Areas of special interest (164hrs)
1st year (692 hrs)
Academic literacy (10 cr, 75hr, S1&2)
Social sciences for Oral Health (10cr, 80hrs, S1)
Health, development and primary health care (5cr, 6hrs, T2)
Introduction to Xhosa (selective) OR Introduction to Afrikaans (10cr, 42hrs, S2)
Clinical Oral Health (20cr, 10hrs, year course)
Oral Biology for Oral health (20cr, 70hrs, T1)
Oral diseases (10cr, 40hrs, T2)
Radiography (5 cr, 30hrs, S2)
Oral dieases (10cr, 20hrs, T2)
Oral Biology for Oral health (20cr, 50hrs, T1)
Radiography (5 cr, 5hrs S2)
Clinical Oral Health (20cr, 60hrs, year course)
Clinical Practice I (15cr, 60hrs, S2)
Clinical Oral Health (20cr, 40hrs, year course)
Clinical Practice I (15cr, 25hrs, S2)
Interdisciplinary health promotion (10 cr, 30hrs,T3)
Clinical Oral health (20cr, 20hrs, T2)
Health, development and primary health care (5cr, 10hrs, T2)
Interdisciplinary health promotion (10 cr, 19hrs,T3)
2nd year (951hrs)
Measuring Health and disease (10cr, 15hrs, T3)
Measuring health and disease (10cr, 30hrs, T3)
Clinical Oral Health II (15cr, 20hrs, year course)
Pharmacology for Oral Health (5cr, 15hrs, S1)
Clinical Oral Health II (15cr, 70hrs, year course)
Periodontology for Oral Health (5cr, 25hrs, S2)
Radiography (15cr, 130hrs, year course)
Local Anasthesia and Oral surgery (10cr, 60hrs, S2)
Oral diseases II (10cr, 80hrs, year course)
Pharmacology for Oral Health (5cr, 11hrs, S1)
Special care for Oral Health (20cr, 130hrs, year course)
Clinical Practice II (35cr, 200hrs year course)
Oral Health promotion I (20cr, 120hrs, S1)
Clinical practice II (35cr,20hrs, year course)
Oral Health promotion I (20cr, 25hrs, S1)
3rd year (977hrs)
Applied Research (20cr, 185hrs, year course)
Oral Health Promotion II (25cr, 12hrs, S1)
Health systems (5cr, 35hrs, T1)
Radiological diagnosis for Oral Health (10cr, 60hrs, year course)
Oral diseases and Prevention (25cr, 25hrs, S1)
Clinical practice III (40cr, 310hrs, year course)
Clinical Oral Health III (10cr, 80hrs, T4)
Ethics and practice management (10cr, 20hrs, S1)
Oral diseases and Prevention (25cr, 80hrs, S1)
Clinical practice III (40cr, 20hrs, year course)
Ethics and practice management (10cr, 40hrs, S1)
Health systems (5cr, 10hrs, T1)
Oral Health Promotion (25cr, 100hrs, S1)

6.3.2 Description of the curricula based on Blitz and Hovius' guidelines tool

When analysing the two curricula using the Blitz and Hovius guidelines, I was able to identify the following:

Firstly, both institutions focus most of their contact time across the three years on topics that Blitz and Hovius classify under Dental Hygiene sciences and Dental sciences (see Figure 9). Blitz and Hovius' guidelines split the clinical scope of the degree between these two content areas. The Dental Hygiene science content area includes topics such as prevention, health promotion, oral health education, and clinical dental hygiene care and community oral health. Blitz and Hovius regard this content area as the distinctive knowledge of the Oral Hygiene degree. The Dental sciences content area includes topics such as tooth morphology, oral anatomy, embryology, pathology, radiology, dental materials, paedodontics and administration of local anaesthesia.[23] This content area forms the specialty of dentistry. Dental Hygiene sciences form the bulk of the curriculum at both institutions, UNIV1 (1170 hours - 40%) and UNIV2 (1035 hours - 40%) respectively. UNIV1 spends 848 hours and UNIV2 spends 656 hours on Dental sciences (29% and 25% respectively). This analysis shows that the emphasis in both curricula is on clinical contents for the Oral Hygienist. UNIV1 spends more time on these content areas than UNIV2.

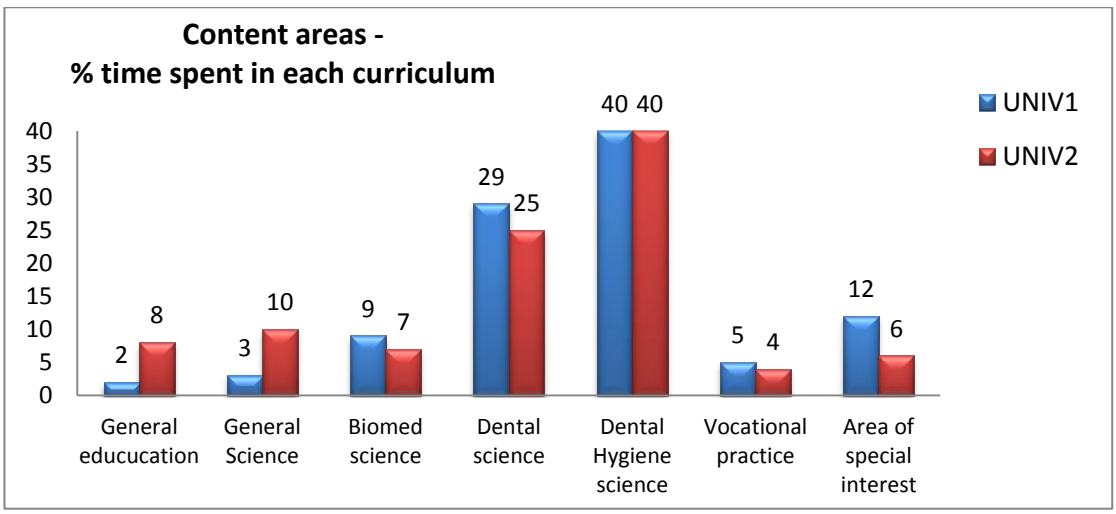


Figure 9 Time spent on the various content areas in each curriculum

[23] Blitz and Hovius do not allocate Periodontology anywhere; I placed it under Dental sciences, as it is an internationally recognised specialty in Dentistry.

Secondly, the Biomedical sciences display strong links to Dental Sciences and Dental Hygiene sciences in both curricula. UNIV2 offers six modules in this content area. The topics included in these modules overlap with contents, which Blitz and Hovius place under Dental sciences and Dental Hygiene sciences (e.g. Clinical Oral Health I, Oral Biology, and Clinical Oral Health II). UNIV1 offers four modules in this content area. UNIV1 offers modules in Biomedical sciences for 266 hours (9%) spread across all three years of study. UNIV2 offers it in the first two years and only for 185 hours (7%). UNIV1 offers slightly more time to Biomedical science than UNIV2.

Thirdly, modules that include topics such as research, self-and peer-assessment, and practice management skills map onto the General sciences content area. In UNIV2 these topics are offered in modules during the second and third years and in UNIV1 only in the third year. Correspondingly the time spent is also different: UNIV2 spends 262 hours (10%) while UNIV1 spends 100 hours (3%). In the General sciences content area UNIV2 spends much more time than UNIV1. The topics of these modules overlap with contents that Blitz and Hovius include under Dental Hygiene sciences, General education, Vocational practice or Areas of special interest.

Fourthly, according to Blitz and Hovius, the General Education content area combines several disciplines such as Sociology, Psychology and Communication. General education modules are offered mainly in the first year at both institutions, with UNIV2 spending much more time, 228 hours (8%) on General Education than UNIV1 with 82 hours (2%). The modules in this content area overlap with Dental Hygiene sciences, General Sciences or Areas of special interest. In the General education content area UNIV2 spends more time than UNIV1.

Fifthly, the time spent on modules in the Vocational practice content area is different. At both universities Vocational practice contents are included in modules in all three years. UNIV1 spends 136 hours (5%) and UNIV2 spends 80 hours (4%) in Vocational practice. During the first two years at both institutions the topics in the modules which fall under the Vocational practice content area, overlap with other content areas such as Dental sciences, Dental Hygiene sciences, General sciences and General

education, albeit the Vocational practice content area forms a small part of those modules.

Finally, the Areas of special interest content area include topics such as public health, restorative special needs and dental hygiene education.[24] Areas of special interest are found in modules in all years at both institutions with UNIV1 spending 346 hours (12%) and UNIV2 spending almost half, 164 hours (6%).

Regarding the sequencing of the modules, I observed that contents in Dental Hygiene sciences and Dental sciences are introduced across all three years at both institutions.

Biomedical science is included in both curricula, in years one and two, with UNIV1 also including very little content in year three. General education topics are included in year one at both institutions, UNIV2 has a small component in year two and UNIV1 has an even smaller component in year three. The General science knowledge area is covered in second and third year in UNIV2 and in third year only in UNIV1. Vocational practice and Areas of special interest are covered in all three years in both curricula. Table 10 provides a brief overview of the two curricula using the Blitz and Hovius tool for analysis.

	UNIV1	**UNIV2**
Number of contact hours	2683	2611
Number of modules	34	30
Electives	3 (3rd year)	4 (1st and 3rd year)
Number of mixed type content areas	14	17
Sequencing per year	General education – 1st & 3rd General sciences - 3rd Biomedical sciences – 1st, 2nd & 3rd Dental sciences - 1st, 2nd & 3rd Dental Hygiene sciences - 1st, 2nd & 3rd Vocational practice – 1st & 2nd Areas of special interest - 1st, 2nd & 3rd	General education – 1st & 2nd General sciences - 2nd & 3rd Biomedical sciences – 1st & 2nd Dental sciences – 1st, 2nd & 3rd Dental Hygiene sciences– 1st, 2nd & 3rd Vocational practice – 1st, 2nd & 3rd Areas of special interest– 1st, 2nd & 3rd

Table 10 Comparison of two curricula using the Blitz and Hovius tool

[24] All the modules under this content area have been mapped and counted even though students will only need to select one at UNIV1.

In summary, the Blitz and Hovius tool allows one to see that Dental Hygiene sciences is the focus in both curricula and covers almost half of the content in each curriculum. The Dental sciences content area covers about a quarter of both curricula. UNIV1 spends slightly more time on Biomedical sciences and Vocational practice. UNIV2 covers much more time on General sciences and General education. The tool suggests that the two curricula look similar in the clinically oriented content areas.

The Blitz and Hovius' classification tool is intended for use as a guideline for curriculum design. It is not intended to provide a means to classify knowledge types and is thus only partially helpful for analysing the knowledge base of the two curricula. It is useful as it distinguishes the contents of the programme. However, it is too broad in its categorisation of the contents that are included in curricula. With this analysis tool, which is intended to classify contents under different content areas, it is difficult to differentiate where some of the modules have to be placed, as some contents are repeated across content areas. For example, Blitz and Hovius include Ethics in more than one content area, under Dental Hygiene sciences and under Vocational practice. Orthodontics is included in both Dental science and Areas of special interest and Professionalism is included under both Dental Hygiene sciences and under Vocational practice. A number of modules were mapped across three different content areas, which showed that the contents were mixed across the different content areas. The guideline tool by Blitz and Hovius does not separate the contents of the different content areas sufficiently; they also do not provide any reasoning for placing various contents in more than one content area. Finally, the guideline does not offer a clear indication about time or sequence and does not explain the logic of coherence in the model, for example the preferred relation between the sciences and the clinical knowledge components of the curriculum. This means that it makes it difficult to classify the knowledge type of topics thus providing a limited understanding of the knowledge base of Oral Hygiene.

6.3.3 Curriculum analysis tool from the conceptual framework

I derived a different classification of knowledge covered by the curricula under investigation from the conceptual framework; I used various concepts to create a more analytically informed classification of the knowledge types the curricula cover.
In this analysis I applied the following three conceptual points. First, I divided disciplinary knowledge into four types, namely: Social sciences (soft-pure), Natural sciences (hard-pure), Clinical knowledge (applied knowledge) and Generic knowledge. I chose these knowledge distinctions because Oral Hygiene is a 'region' and involves knowledge from more than one disciplinary base. A 'region' also constructs specialised identities projecting knowledge as a practice in a future empirical context (Muller & Young, 2013). In Winch's terms, the Oral Hygiene curriculum should include both 'knowledge that' and 'knowledge how' (Winch, 2010).

Second, the occupation of Oral Hygiene is striving toward a professional identity (refer to Chapter 2, pp. 19 - 21) and has already developed a set of internationally defined roles of an Oral Hygienist. Disciplinary knowledge from Natural Sciences should be included to allow students to make deductions, for example about dental diseases, and why and how specific clinical procedures and techniques are performed; disciplinary knowledge from Social sciences should be included so that a student understands patients and communities; Clinical knowledge should be included to enable the student to learn how to execute techniques and procedures. I also included Generic knowledge as a knowledge type (refer to the discussion on p. 44). Generic knowledge refers to knowledge of communication and professional behaviour in the workplace. Generic knowledge type is described as a new concept of work and life; its contents are focused on training a student how to become a professional. Together these four knowledge types form the knowledge base of the 'region' called Oral Hygiene (refer to Chapter 3, p. 42 which describes the nature of professional knowledge).

Third, in Oral Hygiene, the Natural sciences include subject matter mainly from disciplines such as Anatomy, Physiology, Biology and Physics. Social sciences include

subject matter mainly from disciplines such as Psychology and Sociology. Here the knowledge type would be 'hard' and 'soft' respectively. I classified both Social and the Natural sciences as 'pure' and 'applied' knowledge. This is different from Muller's typology (2009), which separates 'hard-pure', 'hard-applied', 'soft-pure' and 'soft-applied' knowledge. The curriculum analysis below will show that some of the modules I classified under Natural and Social sciences cover knowledge in an 'applied' form. I therefore decided to amend the classification. Where a module covers 'pure' knowledge only I indicate it. Applied knowledge in these two knowledge types refers to knowledge that draws on concepts from for example Biology to explain dental diseases or on concepts from Sociology to explain community needs of oral health. I selected Clinical knowledge as a separate category of 'applied' knowledge type. This knowledge type, henceforth 'Clinical Applied knowledge' is a different type of applied knowledge. It is about learning to administer procedures and techniques in a future clinical setting, drawing on concepts but also on everyday knowledge of practice.[25] This would assist in recognising where the emphasis of propositional and practical knowledge is in the different curricula (Winch, 2010). More analysis of this distinction is conveyed in the assessment of the examination questions (see section 6.4).

In order to classify the knowledge types of the modules included in each of the university curricula, I sourced key terms from the rulebooks of both degrees. I placed the key terms under the most appropriate knowledge type namely Social sciences, Natural sciences, Clinical knowledge and Generic knowledge. I used these key terms to classify the content description of the module (the topics specified in the rulebook) according to its knowledge type. The key terms are presented below in Table 11. The topics in the two columns on the left, Natural and Social sciences have been classified as 'pure', 'applied' or both to show that the knowledge from the sciences can have either knowledge type. In the 'Clinical Applied knowledge' column the topics have been classified as 'hard', 'soft' or both to show that the 'applied' knowledge relies on ideas from the Natural and/or Social sciences. It is important to understand that Muller/Biglan use the terms 'hard' and 'soft' in reference to

[25] The curriculum analysis does not allow me to make these distinctions. The assessment analysis provides some data on this.

scientific concepts. I adapted their distinction for this analysis. For example knowledge that refers to dental procedures or techniques is placed under 'clinical applied knowledge' as instances of 'hard'. I differentiated between topics that were 'pure' and placed those into either Natural or Social sciences but these topics could be regarded 'applied' knowledge in a different manner. Some words in the table refer to a topic 'intended' to be taught as 'pure'. For example, 'body systems' and 'body functions' under Natural science and 'culture' or 'human development' in Social sciences. Other words in the table refer to a topic 'intended' to be taught as 'pure' and 'applied', for example, 'health promotion' and 'community' from Social sciences. It is important to remember that this is what was found from the rulebook and did not rely on how these topics were enacted in the curriculum.

NATURAL SCIENCES (hard-applied)	**SOCIAL SCIENCES (soft-applied)**	**CLINICAL APPLIED KNOWLEDGE (hard/soft)**	**GENERIC KNOWLEDGE**
Anatomical structures (P)	**Psychology**	Case report (H+S)	**Economic sciences**
Biology (P)	Behaviour (P)	Clinical interpretation (H)	Finances
Body functions (P)	Human development (P)	Clinical practice (H)	**Management sciences**
Body systems (P)	Learning (P)	Dental education (S)	Professionalism
Cell function (P)	**Sociology**	Dental materials (H)	Practice management
Chemistry (P)	Community (P+A)	Dental specialties (H)	Employment
Embryology (P)	Culture (P)	Emergencies (H)	Occupation
Immunology (P)	Environmental context (P+A)	Instrumentation (H)	Professional development
Metabolism (P)	Epidemiology (P)	Oral disease (H)	Marketing
Microorganisms (P)	Health policy (P+A)	Oral environment (H)	Project management
Pathology (P)	Health promotion (P+A)	Patient assessment (H+S)	**Law**
Pharmacology (P)	Health systems (P+A)	Patient counselling (S)	Legal issues
Physiology (P)	Political (P)	Patient management (H+S)	Ethical issues
	Outreach (P+A)	Prevention strategies (H)	
	Primary health care (P+A)	Procedures (H)	Computer literacy
	Research process (P)	Radiology (H)	Academic literacy
		Scope of practice (H)	**Languages**
		Techniques (H)	English, Xhosa, Afrikaans
		Therapeutic services (H)	Language development
		Treatment planning (H+S)	**Communication**
			Communication process

Table 11 Key terms sourced from rulebooks to analyse disciplinary knowledge

This template allowed for the analysis of the modules in the rulebooks and aided me in identifying the knowledge type covered in each module. I needed to examine again the topics specified in the rulebooks for each of the modules, this time in order to

identify the knowledge type covered within a module and across the three years of the degree. The table in Appendix 3 shows each module placed according to the knowledge type, it displays how it overlaps across different knowledge types and includes the main topics in the module. Some of the modules include topics that draw on one knowledge type while others combine two or more knowledge types and were therefore classified as a mixed type (refer to arrows on Appendix 3). Where the topics described in the rulebook appear to cover 'pure' knowledge, the concept that is covered, is indicated; otherwise the module is classified as 'applied'. The number of contact hours,[26] spent on the different knowledge types, was also indicated. This enables the calculation of time spent on each of the knowledge types in each year and over the entire course of the two curricula.

6.3.4 Description of the curricula based on the new classification tool

With this new classification tool, the spread of knowledge types can be seen across the different modules and over the three years of both curricula more noticeably. The analysis of the various modules located in the four knowledge types now follows.[27]

6.3.4.1 Results of curriculum analysis of UNIV1

When distinguishing which knowledge types are seen in each of the three years and the entire curriculum in UNIV1, the following were identified: First, the time allocation for the modules in the Clinical Applied knowledge type is 1868 hours; it is the biggest part of the entire curriculum and makes up 73%. Each year the time allocated for clinical knowledge steadily increases. Very little time (13%) is spent on Clinical Applied knowledge in the first year of study, with steady growth in the second (856 hours – 34%) and in the third (670 hours - 26%). Figure 10 depicts the spread of hours for the entire curriculum and highlights the range of hours spent in

[26] The number of hours that was counted for both classifications was the contact time with the lecturer, practical sessions and any other work that requires supervision e.g. clinical work or research work. All other time such as self-study and assessment time was omitted.
[27] The Natural sciences are counted as 'hard-pure' and 'hard-applied' knowledge and the Social sciences as 'soft-pure' and 'soft-applied'

percentages across the different knowledge types in each year, the centre ring represents first year, the middle is second year and the outer ring represents the third year of the degree.

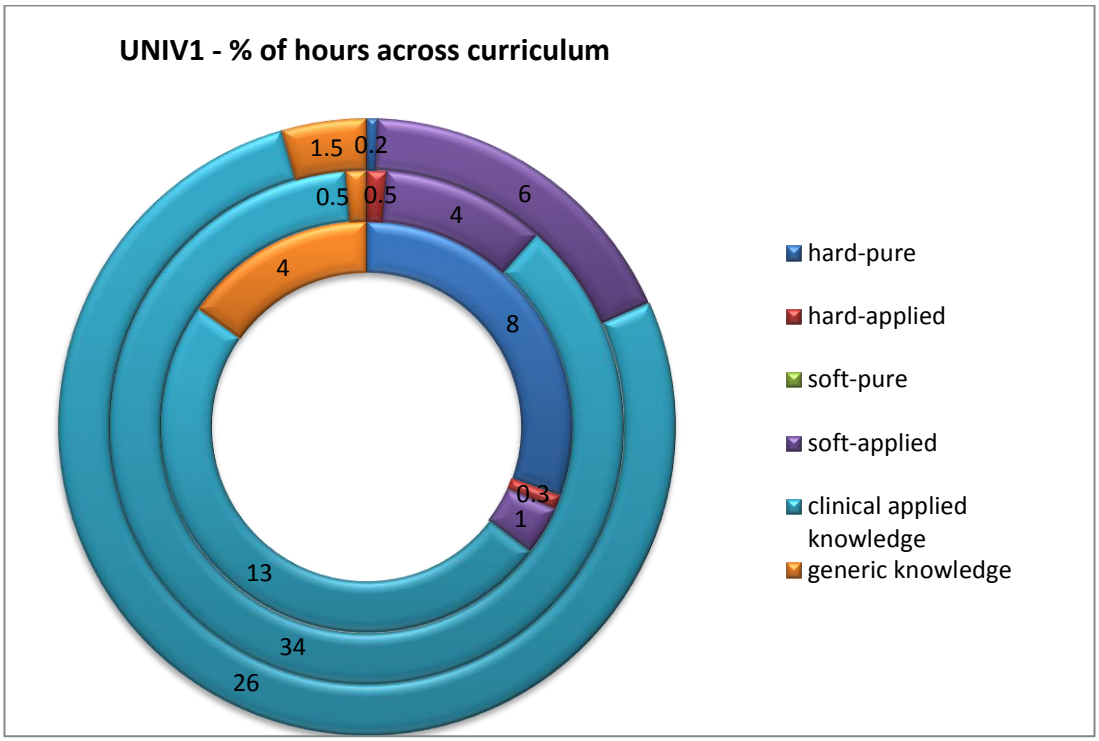


Figure 10 Spread of hours in percentages across knowledge types at UNIV1

The Clinical Applied knowledge is covered in twenty-two modules (refer to Appendix 3). The main Clinical Applied knowledge modules in each year are Preventive oral health I, II and III; these modules focus on the clinical scope of practice of the Oral Hygienist, with the emphasis on 'hard-applied' knowledge types. Second, of the twenty-two modules a total of nine modules were classified as mixed type. This means that topics in these modules are borrowed from different knowledge types. This is further described below.

Five of the nine Clinical Applied knowledge mixed type modules overlap with Natural science. They include Orthodontics I, Periodontology I, Pharmacology I and Radiography I and III. The amount of time spent on clinical knowledge in each of these modules is much greater than the Natural sciences; the focus is mainly on 'hard-applied' knowledge types, with topics such as orthodontic procedures, periodontal diagnoses, pharmacological patient management and radiological

techniques. Four of the nine Clinical Applied knowledge mixed type modules overlap with Generic knowledge. One in the first year, Academic competency combines topics such as instrumentation, ethics and professionalism. A second year module, Comprehensive patient management, overlaps with Generic knowledge and Social sciences. The topics in this module include applied psychology and sociology and patient care. The last two modules, Radiography (radiation physics & radiography techniques) and Comprehensive patient management (patient management & practice management) are offered in the third year. In all four modules the Clinical Applied knowledge is allocated more time and the focus is predominantly on 'hard-applied' knowledge types. In the second year, one module in Clinical knowledge overlaps with Social sciences (Comprehensive patient management). The topics in this module overlap with Generic knowledge too. In the third year, Clinical knowledge overlaps with Social sciences again in the module Counselling, and the topics are behaviour management and patient education, which are focused on 'soft-applied' knowledge types.

Natural science knowledge is covered in nine modules across the degree programme. The time allocated for Natural sciences over the three years is 254 hours (10%). There are eight modules that cover 'hard-pure' knowledge and together they make up 8% of Natural sciences; these have been noted in Appendix 3. The first year carries the biggest load of Natural science, across seven modules (9%). Apart from the five modules that overlap with Clinical Applied knowledge (see above) an additional four modules carry the bulk of the Natural sciences. They include topics such as oral biology, dento-cranial structures and pharmacology. The second and third years of study have very little Natural science knowledge and both modules Radiography I and III overlap, with Clinical Applied knowledge making them mainly 'hard-applied' knowledge types. In sum, there are five modules in the degree that are mixed and draw on both Natural sciences and Clinical Applied knowledge. In general, Natural sciences are not presented together with Social sciences or with Generic knowledge types.

Social science knowledge is covered in seven modules across the degree programme. The time allocated for Social sciences over the three years of study is 273 hours

(11%), or 408 hours if the elective module is included. There are no modules in Social sciences, which cover 'soft-pure' knowledge; all the knowledge that is covered is 'applied'. Very little time (9 hours) is spent on Social science knowledge in the first year of study, with gradual growth in Social science knowledge in the second (106 hours – 4%) and in the third (158 hours - 6%) years. The first of these modules presented in the first year, is Comprehensive patient management. The module covers a brief introduction to the psychosocial behaviour of patient management; I classify the content as 'soft-applied' knowledge type. This module also covers Generic knowledge - basic communication skills. In the second year, Social sciences knowledge is included in two modules. It is covered in Community as a patient, a module that focuses on community and health promotion, also in Comprehensive patient management as this comprises a number of different topics (such as occupational health and safety, communication, professionalism law, administration, prevention, patient treatment and care) mentioned above, combine two other knowledge types namely Clinical and Generic knowledge. The third year covers most of the Social sciences knowledge in this curriculum with 158 hours (6%) plus 135 hours (if the elective is chosen). Four modules in the third year contain Social sciences knowledge. One of these modules, Counseling, overlaps with Clinical Applied knowledge, the other three include topics such as health promotion, epidemiology, and research, which are all 'soft-applied' knowledge types. In the main, Social science is covered in the Oral Hygiene region together with 'applied' knowledge types. It is presented with Generic knowledge types in the first year and Clinical Applied knowledge types in the second and third years.

Generic knowledge is presented in seven modules and takes up 149 hours (6%) of the entire curriculum. Generic knowledge is focused mainly in the first year of study with 98 hours (4%), the second year 10 hours (0,5%) having much less coverage, and the third year has 41 hours (1,5%). The main module in each year is Comprehensive patient management I, II and III. These modules cover topics of 'soft-applied' knowledge type such as communication, ethics, professionalism law, administration, technology management, administration and practice management, customer needs and demands, marketing and career management. In the first year the four modules include topics such as professionalism, ethics (Academic

competency); Communication (Comprehensive patient management); academic reading and writing skills (Academic literacy) and computer skills (Computer literacy). The modules that overlap with other knowledge types in the first year cover topics that draw on Social sciences (Comprehensive patient management) or Clinical Applied knowledge (Academic competency). The module that overlaps with other knowledge types in the second year covers topics that draw on Clinical Applied knowledge (Comprehensive patient management II). The third year has two modules, Comprehensive patient management III and Radiography III, which both overlap with Clinical Applied knowledge. In the main, Generic knowledge is covered in the Oral Hygiene region together with Clinical and Social science knowledge types.

6.3.4.2 Results of curriculum analysis of UNIV2

When distinguishing which knowledge types are seen in each of the three years and the entire curriculum at UNIV2, the following were identified: first, the time allocation for the modules in Clinical Applied knowledge is 1383 hours; it is the largest knowledge type of the entire curriculum and makes up 53%. Each year the time allocated for Clinical Applied knowledge increases and the second year covers the most time. The allocated contact time for Clinical Applied knowledge offered in the first year of study is 165 hours (6%), the second year 693 hours (26%), and third year is 525 hours (21%). The main Clinical Applied knowledge modules are Clinical oral health I, and Clinical practice II and III; these modules focus on the patient care and the scope of practice of the Oral Hygienist. Figure 11 depicts the spread of hours for the UNIV2 curriculum and highlights the percentage of hours spent across the different knowledge types in each year.

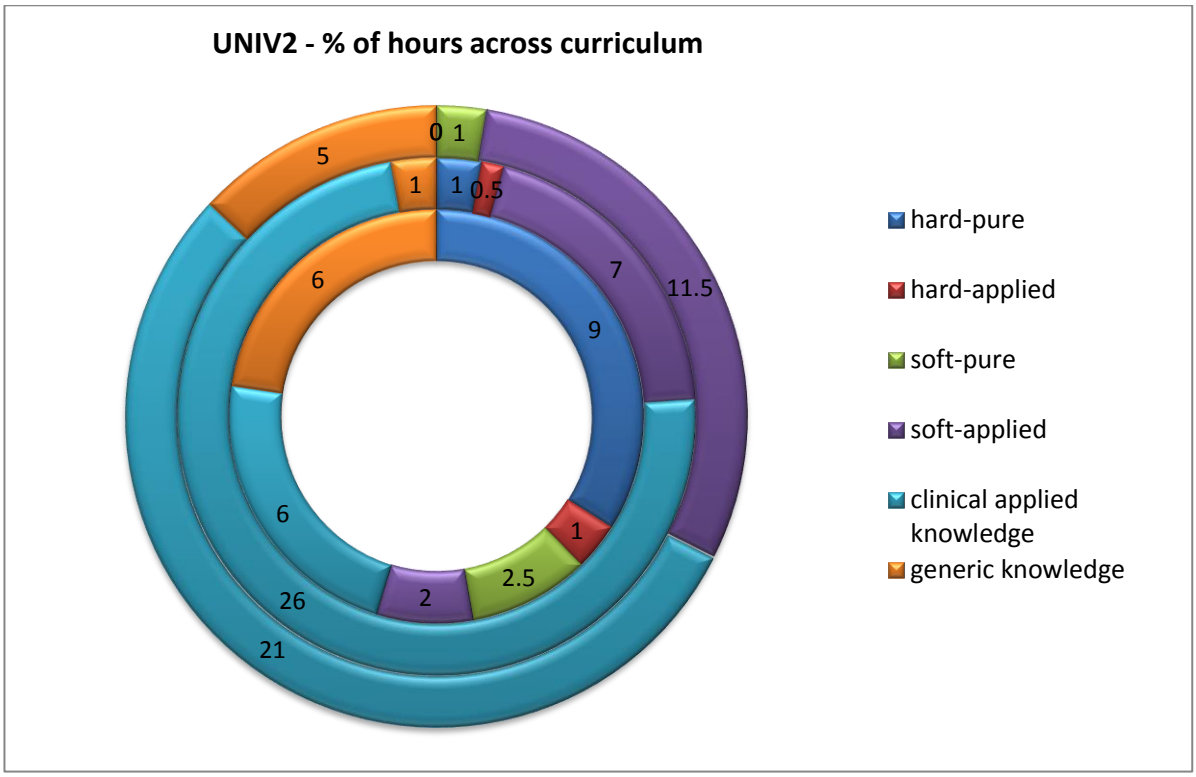


Figure 11 Spread of the percentage of hours across knowledge types at UNIV2

Second, a total of fourteen modules were classified as the mixed type. This means that topics in these modules are borrowed from different knowledge types, this is further described below.

Five modules in Clinical Applied knowledge overlap with Natural science, one in the first year Clinical practice I; and the rest in the second year of study (Clinical Oral Health II, Periodontology for Oral Health, Pharmacology for Oral Health and Oral diseases II). In each of these modules the Clinical Applied knowledge is allocated more time. Clinical Applied knowledge also overlaps with Generic knowledge in three modules, Academic Literacy, Clinical practice I, and Special care for Oral Health and once again the Clinical knowledge covers much more time than the Generic knowledge. One of these modules, Clinical Practice II contains mainly Clinical Applied knowledge but straddles both Social sciences and Generic knowledge.

The Natural sciences knowledge is covered in eight modules in the first and second years of the curriculum. The time allocated for Natural sciences over the curriculum is 303 hours (12%). All eight modules cover 'hard-pure' knowledge and make up

10% in Natural sciences; these have been noted in Appendix 3. The first year conveys the bulk of Natural science knowledge, across four modules with 255 hours, (10%) in the first year and 48 hours (2%) in the second year. Only one of these first year modules, Clinical practice I, overlaps with Clinical knowledge and includes topics from Microbiology (see above). The other three modules (Oral Biology for Oral Health, Radiography I and Oral Diseases I) are focused on topics such as Anatomy, Physiology, Physics, Biology and Pathology. These modules are classified as 'hard-pure' knowledge types. The second year of study has very little Natural science knowledge, and is presented in four modules (Clinical Oral Health, Periodontology for Oral Health, Pharmacology for Oral Health and Oral Diseases II). These four modules all overlap with Clinical Applied knowledge (see above) and include topics such as dental anatomy, applied physiology, pharmacological interactions and microbiology and immunology and are classified as 'hard-applied' knowledge types. In sum, in this curriculum five out of eight modules draw on both Clinical Applied knowledge and Natural sciences, and three draws on 'hard-pure' knowledge of Natural sciences. The Natural sciences are generally not presented together in modules with Social sciences or with Generic knowledge types.

Social science knowledge is covered in nine modules across the degree programme. The time allocated for Social sciences over the three years of study is 310 hours (24%). There are three modules that cover 'soft-pure' knowledge and make up 2,5% of Social sciences; these have been noted in Appendix 3. Of this time 117 hours (5%) is spent on Social science knowledge in the first year of study, with steady growth in Social science knowledge in the second year of 180 hours (7% which is only soft-applied) and the third year 310 hours (12%), which covers most of the Social science knowledge in this curriculum. Three of the nine modules (Interdisciplinary Health Promotion, Social sciences for Oral Health, and Health Development and Primary health care) are offered in first year. The latter two modules overlap with Generic knowledge. The Social sciences for Oral Health module covers mainly Psychology and Sociology, while the Health Development and Primary health care module covers topics such as health and disease in the community. These modules are classified as both 'soft-pure' and 'soft-applied' knowledge types. This module also covers Generic knowledge and includes an introduction to communication. The Health development

and primary health care module includes the sociology of health and overlaps with Generic knowledge too and also includes communication. In the second year, Social sciences knowledge is included in three modules. The first of these, Measuring health and disease, focuses on epidemiology and overlaps with Generic knowledge of computer skills. The second, Oral Health Promotion I comprises community and health promotion. The third, Clinical practice II module includes Psychology and Sociology and overlaps with two other knowledge types, namely Clinical Applied knowledge, which covers instrumentation and Generic knowledge, which covers legal issues. The three modules in the third year that contain Social sciences knowledge are Applied Research, Oral Health promotion II and Health systems. These modules cover topics such as research, public health and health systems and policies, which are all 'soft-applied' knowledge types. The latter two modules overlap with Generic knowledge. In the main, Social sciences are covered in this curriculum together with 'applied' knowledge types. It is presented with Generic knowledge types in all three years and with Clinical Applied knowledge types in the second year.

Generic knowledge is presented in twelve modules and contributes 132 hours (12%) of the complete curriculum. Generic knowledge is offered across all three years of study. In the first year of study, the contact time for Generic knowledge covers 156 hours (6%), the second year having much less coverage with 30 hours (1%), and the third year 132 hours (5%). In the first year the five modules are Academic Literacy (life skills), Clinical Oral Health I (management professionalism and ethics), Social sciences for Oral Health and Health development and primary health care (Communication), Xhosa / Afrikaans (indigenous languages). In the second year the three modules are Measuring health and disease (computer skills), Clinical practice II and Special care for Oral Health (legal issues). The third year modules are Clinical practice III, Oral Health Promotion II, Ethics and Practice Management and Health Systems. Nine of these modules overlap mainly with Social sciences and Clinical Applied knowledge, with Generic knowledge always making up only a small part of each module.

6.3.4.3 Comparing the two curricula

Table 12 shows a comparison of the similarities and differences of these two curricula, which will be further discussed below.

	UNIV1	**UNIV2**
Number of contact hours	2683	2611
Number of modules	34	30
Electives	3 (3rd year)	4 (1st and 3rd year)
Clinical Applied knowledge coverage	73%	53%
Hard-pure knowledge coverage	9%	10%
Hard-applied knowledge coverage	1%	1,5%
Soft-pure knowledge coverage	0%	3,5%
Soft-applied knowledge coverage	11%	20,5%
Generic knowledge coverage	6%	12%
Number of mixed knowledge types	10	13
Sequencing per year	Clinical–1st, 2nd, 3rd Natural–1st Social–2nd & 3rd Generic –1st, 3rd	Clinical–1st, 2nd, 3rd Natural–1st & 2nd Social–1st, 2nd, 3rd Generic –1st, 2nd, 3rd

Table 12 Comparison of two curricula using the knowledge type analysis tool

Firstly, when examining the coverage of knowledge types in the modules, there is an emphasis on 'Clinical Applied knowledge' in both curricula. More time is spent on Clinical Applied knowledge across all three years and also across modules, which overlap in the same year of study at both institutions. 'Clinical Applied knowledge' at UNIV1 covers the majority of the knowledge in the curriculum, with twenty-two modules making up 1868 hours (73%). In UNIV2 'Clinical Applied knowledge' also covers the majority of the knowledge in the curriculum, with fourteen modules making up 1383 hours (53%) but proportionally less than UNIV1. What is also evident is that in UNIV1, Natural sciences and Social sciences make up about one-eighth each and Generic 6%. When proportionate to the share in the curriculum of Natural and Social sciences, 6% is not too little. In UNIV2 curriculum Social science knowledge makes up a higher share of one-quarter (24%, of which 20,5% is applied) and Natural science knowledge makes up one-eighth (12% of which 10% is pure) of the curriculum. This displays quite a difference in coverage of 'pure' and of 'applied' knowledge between the Natural and the Social sciences. Also most of the 'applied' knowledge is in the Social sciences. The other kind of applied found in 'Clinical

Applied knowledge' may rely on conceptual knowledge but is focused on what Muller calls coded practice (recontextualisation from practice). Interestingly, Generic knowledge (12%) also makes up about one-eighth of the curriculum.

Secondly, the 'Clinical Applied knowledge' covered in both the curricula has a strong emphasis on Natural sciences (hard-pure/applied). This means that in many of the Clinical Applied modules, topics that are classified as 'hard-pure' are recontextualised to clinical knowledge (that is to knowledge of procedures and instrumentation to be used in a future clinical setting). Both curricula have five modules in which Natural science overlaps with 'Clinical Applied knowledge', showing the importance of linking 'hard-pure' and 'hard-applied' knowledge types in both curricula. For example, when I scrutinise the contact time of Natural science knowledge in two of the mixed modules of the first year, I see that 34% at UNIV1 and 37% UNIV2 (of the entire curriculum) is focused on Natural sciences.[28] UNIV1 does not focus on Natural sciences much in the second and third years, while UNIV2 covers 16% of time on Natural sciences across four modules in the second year.

Thirdly, the Social science knowledge type makes up a very small part of the curriculum at UNIV1 (11%) and is almost non-existent in the first year. It develops slightly over the second and third years and is located in seven modules with mainly 'soft-applied' knowledge types. UNIV2 has much more coverage (24%) of the Social sciences in all three years of study and across nine modules. The knowledge types here are 'soft-pure' and 'soft-applied'. UNIV1 includes no 'soft-pure' knowledge while UNIV2 includes approximately 4% 'soft-pure' knowledge. In both curricula there is very little 'pure' knowledge types with UNIV1 covering 9% of 'hard-pure' and UNIV2 covering 10%. The 'hard-applied' knowledge covers a very small percentage of topics in both curricula. While the 'soft-applied' knowledge type covers 10% in UNIV1 and is doubled in UNIV2 with 20%.

Fourthly, Generic knowledge in UNIV1 is spread over seven modules and makes up only 6% of the entire curriculum, which is not so little given the percentage of time

[28] *These percentages are taken from the total time spent on these two knowledge types in the entire curriculum at both institutions.*

spent on Natural and Social sciences (10% and 11% respectively). The time covered on Generic knowledge is offered mostly in the first year while the second and third years of study cover much less of Generic knowledge. In UNIV2, Generic knowledge is spread over twelve modules and takes up 12% of the entire curriculum, which is the same, portion spent on Natural sciences. The time covered on Generic knowledge is offered mostly in the first and third years of study, with the second year having much less coverage. UNIV2 spends double the amount of time on Generic knowledge when compared to UNIV1. The knowledge type is mainly 'soft-applied'.

6.4 Analysis of the assessment documents

The emphasis of knowledge types in Oral Hygiene curricula is in the hands of lecturers at the various universities involved in curriculum planning and design and this can be seen in the curriculum documents. As a region, Oral Hygiene includes both theoretical and applied knowledge. In my classification applied knowledge is divided between applied knowledge in the sciences and 'Clinical Applied knowledge'. This classification enables me to assess the way in which knowledge of theory is recruited to inform clinical procedures and how everyday knowledge of clinical practice is recruited to inform knowledge of theory. Understanding how Oral Hygiene theory is put into practice depends on how applied knowledge fits into the broader theoretical framework of Oral Hygiene. The curriculum analysis has provided the details on the sequencing and coverage of content areas and knowledge types in each curriculum. The assessment analysis aims to examine how the types of knowledge are recontextualised in final examination questions.

To do the analysis of the examination questions I refer to Winch (in Muller & Young, 2013).[29] Winch argues for distinguishing between theoretical and practical knowledge so that 'knowing that' is not reduced to 'knowing how'. He describes two kinds of 'know how' that supplement 'knowing that'. These include 'knowledge of inferential relations between propositions', and 'knowledge of the procedures in assessing, testing and acquiring new knowledge'. In my analysis I also draw on the

[29] *Refer to pages 40 and 41 for this discussion.*

knowledge type distinction made by Biglan of 'soft', 'hard', 'pure', 'applied' (Biglan in Muller, 2009). I draw on these two sets of concepts (Winch and Muller) to examine how knowledge is recontextualised in final examination questions. Muller (2009) argues that when knowledge is recontextualised in the curriculum one has to assess if the knowledge is drawn from a concept or from everyday knowledge of practice. Muller (2009) describes this as a curriculum having either conceptual coherence or contextual coherence. He indicates that curricula with conceptual coherence 'presume a hierarchy of abstraction and conceptual difficulty that is regulated by logic' (p. 216). Curricula with contextual coherence are segmentally connected, where 'each segment is adequate to a context and purpose in a particular specialised form of practice' (Muller, 2009, p. 216). I draw on these ideas to distinguish whether the questions are assessing knowledge from concepts or from everyday knowledge of practice. I use this distinction to indicate whether questions focus on 'technique' or 'skill'. (in press Winch)

The analysis of the examination questions is not intended to compare the two institutions and in itself cannot be sufficient to decide on the logic of the curriculum. It needs to be seen in the context of the other two sets of data (lecturers' perceptions and curriculum analysis). The assessment analysis is proposed in order to make general comments about the knowledge types that are foregrounded in the selected final examinations only. I requested lecturers to provide the final examination question papers across various modules and the different years.[30] The final examination papers of six modules were analysed, three from each institution. I was unable to source examination papers for similar modules, as I was dependent on what lecturers at the different institutions made available to me to study. However, there are commonalities across the selected question papers, the three papers in each institution cover topics that the curriculum analysis classified as 'hard-applied', 'soft-applied' and 'generic' knowledge types.

[30] *These question papers are the final written examinations for the various modules and do not include the overall assessments that a student might have to undertake. Other assessments could include clinical work, case reports, assignments, etc.*

Table 13 below shows the different question papers that were used in this analysis, and provides an overview of when the module is offered, its topics, and the knowledge types the module was classified under in the curriculum analysis. All of the modules include 'applied' knowledge; three modules cover both 'hard-applied' and 'soft-applied' knowledge types, one module covers only 'hard-applied' knowledge and two modules cover only 'soft-applied' knowledge.

Module name and code	**Institution and YOS**	**Topics**	**Knowledge type**
Academic competency (ACO 171) June 2013	*UNIV1 Year 1*	*Instrumentation and Ethics and Professionalism*	*Clinical Applied & Generic knowledge 'Hard-applied' & 'soft-applied' Mixed type*
Preventive oral health (VKM 371) Oct/Nov 2013	*UNIV1 Year 3*	*Clinical scope*	*Clinical knowledge 'Hard-applied'*
Comprehensive patient management (TBW 371) October 2013	*UNIV1 Year 3*	*Patient management and practice management*	*Clinical Applied & Generic knowledge 'Hard-applied' & 'soft-applied' Mixed type*
Oral Health Promotion I (OHP212) May/June 2013	*UNIV2 Year 2*	*Health promotion*	*Social science 'Soft-applied'*
Oral Health Promotion II (OHP320) November 2013	*UNIV2 Year 3*	*Public health and communication*	*Social and Generic knowledge 'Soft-applied'*
Clinical Practice (CLP 300) November 2013	*UNIV2 Year 3*	*Clinical scope, case report, Ethics and Professionalism*	*Clinical Applied & Generic knowledge 'Hard-applied' and 'soft-applied' Mixed type*

Table 13 Selection of final examination papers that were analysed

I placed all the questions from the six examinations in a table (refer to Appendix 4). In the analysis of the questions I first examined whether the question relied on 'hard' or 'soft' knowledge type. I ticked all boxes in which questions covered either the 'hard' or the 'soft' knowledge type and then tallied them (E.g. 'Explain advantages of the use of home bleaching to improve the aesthetic appearance of teeth' - 4 marks, was classified as 'hard' knowledge type). I then examined whether the questions required the student to provide facts or make inferences about facts (E.g. 'Distinguish between generic, targeted and personalised health messages' – 3 x 2=6 marks, was classified as facts from concepts).

Since the purpose of the analysis was to examine recontextualisation, it was important to analyse the nature of application the questions required. Once facts or inferential knowledge was indicated, I looked at whether the questions were assessing knowledge borrowed from concepts or from the everyday knowledge of practice. Questions may rely on 'hard' or 'soft' disciplinary knowledge but the emphasis of the question is on everyday knowledge of practice and not on concepts. The mark allocation for each question was tallied and claims could be made about how knowledge was recontextualised for these modules at the two institutions in these six final examination questions. No differentiation was made about the depth and complexity of the inferential analysis required by the questions. Combinations of these five items emerged when mapping, this included:

- facts about concepts (F+C),
- inferential knowledge about concepts (IR+C),
- facts about everyday knowledge of practice (F+P),
- inferential knowledge about practice (IR+P),
- facts about generic knowledge (F+G)
- inferential knowledge about generic knowledge (IR+G).

Table 14 shows each module with its total number of final examination questions and mark allocation for each question. When comparing the analysis of the examination papers to the curriculum analysis it is evident that in modules that were classified, as both 'hard-applied' and 'soft-applied' one of the knowledge types is dominant.

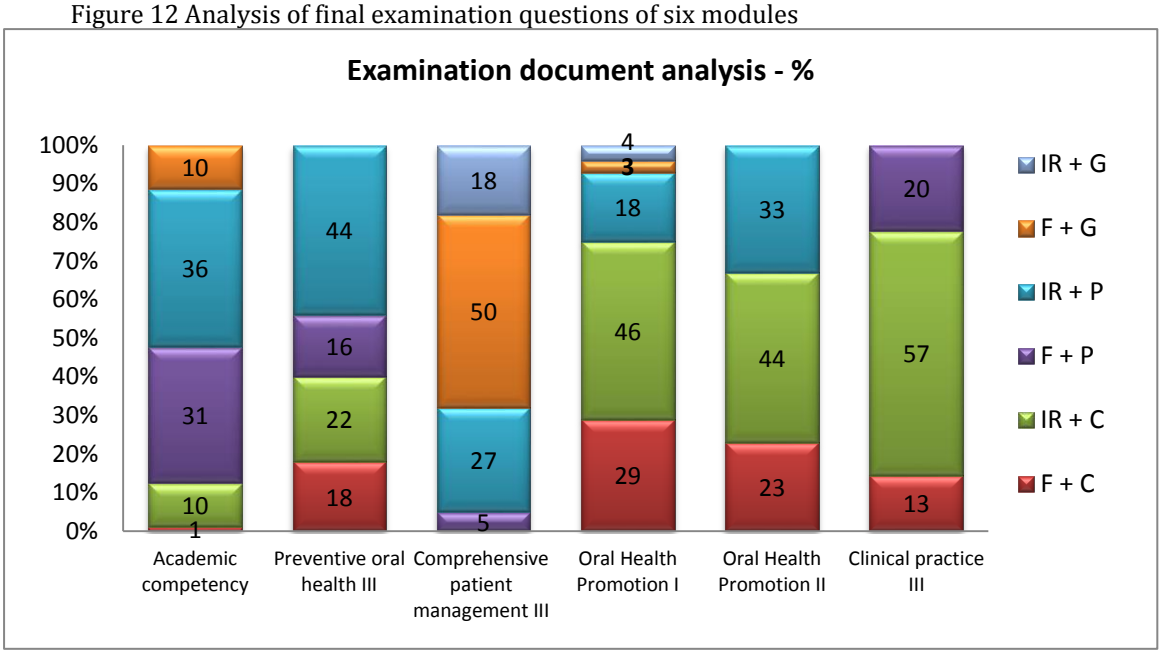
The results show that in the three mixed type modules (Academic competency, Comprehensive patient management and Clinical practice) either 'hard' or 'soft' disciplinary knowledge is dominant, and most of the marks in the final written examinations are gained from either 'hard' or 'soft' knowledge type questions.

MODULE AND CURRICULUM CLASSIFICATION	HARD	SOFT	PURE	APPLIED					
			F + C	F + C	IR + C	F + P	IR + P	F + G	IR + G
ACO171 Academic competency *'hard-applied' and 'soft-applied' (Mixed type)* **70 marks**	23 qu 52marks 75%	9qu 18marks 25%	2 qu 8marks 12%	1 qu 1 mark 1%	3 qu 7 marks 10%	11 qu 22marks 31%	11qu 25marks 36%	4 qu 7 marks 10%	-
VKM371 Preventive oral health *'hard-applied'* **50 marks**	33 qu 50marks 100%	-	-	7 qu 9 marks 18%	10 qu 11marks 22%	4 qu 8 marks 16%	12 qu 22marks 44%	-	-
TBW371 Comprehensive patient management *'hard-applied' and 'soft-applied' (Mixed type)* **110 marks**	1 qu 15marks 14%	7qu 95 marks 86%	-	-	-	1 qu 5 marks 5%	2 qu 30marks 27%	4 qu 45marks 50%	2 qu 20marks 18%
OHP212 Oral Health Promotion *'soft-applied'* **125 marks**	2 qu 9 marks 7%	21 qu 116marks 93%	-	6qu 36marks 29%	8 qu 57marks 46%	-	6 qu 22marks 18%	1 qu 4marks 3%	1 qu 6 marks 4%
OHP320 Oral Health Promotion *'soft-applied'* **100 marks**	-	14 qu 100marks 100%	-	3qu 23marks 23%	7 qu 44marks 44%	-	4 qu 33marks 33%	-	-
CLP300 Clinical practice *'hard-applied' and 'soft-applied' (Mixed type)* **100 marks**	18qu 90marks 90%	1 qu 10 marks 10%	-	2qu 13marks 13%	10 qu 57marks 57%	4 qu 20marks 20%	-	-	-

Table 14 Modules with their mark allocation for knowledge types

Academic competency has 75% of 'hard' knowledge questions, Preventive oral health has 100% and Clinical practice has 90%. Examples of questions from these modules are as follows: 'Identify the anatomical parts as marked on the model', 'Identify the deposit on the teeth' and 'Describe the role of the oral hygienist in terms of occlusal and temporomandibular disorders'. In three of the five modules that 'soft' disciplinary knowledge is dominant; most of the marks in the final written examination are gained from 'soft' knowledge type questions. Comprehensive patient management has 86% of 'soft' knowledge questions, Oral health promotion I has 93% and Oral Health Promotion II has 100%. Examples of questions from these modules are as follows: 'Describe the difference between management and leadership', 'Define the term health education' and 'Briefly compare advice giving and motivational interviewing techniques in chair-side education'. In modules that were classified as either of these types, for example Preventive oral health, all the questions are classified as 'hard' knowledge type questions. Figure 12 below represents the results of the question papers' mapping, with specific reference to the nature of inference, which the questions required.

Figure 12 Analysis of final examination questions of six modules



The results from Figure 12 show the following: three question papers primarily require inferential understanding of concepts (IR+C); these are Clinical practice III, Oral Health Promotion II and Oral Health Promotion III. Examples of these questions include 'Tabulate the three categories of caries-risk' and 'List the caries-risk factors for each category as outlined in the Caries-Risk Assessment Tool', 'Use the Diffusion of Innovation theory to explain possible reasons for the lack of acceptance of patient of you as the oral hygienist', 'State the stage of the change (i.e. readiness for change) of this patient according to the Stages of Change model'. Two question papers, Preventive oral health and Academic competency, require primarily inferential understanding of everyday knowledge of practice (IR+P). Examples of these questions include 'Explain how you will go about mixing it', 'Indicate which three (3) of these aids would be suitable for cleaning implants at home', 'Describe the role of the oral hygienist in terms of occlusal and temporomandibular disorders'. Generic knowledge (F+G & IR+G) is included predominantly in Comprehensive patient management; with a small amount in two other modules, namely Academic competency and Oral Health Promotion II. Examples of these questions include 'Briefly explain the purpose of the introduction (2), body (2) and conclusion (2) of a presentation', 'Explain the university policy regarding this enfringement', 'Study the sketch and indicate how members of a group could sabotage the functioning of a group'.

6.5 Conclusion of curriculum analysis

The aim of this chapter was to understand how the knowledge base of Oral Hygiene is organised and classified in the curricula of two South African degree programmes. I examined how Oral Hygiene knowledge was classified and organised in the overall curriculum design and more specifically through analysis of assessment tasks of six modules. The brief overview of the two programmes depicted the similarities and differences of the two curricula. The detailed analysis of the rulebooks and final examination question papers of the two curricula provided a clearer indication of the knowledge base at each of the two institutions, which I now turn toward.

Two analysis tools were used to analyse the curriculum documents, and when reflecting on the use of these tools to compare the results of each, I noticed the following: firstly, the tools do not investigate the same entities in the curricula. The first tool (Blitz and Hovius tool) gives an indication of how contents are spread across the curricula and the time spent on each content area. The second tool (knowledge types) shows the emphasis of the time spent on knowledge types across the curricula and gives an indication of whether the focus is on 'hard', 'soft', 'pure' or 'applied' knowledge types.

The first tool (Blitz and Hovius tool) shows the following content similarities and differences between the two curricula: Both universities focus on Dental Hygiene sciences (40%) and Dental sciences (UNIV1 – 29% and UNIV2 – 25%). Much more time is spent on General education and General sciences in UNIV2 (8% and 10%), while UNIV1 spends slightly more time on Vocational practice and Areas of special interest than UNIV2 (5% and 12%).

In terms of the knowledge base of the two curricula, the second tool shows the following similarities and differences in knowledge types between the two curricula: 'Clinical Applied knowledge' is greater in UNIV1 than in UNIV2, Natural science knowledge is prominent in the first year in both (slightly greater in UNIV1). Social sciences and Generic knowledge are much more evident in UNIV2. In general, UNIV2 has less contact hours and covers less 'Clinical Applied knowledge', and much more

Natural sciences, Social sciences and Generic knowledge in comparison with UNIV1. Both curricula include four modules that overlap between Generic knowledge and Clinical Applied knowledge where clinical practice topics and communication skills are offered jointly. There is no overlap between Generic knowledge and Natural sciences in either of the two curricula. In both curricula there are very little 'pure' knowledge types. UNIV1 however, covered no 'soft-pure' knowledge while UNIV2 covered a very small amount of 'soft-pure' knowledge. The 'hard-applied' knowledge covered by a very small percentage of topics in both curricula. While the 'soft-applied' knowledge type covered 10% in UNIV1 it is doubled in UNIV2.

The comparison of the examination papers' analysis and the curriculum analysis show that modules classified as both 'hard-applied' and 'soft-applied' (mixed type) in the curriculum analysis had one dominant knowledge type in the examination paper analysis. In three of the six modules, the examination papers draw on conceptual knowledge either as facts or as inferential relations about facts. There is also a strong emphasis on inferential relations about everyday knowledge of practice in four modules. From Muller's (2009) distinction on coherence, the two curricula merge conceptual and contextual coherence, as both have knowledge from the sciences and applied knowledge and their final examination includes inferential knowledge from concepts and from everyday knowledge of practice. The emphasis is however on contextual coherence as displayed by the prominence of 'Clinical Applied knowledge' in both curricula.

Both the curriculum analysis and the examination paper analysis provide valuable insights into how Oral Hygiene knowledge is perceived and organised by lecturers at the two universities. The knowledge that is valued 'Clinical Applied knowledge' comes to the fore. At UNIV2 the curriculum displays a greater orientation towards Social sciences and has more of a community focus than UNIV1. This analysis thus allows one to uncover the type of professional being trained at the two universities. The curriculum at UNIV1 promotes a practitioner with sound clinical skills. The UNIV2 curriculum promotes a practitioner with sound clinical skills but who also accentuates community needs.

CHAPTER 7 - DISCUSSION CHAPTER

7.1 Overview of the discussion

Understanding that the purpose of Higher Education is driven by societal and workplace demands; and that this influences the structure and form of curricula has been the underlying theme of this study. This research project was initiated to answer the call by Cobban et al. (2007) to support the advancement of specific forms of knowledge in the Oral Hygiene occupational field. In order to understand which knowledge is most valued by the Oral Hygienist, there is a need to examine the coverage of knowledge in Higher Education institutions. This has been the main thrust of this project and has led to the main research question.

One of the main problems identified in the literature review was that there is a lack of understanding of knowledge in the field and how this affects professional development. As this project is located in the Education field and my attention is on Higher Education; this study focused on the ways in which Oral Hygiene lecturers in South Africa view knowledge for the field. Thus the main research question was: 'When studying the perceptions of Oral Hygiene lecturers and curricula, what can we learn about current attempts to professionalise the field?' This necessitated examining lecturers' perceptions of knowledge found in curricula, and what they believe is relevant knowledge for preparing students for professional practice. It also meant to look at the ways knowledge is classified and organised in the curriculum of the programmes in which they teach. The main research question was further divided into the following sub-questions; In what way does the literature theorise the knowledge base of Oral Hygiene? What are South African Oral Hygiene lecturers' perceptions of the field of knowledge? How do South African Oral Hygiene degree programmes organise the knowledge base into curricula? In what ways are Oral Hygiene lecturers' perceptions aligned (or not aligned) to the organisation of knowledge in the curricula?

The aim of this chapter is to provide a concluding discussion making use of the results of this research project. I answer the main research question and the sub-questions separately. I provide the rationale for using the methodology to validate this study and conclude with limitations and recommendations emanating from the study.

7.2 Understanding the Oral Hygiene literature

The literature review is focused on the current discussions about the Oral Hygiene knowledge base, which explored a number of matters. These include claims about knowledge found in the literature and about the envisaged professional. The following contestations about Oral Hygiene knowledge were emphasised through the review of the literature: whether Oral Hygiene is a 'discipline' or 'field of study'; what its body of knowledge is; whether Oral Hygiene is a profession or not; and finally the relation between knowledge, theory development and curriculum design.

The literature provides a clear definition of the Oral Hygiene field (refer to p. 1), which can be linked to the set of international roles of the Oral Hygienist (refer to p. 9) and the core contents set in curriculum guidelines (refer to p. 28). These all point to the fact that the Oral Hygienist is regarded as a specialist in the areas of oral health prevention and promotion. In spite of showing this, the literature shows a paucity of research contributions that systematically describe the knowledge types that form the field. The literature is clear that the knowledge used in Oral Hygiene is drawn from other dental and medical fields. On the whole, the literature shows that Oral Hygiene is viewed appropriately as a 'field of study', as it does not have a distinctive unifying theory and has to develop its knowledge base (Biller-Karlsson, 1988). To articulate the forms of knowledge in the field we have to develop and validate knowledge used for practice. Therefore there is an appeal by researchers to set research agendas for the field and to increase publication rates in order to develop the knowledge base.

Another theme concomitant to the knowledge debate is the relationship between

knowledge development and professional identity. For Oral Hygiene to strengthen as a profession, theoretical development of knowledge is essential (Cobban et al., 2007; Reveal, 1988). Developing key concepts is essential for framing the work of Oral Hygienists as knowledge workers. The literature also provides some examples of conceptual development (Darby & Walsh, 1993; Williams et al., 1998) but shows that these concepts are mainly borrowed from other fields such as Psychology and Sociology.

The literature reveals a divergence of perceptions about the identity of Oral Hygienists; they are viewed as either knowledgeable workers or mere technicians (Biller-Karlsson, 1988 and Dickoff & James, 1988). The way in which Oral Hygienists perceive themselves impinges on their professional identity. The literature shows that being professional comes from knowing oneself through your own personal experiences and this includes being reflective, ethical, able to reason about the specialised knowledge, and being authentic with others (Dickoff & James, 1988a; Cobban et al., 2007). A number of barriers that delay professional development in the field are mentioned. These include amongst others, the underdevelopment of professional work, as the Oral Hygienist has a limited scope of practice in many countries (Cobban et al., 2007). Be that as it may, expanding the professional work of the Oral Hygienist does not necessarily develop the knowledge base. On the contrary the literature furthermore indicates that Oral Hygiene is still developing as a profession and thus requires theory development. This development needs to be reinforced via knowledge included in curricula, which impacts on professional identity.

Notwithstanding, the literature review shows that there are inadequate theoretical foundations in Oral Hygiene curricula, and not enough clarity about the nature of knowledge within them. The argument is that in order to develop the knowledge of the field it is important to introduce Bachelor Degree programmes instead of Diplomas (Johnson, 2003; Smith, 2011), and qualifications that encompasses commonly understood methods of inquiry and techniques (Biller-Karlsson, 1988). Increasing the length of a qualification does not ensure that practitioners will become knowledge workers; it is the focus of the types of knowledge included in

curricula. Very little is published about how curricula differ in diploma and degree programmes. There is evidence of an international shift to more advanced curricula, from diplomas toward the introduction of postgraduate level training in the field (Johnson, 2003). The literature implies that this will impact on the identity of Oral Hygienists as bachelor's programmes are intended to prepare students for inferential understanding (Kanji et al., 2011; and Winch, 2014). Oral Hygiene lecturers should be able to convey concepts that will help students to understand their function, the reasons for why they use certain materials and follow certain procedures and techniques. This literature review has not assisted in gauging the perceptions about knowledge from lecturers, nor has it provided clarity of their understanding of the field locally.

So, in answering the question on how the literature theorises the knowledge base of Oral Hygiene: I maintain that the knowledge debate in the field of Oral Hygiene is primarily about ways of knowing about the field and not enough is written about the forms of knowledge that are valued in the field (Cobban et al., 2007). Although there is a strong call for the creation of advanced qualifications and for developing professionals who are knowledgeable workers, the literature provides insufficient clarity on the types of knowledge to be included in curricula or lecturers' perceptions about the knowledge base. This lack of clarity makes it difficult for curriculum developers to decide on curriculum standards. Consequently, the literature review was unable to offer sufficient information about the Oral Hygiene knowledge base thus a search for a set of broader conceptual tools to interrogate the research questions in this study was necessary (these tools will be highlighted when the rest of the questions posed in this study are being answered).

7.3 Recognising Oral Hygiene lecturers' perceptions of the field of knowledge

In order to advance the Oral Hygiene knowledge base, Biller-Karlsson (1988) argues that educators need to 'gain advanced degrees', and develop 'commonly understood methods of enquiry and recognised techniques' (refer to p. 11). This idea of lack of

commonly understood methods of inquiry prompted me to classify the lecturers' qualifications, research activities and teaching interests according to the different knowledge types by Biglan (in Muller, 2009) as seen in Table 6. The classification provided the context in which the lecturers' opinions about knowledge in the field are set. One could say from this classification that lecturers have gained advanced degrees and that there is a strong focus on 'applied' knowledge in the Oral Hygiene 'field of production' in South Africa.

Bowen (1988) indicates that research is haphazard and suggests that research should be relevant to practice and that priorities need to be set to link to the needs of the patient or communities. One can see from the lecturers' research titles that six titles from the 'soft-applied' knowledge type deal with teaching. It is questionable whether this kind of research will help build concepts for the field of practice. Lecturers' research activities at UNIV1 draw mainly on 'hard-applied' knowledge with specific an emphasis on clinical practice. There is no doubt that their research relies on concepts from the sciences such as Microbiology or Anatomy but their investigations appear to be focused more on the effects of techniques, products and materials used in practice than on the conceptual resources which they borrow. Lecturers' research activities at UNIV2 appear[31] to draw mainly from 'soft-applied' knowledge, with specific emphasis on analysing societal factors. With these research activities they attempt to develop an understanding of local oral health needs, develop new conceptual understandings and share common methods of inquiry. From Bernstein's analysis of Horizontal knowledge structures and Muller's analysis of knowledge types, a claim can be made that developing new knowledge and sharing common methods of inquiry is notably more difficult in research that is focused on clinical practice (because it hones in on finding solutions to practical problems) or on 'soft-applied' knowledge (because it is weakly structured).

For students to be socialised as knowledge workers, it is argued that Oral Hygiene lecturers have to convey concepts that will help students understand their new practice (Reveal, 1988). While reviewing these lecturers' perspectives of the

[31] These claims need to be substantiated with further in-depth reviews of each article.

curricula, I indeed found that they foreground specific disciplinary knowledge types. Dentistry contents were considered as an important part of the curricula at both institutions. The lecturers also argue that Oral Hygiene knowledge is borrowed predominantly from Natural sciences and less so from Social sciences. It appears that UNIV2 lecturers place more importance on 'soft-pure' and 'soft-applied' disciplinary knowledge types than UNIV1 lecturers. In addition lecturer's perceptions point to the aspiration for a professional model of practice in which practitioners are knowledgeable workers instead of mere technicians. 66% of these lecturers claim that locally Oral Hygienists function according to an occupational model and that they have little authority in the workplace. They are hopeful that the introduction of the bachelor's degree will make a difference in producing more knowledgeable workers. All of these perceptions support the above idea, that conveying concepts to help students understand their new practice is very important for developing knowledgeable workers.

But extending the qualification may not be sufficient, if the focus of the degree is on 'Clinical Applied knowledge' and not on developing the knowledge base of the field (a finding that emerges from the curriculum analysis). Lecturers want Oral Hygienists to have a high level of professionalism in clinical practice and/or community service. This can be understood from the lecturers' qualitative responses, in which they suggest that students should be able to think critically about why they perform procedures and want practitioners to be responsible for decision-making. This point can also be linked to Winch's (in press) notion of inferential thinking (to which I return in the following section). However, this can be contrasted with the lecturers' research activities and the absence of a postgraduate route in the Oral Hygiene field. They also rate the most prominent role of the Oral Hygienist, as that of clinician and the least important role as that of researcher, which highlights the emphasis on clinical practice and undermines the importance of research and knowledge development. These results all show that despite their aspirations to develop knowledge workers, their teaching and research identities incline towards preparing students for the occupational model of practice.

7.4 Valuing knowledge in South African Oral Hygiene degree curricula

Bowen (1988) appeals that we 'build the requisite body of knowledge that is linked to the theoretical framework of related disciplines, but that also embarks upon building new theories relevant to the prevention of diseases' (p. 24). To understand which knowledge is valued in the two curricula, I examined the classification and organisation in the overall curriculum design and more specifically attempted a very circumscribed analysis of assessment tasks of six modules.

The curriculum analysis provided a more explicit account of the knowledge base at the two institutions. Using Bernstein and Muller's accounts of knowledge, the structure of the Oral Hygiene knowledge base became more apparent. Their analytical distinctions allowed me to make associations about the level of professionalisation within the field. The curriculum analysis showed that at both institutions the curricula is formed by using combinations of different knowledge types and thus Oral Hygiene is regarded as a 'region' in which knowledge from various disciplines and from practice merge to illuminate the practice (Shay, 2013; Muller & Young, 2013). The analysis showed though, that in both curricula the focus is on 'Clinical Applied knowledge' with much less emphasis on 'pure' knowledge. 'Hard-pure' knowledge type is given emphasis in the first year in both curricula (UNIV1, 73% and UNIV2, 53%). 'Soft-pure', 'soft-applied' and 'generic' knowledge are more evident in UNIV2. There are a number of modules, which overlap Clinical Applied knowledge and 'generic' as well as 'soft-applied' and 'generic' knowledge. Neither of the two curricula have modules which overlap 'generic' and 'hard-pure' knowledge. The point to be made here is that an emphasis on 'Clinical Applied' knowledge suggests that a large amount of time is spent on covering procedures for practice, which in turn is an indication that the two curricula are inclined towards preparing students for an occupational model of practice.

The examination questions were useful in assessing what lecturers convey to students as important knowledge for them to acquire; whether knowledge is

recontextualised from general propositions or from practice. The dominance of the 'Clinical Applied' knowledge type was therefore further analysed in the examination questions. The assessment task analysis was used to evaluate the emphasis on the different kinds of practical knowledge and the importance of inferential relations in conceptual, practical and generic knowledge. In three modules analysed, approximately 70% of the examination questions draw on conceptual knowledge (either as facts or as inferential relations about facts). There is also an emphasis on knowledge of everyday practice of approximately 60%, in two modules. From the appeal by Dickoff and James (1988b) to identify the concepts to be used to frame the activity of the Oral Hygiene practitioner, this analysis allows one to see that the emphasis in both curricula is on contextual coherence as displayed in the application of 'Clinical Applied' knowledge in both curricula; even though examination questions from UNIV2 showed slightly more conceptual emphasis.

This study is the first of its kind in the field of Oral Hygiene, as the literature does not describe an approach to analyse how knowledge is organised or classified in curricula. This analysis has clarified the knowledge most valued by lecturers in two different degree programmes.

7.5 Alignment of Oral Hygiene lecturers' perceptions to knowledge in the curricula

The study also tried to assess the extent to which the Oral Hygiene lecturers' perceptions are aligned with the organisation of knowledge in the curriculum. This allowed for further investigation of the relationship between their perceptions and the results of the curriculum analysis and examination questions analysis.

From the lecturers' perceptions of the knowledge base it is clear that the similar use of resources have impacted on curriculum design and development. The use of the same textbook suggests some consistency in teaching of 'Clinical Applied' knowledge. The lecturers also indicated that they make use of a unifying concept for practice, "the process of care". Blitz and Hovius (2003) recommended that this is an

important concept to be included in all curricula. The content analysis of the two curricula, using Blitz' and Hovius' proposed guideline, points to the fact that the Oral Hygienist is regarded as a specialist in the areas of oral health prevention and promotion. All the lecturers felt that they have expert clinical knowledge and this aligns with the focus on 'Clinical Applied' knowledge type seen in the curriculum analysis. However, the lecturers indicated that their practice experience does not assist them much in teaching and they believe that their postgraduate qualifications assisted them more to improve their teaching.

There is a strong focus on 'applied' knowledge in the Oral Hygiene field of production. The lecturers at UNIV1 have more qualifications and research publications from 'hard-applied' knowledge and this is aligned to how they perceive knowledge borrowed for their curriculum, which displays Natural science disciplinary knowledge slightly more. However, this statement should be regarded tentatively as the lecturers' perceptions about borrowing knowledge can be superficial. Lecturers at UNIV2 have more qualifications and research publications from 'soft-applied' knowledge and this is aligned to how they perceive knowledge borrowed for their curriculum, arguing for the importance of Social science disciplinary knowledge slightly more than UNIV1 lecturers. However, the analysis of the curricula reveals that both institutions emphasise 'Clinical Applied' knowledge types as important foundations to develop the field of practice. Both curricula display a small amount of 'pure' knowledge that is focused in the first year and used mainly as pre-clinical knowledge. A programme with less 'pure' knowledge will prioritise techniques used in practice and neglect conceptual and principled bases of an occupation. The curriculum at UNIV1 possibly promotes a practitioner with sound clinical skills, while UNIV2 promotes both an emphasis on clinical skills as well as social relevance.

Lecturers express an aspiration to develop clinicians who think critically and perform procedures as knowledgeable workers. An argument by Winch (in press) indicates that to be knowledge worker, systematic theoretical knowledge has to be in place. The Oral Hygiene knowledge base does not provide enough emphasis on systematic theoretical knowledge development. The results of the curriculum

analysis exhibit differences in, the lecturers' perceptions and the curriculum documents, which are misaligned. When considering which identity they are promoting the small amount of time spent on 'pure' knowledge suggests that the curriculum prepares students mainly for the identity of 'technician' and less so for the identity of 'knowledge worker'. The lecturers' weak research identity and their focus on 'hard-applied' knowledge borrowed for clinical practice; the fact that they use a unifying concept for practice (the process of care) and that they feel they are experts in clinical teaching focuses on the Occupational model. On the other hand, they aspire toward preparing an Oral Hygienist who is able to operate according to the Professional model. This can be seen from the following trends at both institutions - the achievement of post-graduate qualifications by lecturers, the slight evidence of 'pure' knowledge at the beginning of the degree, the use of common concepts in the field and the use of conceptual knowledge in examination questions.

7.6 Reflecting on the relevance and implications of this study

7.6.1 Rationale for the use of the methodology

The methodology used in this study allowed me to analyse a number of different areas of knowledge in Oral Hygiene and these included: how the literature theorises the knowledge in the field, the lecturers' perceptions of knowledge and the identity of the Oral Hygienist, knowledge covered in curriculum documents and some final examination questions.

The literature review provided a valuable impression of the shortcomings on knowledge within the Oral Hygiene field, which allowed for the consideration of the questions that would expose this knowledge debate further. The use of a set of curriculum guidelines (Blitz and Hovius, 2003) from the literature assisted me to do an analysis of the content areas seen in the two curricula. This analysis did not provide enough clarity on the knowledge types, which prompted a search for conceptual language borrowed from sociological studies on professional knowledge to study the field. I argue that the knowledge type analysis provides a more reliable

indication of the structure of the Oral Hygiene field. It provides a way to consider which knowledge is most valued, as well as highlights the coverage and sequencing of knowledge in the two curricula. From the survey of the lecturers' perceptions I was able to ascertain how the individual lecturers perceive their curriculum in particular and how they observe knowledge for the Oral Hygiene field more generally. It also offered a broad overview of the individual respondents who influence the design and implementation of Oral Hygiene curricula locally.

Gathering data on the lecturers' perceptions as well as finding a means to analyse the curriculum was important to the outcome of this study. As indicated above, the individual lecturer's perceptions were useful for finding out their perceptions about knowledge borrowed for the field. However, the analysis of the curriculum documents confirms that in the process of recontextualisation into curricula it is 'Clinical applied knowledge' and not the Sciences that are foregrounded. The additional information from the assessment questions, albeit a very limited analysis provided me with further details on whether knowledge was intended for conceptual development of the practice (for conceptual coherence). With all this data available it was possible to establish whether individual perceptions were aligned to what occurs in the curricula of the two institutions. The alignment between these three sets of data aided in answering the main research question in this study.

7.6.2 Reflections of the process of this study

Upon reflection of this project, I soon realised that the literature did not describe the Oral Hygiene knowledge base clearly. The descriptions of content to be included in curricula are not evident in research, but they are stated in policy documents, which do not provide an evidence-based account of knowledge for the field. The Oral Hygiene literature does not suggest any tools to describe curricula, which made it imperative to search for a means to analyse knowledge for the field. It gave me an invaluable opportunity to read in the field of professional knowledge and to develop a method to study a whole curriculum.

This study was dependent on the lecturers' willingness to provide the data, and what became evident was the possibility that lecturers may be cautious about having the perceptions about their own curricula revealed. Circulating curriculum documents, specifically assessment documents are sensitive to lecturers, as these are regarded as intellectual property and are not easily shared. However, the lecturers were most confident about some of the data that came from the questionnaire; this included their inputs on their qualifications, research to date, and the value they place on 'Clinical Applied knowledge'. The perceptions of the lecturers regarding the development of the profession also show a commitment to developing practitioners for the advancement of the field.

7.6.3 Limitations of the study

I have also identified that this study has a number of limitations. Firstly, it was not possible to examine the curricula of all five institutions in South Africa. If it were possible to include them all, credible arguments about the knowledge base would be more likely. The sample size was of concern too, as it is small and might not be representative of all lecturers teaching Oral Hygiene students in the country or of the two institutions that were examined. Only a few examination question papers were obtained and their analysis cannot be seen to represent the total assessment practices covered in the degree. The examination analysis cannot account, as a true reflection of all assessments and therefore the results have to be regarded tentatively. The quality of interpretations from the questions with relation to inferences from either fact or practice could have been more specific. This would have given a better indication of whether they are developing knowledge workers. One of the major limitations of this study is that it did not include observation of actual teaching. This would have allowed much more insight into how concepts and practices, which are borrowed from the sciences. This would also be more apparent if all assessment methods were analysed.

7.6.4 Recommendations and implications for practice

More research of this kind is needed so that a richer understanding of the knowledge base of Oral Hygiene field becomes apparent. Since 'Clinical Applied' knowledge is most valued in the curriculum it is really important to investigate it specifically - both in terms of teaching and assessment. To show how concepts are borrowed from the sciences will assist in clarifying commonly understood unifying concepts and how these can be used for practice. Implications of this study for practice are that it can provide a method/tool for analysing how lecturers work with knowledge in curricula. More intensive investigation of what is assessed in curricula can provide valuable insights into what is relevant knowledge for conceptual development and knowledge for practice. This study can therefore be used as a reflection tool for lecturers when developing and reassessing curricula in Oral Hygiene programmes.

7.7 Conclusion

The Oral Hygienist is in an important position to provide the preventive oral health care needed by so many in our country. The societal and workplace demands for oral care places strain on curriculum trends in different programmes. The most pertinent knowledge for the field as seen through two programmes has shown that these demands may have influenced their curricula. By examining the South African lecturers' current views of the Oral Hygiene knowledge base and through studying its organisation within different curricula, I was able to begin a conversation about what knowledge is most valued in the field. This is evident from lecturers' perceptions and from the curriculum documents analysed in this study, which largely appear to reinforce an occupational model of practice, yet at times the results show that the professional model is aspired to as well. To answer the main research question, this study highlights that lecturers aspire to professionalise the field; even though curricula promote the development of practitioners with technical skills.

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APPENDICES

APPENDIX 1

UNIV1		
Module name	**Content**	**Blitz and Hovius Curriculum guidelines**
1st year		
Academic competency in Oral Health	Professionalism, ethics, infection control and instrumentation.	Dental Hygiene Vocational Practice
Anatomy	Oral Anatomy and radiological features of the anatomical structures	Biomedical sciences Dental sciences
Pharmacology	Pharmacological knowledge as well as aspects of Oral Hygiene patient management.	Bio-medical sciences and Dental Hygiene sciences
Physiology	Study of organisms at a cellular and system level	Bio-medical sciences
Oral Biology	Biology and Pathology of the oral cavity required as pre-knowledge for clinical courses	Biomedical sciences
Microbiology and Immunology	Microbiology and Immunology as the pre-knowledge for clinical courses	Biomedical sciences
First aid	A practical module, which develops skills in the management of medical emergencies	Dental Hygiene sciences
Odontology	Diagnosis making and management of dental diseases	Dental sciences
Orthodontics	Malformation of dento-cranial structures and introduction to basic orthodontic procedures	Dental sciences and Areas of Special interest
Periodontology	Features of oral anatomy, specifically the periodontium and its related diseases	Dental sciences
Comprehensive patient management	Communication and understanding the psychosocial aspects of patient behaviour	General Education
Preventive oral health	Knowledge and clinical skills for the scope of practice for Oral Hygienists	Dental Hygiene sciences
Academic Literacy	Academic reading and writing skills	General Education
Computer literacy	Computer skills	General Education
2nd year		
Community as a patient	Oral health problems of community and includes oral health prevention and education in various settings	Dental Hygiene sciences and Areas of special interest
Odontology	A continuation of the first year module and includes diagnosis making and management of dental	Dental sciences
Orthodontics	Develops knowledge and skills in orthodontics and includes clinical work	Dental sciences and Special interest areas
Radiography	Knowledge and skill development in producing and interpreting dental radiographs	Biomedical and Dental sciences
Periodontology	Continues from the first year and includes oral hygiene care and management of related conditions	Dental sciences and Dental hygiene sciences
Oro-Facial surgery	Local anaesthesia, oral surgery procedures	Dental sciences
Preventive oral health	A continuation from the first year of study and includes knowledge and clinical skills for the scope of practice for Oral Hygienists	Dental Hygiene sciences
Comprehensive patient management	Occupational health and safety, patient communication, ethics, professionalism law, administration, primary prevention, treatment and patient care.	Dental Hygiene sciences and Vocational practice
3rd year		
Community as a patient	The student mainly provides education and promotion in practical settings	Dental Hygiene sciences and Areas of special interest
Public Oral Health	An area of special interest, it covers preventive dentistry and epidemiology	General sciences and Areas of special interest
Maxillo-facial Pathology	Pathology relevant in the Maxillo-facial setting	Dental sciences
Research	Use of research to improve practice and a project is undertaken to develop these skills	General sciences
Radiography	More on practical work and understanding the physical science behind x-rays	Biomedical and Dental sciences
Oro-facial surgery	A continuation from the 2nd year and covers more practical aspects of oral surgery	Dental sciences
Preventive oral health	A continuation from the second year of study and includes knowledge and clinical skills for the scope of practice for	Dental Hygiene sciences

	Oral Hygienists	
Patients with special needs	Challenges of special needs patients and the oral hygiene management thereof	Dental Hygiene sciences
Periodontology	An area of special interest Periodontology	Dental Sciences
Orthodontics	An area of special interest Orthodontics	Areas of special interest
Comprehensive patient management	Technology management, administration and dental practice management, customer needs and demands, marketing and career management	General Sciences
Counselling	Behaviour management and specific counselling	General Education and Dental Hygiene sciences

UNIV2

Module name	**Content**	**Blitz and Hovius Curriculum guidelines**
1st year		
Academic literacy	Life skills, academic skills, study skills, language skills and digital skills	General education
Clinical Practice	Microbiology and immunity, infection control, history taking, basic examination, instrumentation, emergencies and patient education on home care	Bio-medical sciences and Dental hygiene sciences
Clinical Oral Health	Scope of practice, infection control, specialist areas in dentistry, dental materials and instruments, as well as administration, professionalism, office management and ethics	Dental hygiene sciences
Health, development and primary health care	Health, primary health care, communication and multilingualism	Special interest and general education
Interdisciplinary health promotion	Health promotion and the planning cycle	Special interest areas
Introduction to Xhosa OR Introduction to Afrikaans	Both cover basic language skills, and language appropriate in a dental context	General education
Oral Biology for Oral Health	Human body and its systems, embryology, the oral environment, nerve supply and physiology	Biomedical sciences
Oral diseases I	General pathology, oral pathology, how to identify and manage various pathological states	Biomedical sciences and dental sciences
Radiography I	Radiation physics and biology, radiation protection	Biomedical sciences and dental sciences
Social sciences for Oral Health	Psychology, sociology and communication	General education
2nd year		
Clinical Practice	Clinical aspects of the Oral Hygienists scope of practice and some areas of vocational practice	Dental Hygiene sciences and vocational practice
Clinical Oral Health	Anatomy and physiology as well as a number of theoretical and clinical applications from dentistry	Biomedical and dental science
Local Anaesthesia and Oral surgery	Oral surgery and local anesthesia.	Dental sciences
Measuring health and disease	Dental epidemiology and research	General sciences
Oral diseases II	Diagnosis and management of dental conditions	Dental sciences
Periodontology for Oral Health	Anatomy within the oral cavity and diseases of the periodontium and its management	Dental sciences
Radiography II	History of dental radiography, theory on radiographic films, radiographic techniques, film processing and interpretation	Dental sciences
Oral Health promotion I	Oral health promotion, education and communication and planning and implementation of interventions	Dental Hygiene sciences and special interest
Pharmacology for Oral Health	Physiology in pharmacology, mainly clinical application of drugs in the dental setting	Biomedical sciences and dental sciences
Special care for Oral Health	Theory about patients with medical conditions and the oral hygiene management of these conditions, and specifically how to counsel these patients	Dental hygiene sciences
3rd year		
Applied Research	Research theory and how to carry out a basic research project in oral health	General sciences
Clinical practice III	Develops the clinical practice of the Oral Hygienist, how to apply the scope of practice in the local context	Dental hygiene sciences and vocational practice
Ethics and practice management	Ethical issues for the Oral Hygienist, practice management, employment issues and professional development	Dental hygiene sciences and vocational practice
Health systems	Health systems, financing, policy, human resources and related oral health strategies	Areas of special interest
Oral diseases and Prevention	Oral hygiene prevention strategies for high-risk conditions related to oral health	Dental hygiene and dental sciences
Oral Health Promotion II	The role of the Oral Hygienist as an oral health promoter; it develops practical skills in communication in different settings	Dental hygiene sciences and special interest areas
Radiological diagnosis for Oral Health	Mainly clinical, focusing on radiological interpretation of dental conditions	Dental sciences
Clinical Oral Health III	Clinical application of oral hygiene scope in various specialist settings.	Dental hygiene sciences
Xhosa III	Indigenous language	General Education

APPENDIX 2

UNIV1			
Module name	**Content**	**Blitz and Hovius Curriculum guidelines**	**Knowledge type**
1st year			
Academic competency in Oral Health	Professionalism, ethics, infection control and instrumentation.	Dental Hygiene Vocational Practice	Soft-Applied Hard-Applied
Anatomy	Oral Anatomy and radiological features of the anatomical structures	Biomedical sciences Dental sciences	Hard-Pure Hard-Applied
Pharmacology	Pharmacological knowledge as well as aspects of Oral Hygiene patient management.	Bio-medical sciences and Dental Hygiene sciences	Hard-Pure + Applied Soft-Applied
Physiology	Study of organisms at a cellular and system level	Bio-medical sciences	Hard-Pure + Applied
Oral Biology	Biology and Pathology of the oral cavity required as pre-knowledge for clinical courses	Biomedical sciences	Hard-Pure + Applied
Microbiology and Immunology	Microbiology and Immunology as the pre-knowledge for clinical courses	Biomedical sciences	Hard-Pure + Applied
First aid	A practical module, which develops skills in the management of medical emergencies	Dental Hygiene sciences	Soft-Applied Hard-Applied
Odontology	Diagnosis making and management of dental diseases	Dental sciences	Hard-Pure + Applied
Orthodontics	Malformation of dento-cranial structures and introduction to basic orthodontic procedures	Dental sciences and Areas of Special interest	Hard-Pure + Applied Soft-Applied
Periodontology	Features of oral anatomy, specifically the periodontium and its related diseases	Dental sciences	Hard-Pure + Applied
Comprehensive patient management	Communication and understanding the psychosocial aspects of patient behaviour	General Education	Soft-Applied Soft-Pure
Preventive oral health	Knowledge and clinical skills for the scope of practice for Oral Hygienists	Dental Hygiene sciences	Soft-Applied Hard-Applied
Academic Literacy	Academic reading and writing skills	General Education	Soft-Applied
Computer literacy	Computer skills	General Education	Soft-Applied Soft-Pure
2nd year			
Community as a patient	Oral health problems of community and includes oral health prevention and education in various settings	Dental Hygiene sciences and Areas of special interest	Soft-Applied Hard-Applied
Odontology	A continuation of the first year module and includes diagnosis making and management of dental	Dental sciences	Hard-Pure + Applied
Orthodontics	Develops knowledge and skills in orthodontics and includes clinical work	Dental sciences and Special interest areas	
Radiography	Knowledge and skill development in producing and interpreting dental radiographs	Biomedical and Dental sciences	Hard-Pure Hard-Applied
Periodontology	Continues from the first year and includes oral hygiene care and management of related conditions	Dental sciences and Dental hygiene sciences	Hard-Pure + Applied Soft-Applied
Oro-Facial surgery	Local anaesthesia, oral surgery procedures	Dental sciences	Hard-Pure + Applied
Preventive oral health	A continuation from the first year of study and includes knowledge and clinical skills for the scope of practice for Oral Hygienists	Dental Hygiene sciences	Soft-Applied Hard-Applied
Comprehensive patient management TBW271	Occupational health and safety, patient communication, ethics, professionalism law, administration, primary prevention, treatment and patient care.	Dental Hygiene sciences and Vocational practice	Soft-Applied Hard-Applied
3rd year			
Community as a patient	The student mainly provides education and promotion in practical settings	Dental Hygiene sciences and Areas of special interest	Soft-Applied Hard-Applied
Public Oral Health	An area of special interest, it covers preventive dentistry and epidemiology	General sciences and Areas of special interest	Soft-Applied Hard-Applied
Maxillo-facial Pathology	Pathology relevant in the Maxillo-facial setting	Dental sciences	Hard-Pure + Applied

Research	Use of research to improve practice and a project is undertaken to develop these skills	General sciences	Soft-Applied
Radiography	More on practical work and understanding the physical science behind x-rays	Biomedical and Dental sciences	Hard-Pure Hard-Applied
Oro-facial surgery	A continuation from the 2nd year and covers more practical aspects of oral surgery	Dental sciences	Hard-Pure + Applied
Preventive oral health	A continuation from the second year of study and includes knowledge and clinical skills for the scope of practice for Oral Hygienists	Dental Hygiene sciences	Soft-Applied Hard-Applied
Patients with special needs	Challenges of special needs patients and the oral hygiene management thereof	Dental Hygiene sciences	Soft-Applied Hard-Applied
Periodontology	An area of special interest Periodontology	Dental Sciences	Hard-Pure + Applied
Orthodontics	An area of special interest Orthodontics	Areas of special interest	Soft-Applied Hard-Applied
Comprehensive patient management	Technology management, administration and dental practice management, customer needs and demands, marketing and career management	General Sciences	Soft-Applied
Counselling	Behaviour management and specific counselling	General Education and Dental Hygiene sciences	Soft-Pure Soft-Applied

UNIV2

Module name	Content	Blitz and Hovius Curriculum guidelines	Knowledge type
1st year			
Academic literacy	Life skills, academic skills, study skills, language skills and digital skills	General education	Soft-Applied Soft-Pure
Clinical Practice	Microbiology and immunity, infection control, history taking, basic examination, instrumentation, emergencies and patient education on home care	Bio-medical sciences and Dental hygiene sciences	Hard-Pure + Applied Soft-Applied
Clinical Oral Health	Scope of practice, infection control, specialist areas in dentistry, dental materials and instruments, as well as administration, professionalism, office management and ethics	Dental hygiene sciences	Soft-Applied Hard-Applied
Health, development and primary health care	Health, primary health care, communication and multilingualism	Special interest and general education	Soft-Pure Soft- Applied Hard-Applied
Interdisciplinary health promotion	Health promotion and the planning cycle	Special interest areas	
Introduction to Xhosa OR Introduction to Afrikaans	Both cover basic language skills, and language appropriate in a dental context	General education	Soft-Applied Soft-Pure
Oral Biology for Oral Health	Human body and its systems, embryology, the oral environment, nerve supply and physiology	Biomedical sciences	Hard-Pure + Applied
Oral diseases I	General pathology, oral pathology, how to identify and manage various pathological states	Biomedical sciences and dental sciences	Hard-Pure Hard-Applied
Radiography I	Radiation physics and biology, radiation protection	Biomedical sciences and dental sciences	Hard-Pure Hard-Applied
Social sciences for Oral Health	Psychology, sociology and communication	General education	Soft-Pure + Applied
2nd year			
Clinical Practice	Clinical aspects of the Oral Hygienists scope of practice and some areas of vocational practice	Dental Hygiene sciences and vocational practice	Soft-Applied Hard-Applied
Clinical Oral Health	Anatomy and physiology as well as a number of theoretical and clinical applications from dentistry	Biomedical and dental science	Hard-Pure Hard-Applied
Local Anaesthesia and Oral surgery	Oral surgery and local anesthesia.	Dental sciences	Hard-Pure + Applied
Measuring health and disease	Dental epidemiology and research	General sciences	Soft-Applied
Oral diseases II	Diagnosis and management of dental conditions	Dental sciences	Hard-Pure + Applied
Periodontology for Oral Health	Anatomy within the oral cavity and diseases of the periodontium and its management	Dental sciences	Hard-Pure + Applied
Radiography II	History of dental radiography, theory on radiographic films, radiographic techniques, film processing and interpretation	Dental sciences	Hard-Pure + Applied
Oral Health promotion I	Oral health promotion, education and communication and planning and implementation of interventions	Dental Hygiene sciences and special interest	Soft-Applied Hard-Applied
Pharmacology for Oral Health	Physiology in pharmacology, mainly clinical application of drugs in the dental setting	Biomedical sciences and dental sciences	Hard-Pure Hard-Applied

Special care for Oral Health	Theory about patients with medical conditions and the oral hygiene management of these conditions, and specifically how to counsel these patients	Dental hygiene sciences	Soft-Applied Hard-Applied
3rd year			
Applied Research	Research theory and how to carry out a basic research project in oral health	General sciences	Soft-Applied
Clinical practice III	Develops the clinical practice of the Oral Hygienist, how to apply the scope of practice in the local context	Dental hygiene sciences and vocational practice	Soft-Applied Hard-Applied
Ethics and practice management	Ethical issues for the Oral Hygienist, practice management, employment issues and professional development	Dental hygiene sciences and vocational practice	Soft-Applied Hard-Applied
Health systems	Health systems, financing, policy, human resources and related oral health strategies	Areas of special interest	Soft-Applied Hard-Applied
Oral diseases and Prevention	Oral hygiene prevention strategies for high-risk conditions related to oral health	Dental hygiene and dental sciences	Soft-Applied Hard-Applied Hard-Pure
Oral Health Promotion II	The role of the Oral Hygienist as an oral health promoter; it develops practical skills in communication in different settings	Dental hygiene sciences and special interest areas	Soft-Applied Hard-Applied
Radiological diagnosis for Oral Health	Mainly clinical, focusing on radiological interpretation of dental conditions	Dental sciences	Hard-Pure + Applied
Clinical Oral Health III	Clinical application of oral hygiene scope in various specialist settings.	Dental hygiene sciences	Soft-Applied Hard-Applied
Xhosa III	Indigenous language	General Education	Soft-Applied Soft-Pure

APPENDIX 3

UNIV1

Modules that have combinations of knowledge from Social sciences (soft-pure), natural sciences (hard-pure), clinical and generic skills are as follows;

Social sciences (Soft-applied)	Natural sciences (Hard-applied)	Clinical Applied knowledge (hard / soft)	Generic knowledge
First year			
Comprehensive patient management 4hrs *(psych, sociology)*	Anatomy 64 hrs *(anatomical structures) (pure 55 hrs)*	Academic competency 45hrs *(instrumentation)*	Academic competency 35hrs *(ethics, professionalism)*
	Physiology 33hrs *(organisms, cellular) (pure 33 hrs)*	Preventive oral health 11 + 88hrs *(clinical scope)*	Comprehensive patient management 5hrs *(communication)*
	Microbiology & Immunology 55hrs *(microbiology) (pure 50 hrs)*	Odontology 70hrs *(diagnosis making, treatment)*	Academic Literacy 28hrs *(writing skills)*
	Oral Biology 55hrs *(biology, pathology) (pure 55 hrs)*	First aid 24hrs *(medical emergencies)*	Computer literacy 35hrs *(computer skills)*
	Orthodontics 12hrs *(dento-cranial structures) (pure 2 hrs)*	Orthodontics 30hrs *(orthodontic procedures)*	
	Periodontology 10hrs *(oral biology) (pure 3 hrs)*	Periodontology 54hrs *(diseases, diagnosis)*	
	Pharmacology 7hrs *(pharmacology) (pure 2 hrs)*	Pharmacology 20hrs *(patient management)*	
4 hours	236 hours (pure 195)	342 hours	98 hours

Second year			
Community as a patient 86hrs *(community, public health)*	Radiography 16hrs *(anatomical landmarks)*	Radiography 134hrs *(effects of radiation)*	Comprehensive patient management 10hrs *(ethics, communication)*
Comprehensive patient management 20hrs *(applied psych & socio)*		Comprehensive patient management 91hrs *(patient care)*	
		Oro-Facial surgery 79hrs *(oral surgery procedures)*	
		Odontology (ODO271) 72hrs *(diagnosis making, treatment)*	
		Periodontology 94hrs *(patient care)*	
		Preventive oral health	

		326hrs *(clinical scope)*	
		Orthodontics 60hrs *(orthodontic procedures)*	
106hrs	16hrs	856hrs	10hrs

Third year			
Counselling 15hrs *(behaviour management)*	Radiography 2 hrs *(radiation physics) (pure 2 hrs)*	Radiography 130hrs *(radiography techniques)*	Radiography 1hr *(ethics)*
Community as a patient 128hrs *(health promotion, community)*		Counselling 15hrs *(patient education)*	Comprehensive patient management 40hrs *(practice management)*
Research 15hrs *(research process)*		Comprehensive patient management 100hrs *(patient management)*	
Public Oral Health 135hrs *(epidemiology, community)* *Elective#*		Maxillo-facial Pathology 52hrs *(assessment, patient care)*	
		Oro-facial surgery 60hrs *(oral surgery procedures)*	
		Preventive oral health 240hrs *(clinical scope)*	
		Patients with special needs 73hrs *(patient care)*	
		Periodontology 135hrs OR Orthodontics 135hrs *(Elective#)*	
158hrs (135)	2hrs (pure 2 hrs)	670hrs (135 or 135)	41hrs
273 (135) (pure)	**254** (pure 197 hrs)	**1868 (135 or 135)**	**149**

Elective module only one of these three modules is chosen as an elective

UNIV2

Modules, which have combinations of knowledge from Social sciences (soft-pure), natural sciences (hard-pure), clinical (applied) and generic skills are as follows;

Social sciences (Soft-Applied)	Natural sciences (Hard-Applied)	Clinical Applied knowledge (Hard /soft)	Generic knowledge
First year			
Interdisciplinary health promotion 50hrs *(Soc of Health)*	Clinical Practice I 40hrs *(Microbiology) (pure 40hrs)*	Clinical Practice I 45hrs *(infection control, patient assessment)*	Academic literacy 75hrs *(Life skills)*
Social sciences for Oral Health 55hrs *(Psychology and Sociology)* (pure 55 hrs)	Oral Biology for Oral Health 120hrs *(Anatomy and Physiology) (pure 120 hrs)*	Clinical Oral Health I 120hrs *(Instruments and materials)*	Clinical Oral Health I 10hrs *(Management, professionalism, ethics)*
Health, development and primary health care 12hrs *(Soc of Health)*	Radiography 35hrs *(Physics and Biology)* (pure 20 hrs)		Social sciences for Oral Health 25hrs *(Communication)*
	Oral diseases 60hrs *(Pathology)* (pure 50 hrs)		*Selective#* Introduction to Xhosa OR Afrikaans 42hrs *(Languages)*
			Health, development and primary health care 4hrs *(Communication)*
117hrs (pure 55hrs)	255hrs (pure 230 hrs)	165hrs	156hrs

Second year			
Measuring health and disease 30hrs *(epidemiology)*	Clinical Oral Health II 15hrs *(dental anatomy - applied)* (pure 8 hrs)	Clinical Oral Health II 75hrs *(dental techniques)*	Measuring health and disease 15hrs *(computer skills)*
Oral Health promotion I 145hrs *(health promotion)*	Periodontology for Oral Health 8hrs *(anatomy and physiology)* (pure 3 hrs)	Periodontology for Oral Health 17hrs *(treatment & patient management)*	
Clinical Practice II 5hrs *(Psychology, Sociology)*		Clinical Practice II 210hrs *(instrumentation, patient care)*	Clinical Practice II 5hrs *(legal issues)*
		Special care for Oral Health 120hrs *(patient care)*	Special care for Oral Health 10hrs *(legal issues)*
	Pharmacology for Oral Health 15hrs *(pharmacological drug interactions)* (pure 15hrs)	Pharmacology for Oral Health 11hrs *(patient care)*	
	Oral diseases II 10hrs *(microbiology& immunology)* (pure 4 hrs)	Oral diseases II 70hrs *(diagnosis and treatment of diseases)*	
		Local Anaesthesia and Oral surgery 60hrs *(dental techniques)*	
		Radiography 130hrs *(dental techniques)*	
180hrs	48hrs (pure 30hrs)	693hrs	30hrs

Third year			
Applied Research 185hrs *(research)* (pure *15hrs)*		Clinical practice III 280hrs *(scope of practice, patient care, case report)*	Clinical practice 50hrs *(marketing, ethics, professionalism)*
Oral Health Promotion II 100hrs *(public health)*		Clinical Oral Health III 80hrs *(scope of practice)*	Oral Health Promotion II 12hrs *(communication)*
		Oral diseases and Prevention 105hrs *(prevention, patient care)*	Ethics and practice management 60hrs *(ethics, practice management, employment)*
Health systems 35hrs *(health systems and policy)* (pure 5 hrs)		Radiological diagnosis for Oral Health 60hrs *(dental techniques)*	Health systems 10hrs *(financing, human resources)*
310hrs (pure 20 hrs)	0	525hrs	132hrs
607hrs (pure 75 hrs)	303hrs (pure 260 hrs)	1383hrs	318hrs

Elective module only one of these two modules is chosen as an elective

QUESTIONS FROM EXAMINATION PAPERS	Hard	Soft	Pure	Applied	Concept / Practice / Generic
			F / IR	F / IR	
Academic competency - June 2013 ***(UNIV1 - yr1)*** *Topics - Instrumentation and Ethics and Professionalism* *Content Area – Dental Hygiene science and Vocational practice* *Knowledge type – Clinical and Generic knowledge –'hard-applied' and 'soft-applied'*					
1.1 Identify the appliance. (1)	✓			F	P
1.2 Indicate for what it is used and how you will go about using it. (2)	✓			IR	P
2. You must reference this scientific article from a journal in your assignment. Write it out according to the Vancouver method. (3)		✓		F	G
3.1 Identify the items marked A and B. (2)		✓		F	P
3.2 Indicate for what it is used. Be specific with regards to the dental material. (2)	✓			IR	P
4.1 Give two (2) indications for usage of this dental material. (2)	✓			F	P
4.2 Explain how you will go about mixing it. (2)	✓			IR	P
5.1 Identify the items marked A and B. (2)	✓			F	P
5.2 Name the indications for the use of each. (1)	✓			IR	P
6. Identify the instruments (marked A, B, C and D) and indicate the use of each. (4)	✓			F	P
7. Name the parts of the tooth marked A, B, C and D. (4)	✓		F		C
8. Identify the anatomical parts as marked on the model. (4)	✓		F		C
9.1 Identify the dental material and indicate for what it is used. (1)	✓			F	P
9.2 Explain how you will go about mixing it. (2)	✓			IR	P
Study the diagramme and answer the following questions. *10.1 Explain what the numbers 1, 2, 3 and 4 mean. (1)*	✓			IR	C
10.2 Each tooth is numbered. Explain what it means. (2)	✓			IR	P
11. You must chart for a colleague. Mark the list of four (4) findings on the odontogram. (4)	✓			IR	P
12. Name the different parts of the instrument marked A, B and C. (3)	✓			F	P
13.1 Select the most appropriate preparation to wash hands with. (1)	✓			F	P
13.2 Name the four (4) areas of the hands that must be disinfected when hands are washed. (2)	✓			IR	P
14. Study the following scenario and indicate where professionalism and ethics were <u>not</u> adhered. <u>Mark professionalism as A and ethics as B.</u> (3)		✓		IR	C
15. This image represents one of the six (6) most important infection prevention and control measures for a health worker. Name the six (6) measures. (3)	✓			F	P
16.1 Identify the instrument. (1)	✓			F	P
16.2 Indicate for what it is used. (2)	✓			IR	P
17.1 Explain what this sketch represents. What is the enfringement committed? (1)		✓		F	G
17.2 Explain the UNIV1 policy regarding this enfringement. (2)		✓		F	G
18. Study the sketch and explain why this sitting position of the operator is the most acceptable/appropriate. (3)	✓			IR	P
19.1 Indicate which injury on duty you can attain with this apparatus. (1)		✓		F	C
19.2 Name the six (6) steps in the <u>correct sequence</u> to indicate the protocol to be followed after occurrence of such an incident. (3)		✓		IR	C
20. You must chart for a colleague. Mark the list of three (3) findings on the periodontal diagramme. (3)	✓			IR	P
21.1 Study the sketch and indicate how members of a group could sabotage the functioning of a group. (1)		✓		F	G
21.2 Explain how this situation could be rectified so that the group functions optimally. (2)		✓		F	P
Total of 31 questions	**23**	**9**			

QUESTIONS FROM EXAMINATION PAPERS	Hard	Soft	Pure	Applied	Concept / Practice / Generic
			F / IR	F / IR	
Preventive oral health - Oct/Nov 2013 examination (UNIV1 – yr3) *Topics – clinical scope* *Content Area – Dental Hygiene science* *Knowledge type – Clinical knowledge –'hard-applied'*					
1.1 Identify the hard tissue condition on the photo (1)	✓			F	C
1.2 Name the four (4) factors involved with this condition. (2)	✓			F	C
2.1 Identify the hard tissue condition on the photo. (1)	✓			IR	C
2.2 Is the condition physiological or pathological? (1)	✓			IR	C
2.3 Name a possible cause of the condition. (1)	✓			IR	C
3.1 Identify the soft tissue condition on the photo. (1)	✓			IR	C
3.2 Name two (2) symptoms of this condition. (2)	✓			F	C
4.1 Identify the hard tissue condition on the photo. (1)	✓			IR	C
4.2 Indicate how you as oral hygienist will treat this condition. (2)	✓			IR	P
5.1 Identify the deposit on the teeth. (1)	✓			F	C
5.2 Indicate how this deposit is formed on the teeth. (1)	✓			IR	C
5.3 With what will you initially remove this deposit? (1)	✓			F	P
6.1 Identify the condition on the Panorex. (1)	✓			IR	C
6.2 Name the two (2) most important instructions to be given to this patient to keep his mouth plaque free. (2)	✓			F	P
7. Handicapped patients can benefit from modified toothbrushes. Indicate in which instances the toothbrushes (marked A, B and C) would be prescribed: (3)	✓			IR	P
8. Indicate for what this material is used and how it is applied. (3)	✓			F	P
9.1 Identify the appliance. (1)	✓			F	C
9.2 For what is it indicated? (1)	✓			IR	P
9.3 Name two (2) instructions that you will give to a patient with regards to this appliance. (2)	✓			IR	P
10. Identify and justify the mouthwash that you would prescribe: *10.1 To a rehabilitated alcoholic in the treatment of periodontitis. (1)*	✓			IR	P
10.2 To a child with orthodontic banding to control plaque. (1)	✓			IR	P
10.3 For demineralisation. (1)	✓			IR	P
11. Indicate which three (3) of these aids would be suitable for cleaning implants at home. (3)	✓			IR	P
12.1 Identify the preparation. (1)	✓			IR	C
12.2 Give two (2) indications for its use. (2)	✓			IR	P
13.1 Name the active ingredient of each of the products (marked A and B). (2)	✓			F	P
13.2 Explain the indications for use as well as the functioning thereof. (2)	✓			IR	P
14.1 Name the active ingredient of this toothpaste. (1)	✓			IR	C
14.2 Explain how this ingredient works. (2)	✓			IR	P
15.1 Name the two (2) differences between these preparations. (2)	✓			IR	C
15.2 Name one (1) essential oil that is contained in both preparations. (1)	✓			F	C
16.1 Name the condition for which this preparation is indicated. (1)	✓			F	C
16.2 Name two (2) types of patients where this condition could be found. (2)	✓			IR	P
Total of 33 questions	**33**	**0**			

QUESTIONS FROM EXAMINATION PAPERS	**Hard**	**Soft**	**Pure**	**Applied**	**Concept / Practice / Generic**
			F / IR	**F / IR**	
Comprehensive patient management - October Exam - 2013 ***(UNIV1 – yr3)*** *Topics – patient management and practice management* *Content Area – General science and Vocational practice* *Knowledge type – Clinical and Generic knowledge –'hard-applied' and 'soft-applied'*					
QU1 You have been treating a six-year-old child for many years who lives with her single mother and three young siblings. Recently she has become withdrawn and does not make eye contact with you. Intra- oral examination reveals bruising of the maxillary gingival and unusual round burn marks on her cheeks. When asked about how the injuries occurred, the child was vague and contradictory. She did however mention that her mother's boyfriend who had a very short temper had recently moved in with them. Review of her record from her previous dental visit showed a report of similar injuries due to apparently being hit by a ball. However, you suspect abuse. Explain your obligation as an oral hygienist in terms of the Children's Act (38 of 2005). (5)		✓		F	P
QU 2 - A young female patient presented complaining of painful gums and recurrent ulcers in her mouth that she had not been able to cure despite various treatments. Intraoral examination revealed multiple creamy white lesions on her cheeks and bucal mucosa. The hygienist suspected that the recurrent ulcers and candidiasis were oral manifestations as a result of possible infection with HIV. What are the oral hygienist's obligations and ethical responsibilities when a patient presents with suspected HIV? (10)		✓		IR	G
QU3 *Oral hygienists face ethical dilemmas on a daily basis throughout their professional careers. Dilemmas arise when the oral hygienist is challenged with competing obligations and has to consider two or more options to resolve the situation. How does the oral hygienist make and take such decisions? Explain your answer by means of the following ethical principles:* • *Principle of justice, Principle of non-maleficence, Principle of beneficence, Principle of autonomy (20)*		✓		F	G
2.1 Describe the difference between management & leadership. (10)		✓		F	G
2.2. Describe the role of internal marketing as marketing tool in your practice AND give examples of internal marketing strategies that you will use. (15)		✓		F	G
2.3. All clinical procedures should be followed by an administrative process – the keeping of proper patient records. Explain the importance of this statement under the following headings *a) Purposes of patient records* *b) Requirements of patient records* *c) Contents of the patient records (15)*		✓		IR	P
3.1 Explain the importance of patient observation and communication even before examining takes place. (10)		✓		IR	G
3.2 Please read the following definitions and descriptions carefully and match the correct description to the definition; *Owners' Equity, Cash Flow, Income, Assets, Balance sheet, Debtors, Creditors, Liabilities, Expenses, Income statement (10)*		✓		F	G
3.3 You found full mouth, thick calculus and swollen, bleeding gingiva. You detected deep fissures on all the first molars, which will require fissure sealing. The patient also experienced full mouth sensitivity and used Sensodyne® toothpaste. The plaque index was 72% and the patient could not illustrate proper brushing technique and never heard of floss. The patient sometimes brushed twice daily. Formulate a treatment plan and record, on the attached document, according to the HPCSA guidelines, your findings and treatments of each visit. Use the correct standard dental procedure-coding list, with descriptions, in combination with a correct ICD 10 code for the visit. Mistakes should also be corrected according to the HPCSA guidelines. (15)	✓			IR	P
Total of 8 questions	**1**	**8**			

QUESTIONS FROM EXAMINATION PAPERS	Hard	Soft	Pure	Applied	Concept / Practice / Generic
			F / IR	F / IR	
Oral Health Promotion I - May/June 2013 ***(UNIV2 – yr2)*** *(Topics – Health promotion)* *(Content Area – Dental Hygiene science and areas of special interest)* *(Knowledge type – Social science – 'soft-applied')*					
QUESTION 1 *i. List and state the assumption of each of the five action areas of the Ottawa Charter (1986). (5x2=10)*		✓		F	C
ii. According to the National Children's Oral Health Survey (van Wyk, 2003), the prevalence of dental caries among 4-5year old children in the Province is 77%. Use one of the action areas identified in (i) to describe how oral hygienists can contribute in improving oral health for this group. (5)		✓		IR	C
iii. Describe two competencies that oral hygienist would require to perform the activities indicated in (ii). (2½x2=5)		✓		IR	C
iv. Briefly explain how poor oral health can affect an individual physically, economically and psychologically. (5)		✓		IR	C
QUESTION 2 *i. Define the term health education. (3)*		✓		F	C
ii. Distinguish between generic, targeted and personalised health messages. (3x2=6)		✓		F	C
iii. You are asked to critique a poster creating awareness on a healthy diet. This poster is directed at mothers at a children's clinic. Identify and explain the factors you would consider in this critique. (8)		✓		IR	P
iv. Distinguish between the medical and behaviour change approaches in health education. (4X2=8)		✓		F	C
QUESTION 3 *You are asked to do an oral health education presentation for the "pensioner" club at the local day hospital. The matron who made the request informs you of the following: All members of this group was screened by the dental clinic and provided with dentures as part of the "in support of the health of the aged" campaign six months ago. However, they were not given advice on caring for their dentures and the oral cavity in general. She had noticed that most of the club members practice inadequate oral hygiene; they do not appear to clean their dentures regularly; a number had very bad halitosis. She also heard one lady advising the group to soak their dentures in bleach to remove stains and for a fresh smell.* *i. Briefly describe any additional information your will request of the matron to assist you to prepare the presentation. (4)*		✓		F	P
ii. List one educational outcome in each of the learning domains. (3) *Know how to care for dentures and soft tissues/oral cavity; be able to clean their dentures and oral cavity, feel it important to clean their dentures and oral cavity daily*	✓			IR	P
iii. Briefly describe the information you will cover in this presentation. (6)	✓			IR	G
iv. Briefly explain the purpose of the introduction (2), body (2) and conclusion (2) of a presentation. (6)		✓		F	C
v. List indicators for each of the educational outcomes that you will use to evaluate the presentation. (3)		✓		IR	C
i. Describe two UNIV2 graduates attributes that would be required to make this presentation a success. (1½x2=3)		✓		IR	P
QUESTION 4 *i. Your patient is a 25year old male university student. He plays soccer for the university. Your assessment finds that the patient smokes 10 cigarettes per day. He informs you that he has been thinking about quitting (stopping) the habit of smoking.* *a) State the stage of the change (i.e. readiness for change) of this patient according to the Stages of Change model. (1)*		✓		IR	C
b) Briefly describe the stage identified in (a) (3)		✓		F	C
c) Describe the purpose of your advice and illustrate this by means of an example. (3)		✓		IR	P

d) Briefly describe the use of the Stages of Change model in developing oral health promotion interventions (3)		✓		IR	P
ii. Your patient is a 13-year-old boy. At this visit, you convince him and his mother that he should have his teeth filled rather than extracted. You do a polish and fluoride treatment at this visit so that the child can have the experience of preventive treatment. A week later the child returns with his mother and the child informs you that he no longer wants his teeth filled, he wants his teeth extracted. On questioning the child, he tells you that his best friends told him "polishing and fillings are for sissies". *a) Use the Theory of Reasoned Action to explain possible reasons for the boy changing his mind about restorations. (8)*		✓		IR	C
b) What would you say to this boy to address the issue you identified in (a)? (2)		✓		IR	P
iii. You have a group of Grade R children in the waiting room at the dental clinic. The children are visiting the dental clinic for dental orientation. As this is their first visit, the children are very anxious. *a) Explain how you could use the Social Learning Theory during the process of orientating the children. (5)*		✓		IR	C
QUESTION 5 *i. A number of approaches or tools are used in oral health promotion interventions. Define each approach below and briefly explain how it can be used in oral health promotion interventions. Illustrate your answer by means of an example.* *a) The settings approach.* *b) The common risk factor approach.* *c) Advocacy and mediation. (3x7=21)*		✓		IR	C
ii. Identify any South African policy that you think promotes health and/or oral health. Motivate your answer (why do you think this policy promotes health and or oral health?) (4)		✓		IR	C
Total of 23 questions	**2**	**21**			
Oral Health Promotion II - Final examination November 2013 (UNIV2 – yr3) *Topics – public health and communication* *Content Area – General science and Areas o f special interest* *Knowledge type – Social and Generic knowledge – 'soft-applied'*					
QUESTION 1 *You are employed as a public health oral hygienist within a primary health care (PHC) facility in the Province. The facility manager requests that you develop an oral health promotion intervention to complement the current health promotion activities at the centre. These activities include nurses doing regular talks with parents at the antenatal and children's clinics, with adults and children showing an interest in these talks. The nurses provide you with the following information: pregnant women are not well informed about oral diseases and prevention; attending children (birth to 6years) suffer from a number of health problems for which the clinic provides cough syrup and other medication; parents complain that children have dental problems such as rotten teeth and abscesses that causes bad breath, difficulty in eating and these problems keep them (parents and children) awake at night; children generally have poor oral hygiene, with parents not paying much attention to the primary teeth as "it will fall out anyway"; although the clinic nurses refer children to the dental clinic, parents do not go for these appointments, saying that they do not like the "attitude of dental staff scolding them like children for not brushing their children's teeth"; the trend is that patients visit the dental clinic when they have problems. Your observation at the PHC facility finds the following: a lady selling sweets, chips and sweetened drinks at the entrance of the clinic; many children (many being at least three years of age) with feeding bottles containing juice or tea. The staff at the dental clinic informs you that they are concentrating on school-going children and do not have time for crying children from the children's clinic or for the pregnant women as they do not have time for their health issues; there are two dentists and two dental assistants and you are the only oral hygienist. You decide to use the Precede-Proceed Health promotion model as a framework for the oral health promotion intervention.* *i. Use the information provided to "populate" the precede component of the model. (7x2=14)*		✓		IR	C

ii. *Based on the results of (i), describe the health promotion activities you would include in a multilevel intervention. (10)*		✓		IR	P
iii. *Briefly describe three implementation strategies for the PHC approach in the development of oral health services that you could use to motivate for activities suggested in (ii). (3x2=6)*		✓		IR	P
QUESTION 2 i. *Dental caries is a major public health problem in the Western Cape Province. You are employed as a public health oral hygienist. Your district health group are having discussions on addressing this problem. The "upstream-downstream" approach is used in the health and oral health promotion literature.* a. *Describe by means of an example a "downstream approach" to addressing dental caries as a public health concern. (5)*		✓		IR	C
b. *Describe how you would motivate for the need for an upstream approach to address the above problem, illustrating your answer by means of an example. (5)*		✓		IR	C
c. *Identify a possible ethical issue that may present to you in (b) and describe the principles you would use to guide you in addressing this issue. (5)*		✓		IR	C
ii. Describe <u>two</u> of the five conference tracks with reference to the 7th WHO Global Conference on Health Promotion – towards integration of oral health (Nairobi, Kenya 2009). (2x5=10)		✓		F	C
QUESTION 3 *You are employed in a private practice. The community served by this practice are generally regular dental attendees; most of them are employed in a professional or administrative capacity. The trend that you and other oral hygienists in the area notice is that patients depend on you to keep their mouths healthy, therefor their (and their children's) regular attendance. You and your colleagues decide to do a project using the social marketing approach.* i. *Briefly describe what you understand by the term social marketing. (5)*		✓		F	C
ii. *Your group decides that the "product" to be marketed is "oral health as part of total health". Describe the information you would need of this community to use the social marketing strategy. (3)*		✓		IR	C
iii. *Briefly describe the application of social marketing to the above scenario, taking into account that the product being marketed is "oral health as part of total health". (12)*		✓		IR	P
iv. Briefly describe why this collaboration is essential for the success of the project. (5)		✓		IR	P
QUESTION 4 *You are employed in a private practice located in a small rural community where patients generally visit the dentist when they have a problem. A number of patients have seen the dentist for preventive care. The dentist informs you that you are the first oral hygienist employed in the practice and that part of your responsibility is to sell yourself as a professional. You are therefore "a new innovation" in this practice and community.* i. *Briefly describe the theory of Diffusion of Innovation. (8)*		✓		F	C
ii. You decide to do a presentation to a group of patients who are regular attendants at the practice. Patients were selected and invited for a presentation to introduce you as the new member of the dental team with the expectation that this presentation would assist in diffusion of the oral hygienist as a "new innovation" to this practice. You arrange a follow up presentation with the same group within one month of the first meeting. After three months you find that there is still resistance to you treating patients as patients insist on being seen by the dentist. Use the Diffusion of Innovation theory to explain possible reasons for the lack of acceptance of patient of you as the oral hygienist. (5)		✓		IR	C
iii. In a discussion with some of the patients, you find that a number of them smoke tobacco. Even though there has been extensive education in this community about the risk of tobacco use for oral cancer, there have been no changes to this practice in the community. A patient, who smokes tobacco and has no intention of stopping, says to you "my mother smoked this same tobacco and she died at 90 years of age". Use the Health Belief Model (HBM) to explain possible reasons for the view expressed by this patient. (7)		✓		IR	C
Total of 14 questions	**0**	**14**			

QUESTIONS FROM EXAMINATION PAPERS	Hard	Soft	Pure	Applied	Concept / Practice / Generic
			F / IR	F / IR	
Clinical Practice - Supplementary exam - NOVEMBER 2013 (UNIV2 – yr3) *Topics – Clinical scope, case report, Ethics and Professionalism* *Content Area – Dental Hygiene science and Vocational practice* *Knowledge type – Clinical and Generic knowledge –'hard-applied' and 'soft-applied'*					
QUESTION 1 *a. Write short notes on the guidelines or the value of the use of the Caries-Risk Assessment tool. (5)*	✓			IR	C
b. Tabulate the three categories of "caries-risk" and list the caries-risk factors for each category as outlined in the Caries-Risk Assessment Tool. (15)	✓			IR	C
QUESTION 2 *a. Answer the following on teeth whitening:* *2.1 Define teeth whitening. (3)*	✓			F	P
2.2 Provide 6 contra-indications to bleaching as a means of teeth whitening 6x½= (3)	✓			F	P
2.3 Explain advantages of the use of home bleaching to improve the aesthetic appearance of teeth (4)	✓			F	P
2.4 List post-operative instructions to a patient following in-office bleaching. (4)	✓			F	P
b. List 6 consequences of tooth loss. (6)	✓			IR	C
QUESTION 3 *A 45-year-old man with coronary artery disease who smokes two packs of cigarettes per day presents at the clinic. He has not responded well to periodontal treatment and does not practice good oral hygiene. His basic periodontal scores were ≥ 3. Management of periodontitis is based on an accurate diagnosis, which is informed, by a thorough history and comprehensive clinical exam. Discuss how you would manage the above patient. 14x½ = **[7]***	✓			IR	C
QUESTION 4 *Create a flow chart to suggest a sequence for the management of periodontitis using the full-mouth root surface approach as suggested by the authors, Bisset S.M and Preshaw P.M, 2013 Techniques for effective management of periodontitis. Dental update. 40: 181-193. 16x½ = **[8]***	✓			F	C
QUESTIONS FROM EXAMINATION PAPERS	**Hard**	**Soft**	**Pure**	**Applied**	**Concept / Practice / Generic**
			F / IR	**F / IR**	
QUESTION 5 *"The association of subgingival calculus and periodontal disease has led to the assumption in the past that there is a cause and effect relationship between these two phenomena" (Ower, 2013 Minimally-invasive non-surgical periodontal therapy. Dental update. 40: 289-295).* *Briefly discuss the above statement in terms of the available evidence. (5)*	✓			IR	C
QUESTION 6 *i. You notice a "click" in the TMJ region during your extra-oral examination of a patient. The patient informs you that he has noticed this for the past month. List two questions you would ask this patient as part of the assessment. 2x½ = (1)*	✓			IR	P
ii. Identify and compare behavioural and physical therapies used in the management of temporomandibular disorders (TMDs). 3x2 = (6)	✓			IR	C
iii. Describe the role of the oral hygienist in terms of occlusal and temporomandibular disorders. (3)	✓			IR	C
QUESTION 7 *Briefly compare advice giving and motivational interviewing techniques in chair-side education. [10]*		✓		IR	P
QUESTION 8 *a.Describe the "ugly Duckling " stage. (5)*	✓			IR	C

b.What advice would you give the patient's parents around this stage that their child is experiencing? (3)	✓			IR	C
c. Which permanent teeth do you expect to see in the mouth of a patient who is 9 years old? (2)	✓			IR	C
QUESTION 9 *Mr Jackson has mandible implants with a full removable denture. The denture is held in position onto the implants by a bar-type structure. The patient has not been able to attend his recall visits for the past six months due to ill health. When recording the main complaint of the patient he reports that he has noticed bleeding on several occasions when brushing the implants in the region of the 31 and 41. When asking him about his oral hygiene home care practices he indicates that at this stage only he only manages to brush his teeth and implants as the rheumatism is limiting on his hand movements and he struggles to floss. Mr Jackson wants to know from you if the bleeding around the implants is a serious clinical sign and will he lose his implants. You explain to the patient that it may be peri-implant mucositis or peri-implantitis.* *9.1 Differentiate between Peri-implant mucositis and Peri-implantitis. (5)*	✓			F	C
9.2 Provide the patient with home care instructions on how to clean the bar-type structure and implants. (5)	✓			IR	P
Total of 19 questions	**18**	**1**			

- **Facts – F**
- **Inferential relations – IR**
- **Generic knowledge – G**
- **Practice – P**
- **Concepts - C**

APPENDIX 5

UNIV1 – Example of a page from rulebook

and sedation, local anaesthetics, local anaesthetic techniques, applied pharmacology and prescription (synoptic), emergency procedures.
(c) Basic oral surgery: Sterilisation and disinfection, oral surgical armamentarium, exodontia and related complications, bleeding problems, antrum.
(d) Advanced oral surgery: Apaicectomy, impactions, electro and cryosurgery, soft tissue infections and osteomyelitis, pre-prosthodontic surgery (review).
(e) Basic maxillo-facial surgery: Traumatology, surgical pathology, neuralgias, temporo-mandibular joint derangements.
(f) Advanced maxillo-facial surgery: Micro surgery (review), orthognathic surgery, facial cleft deformities, cranio-facial surgery (review).

OFC 371 Oro-facial surgery 371
Academic organisation: Maxillo-facial and Oral Surgery
Prerequisite: ODO 271, OFC 271, RAD 271, PDL 271, ORD 271, GAP 271, VKM 271, TBW 271
Contact time: 1 p (2 h) (30 weeks)
Period of presentation: Year
Language of tuition: Double medium **Credits:** 6
Module content:
This module is a continuation of (OFC 271) Orofacial surgery 271 and consists of clinical work only.

OFC 470 Oro-facial surgery 470
Academic organisation: Maxillo-Facial and Oral Surgery
Prerequisite: GNK 388,MDB 370,TGG 370,FSG 370,FAR 370,RAD 370,TBW 370,PDL 370,ODO 370,DFA 370
Contact time: 2 ppw 1 lpw 1 dpw
Period of presentation: Year
Language of tuition: Both Afr and Eng **Credits:** 41
Module content:
(a) Surgical anatomy: Applied surgical anatomy.
(b) Examination, anaesthesia, distress: Examination of a surgical patient, stress control and sedation, local anaesthetics, local anaesthetic techniques, applied pharmacology and prescription (synoptic), emergency procedures.
(c) Basic oral surgery: Sterilisation and disinfection, oral surgical armamentarium, exodontia and related complications, bleeding problems, antrum.
(d) Advanced oral surgery: Apaicectomy, impactions, electro and cryosurgery, soft tissue infections and osteomyelitis, pre-prosthodontic surgery (review).
(e) Basic maxillo-facial surgery: Traumatology, surgical pathology, neuralgias, temporo-mandibular joint derangements.
(f) Advanced maxillo-facial surgery: Micro surgery (review), orthognathic surgery, facial cleft deformities, cranio-facial surgery (review).

OFC 570 Oro-facial surgery 570
Academic organisation: Maxillo-Facial and Oral Surgery
Prerequisite: TBW 470,ODO 470,MFP 470,PDL 470,DFA 470,OFC 470,PTK 470,GAP 470,TMZ 470
Contact time: 2 ppw 1 lpw 1 dpw
Period of presentation: Year
Language of tuition: Both Afr and Eng **Credits:** 42
Module content:
(a) Surgical anatomy: Applied surgical anatomy.

(b) Examination, anaesthesia, distress: Examination of a surgical patient, stress control and sedation, local anaesthetics, local anaesthetic techniques, applied pharmacology and prescription (synoptic), emergency procedures.
(c) Basic oral surgery: Sterilisation and disinfection, oral surgical armamentarium, exodontia and related complications, bleeding problems, antrum.
(d) Advanced oral surgery: Apaicectomy, impactions, electro and cryosurgery, soft tissue infections and osteomyelitis, pre-prosthodontic surgery (review).
(e) Basic maxillo-facial surgery: Traumatology, surgical pathology, neuralgias, temporo-mandibular joint derangements.
(f) Advanced maxillo-facial surgery: Micro surgery (review), orthognathic surgery, facial cleft deformities, cranio-facial surgery (review).

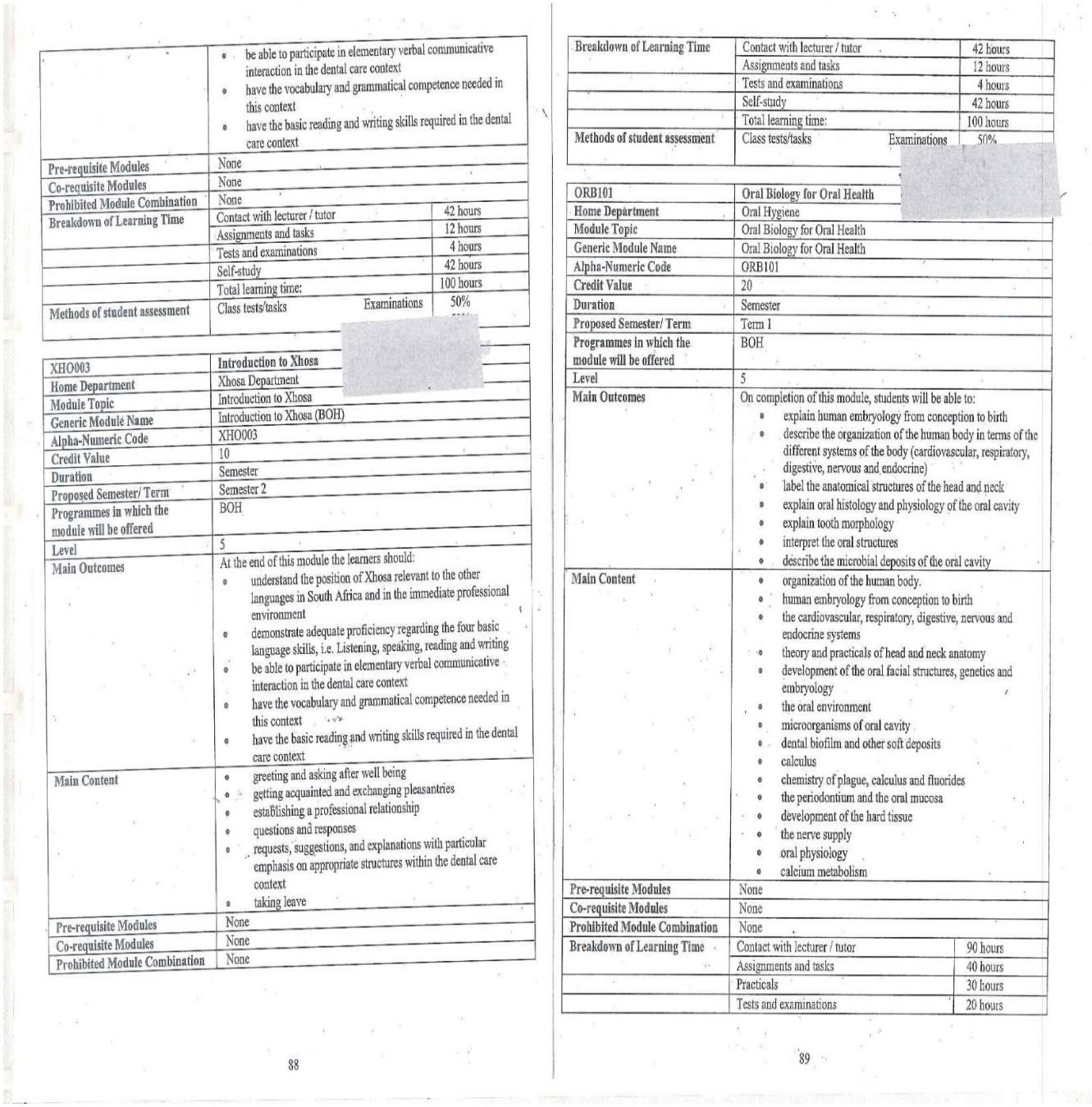
OFT 470 Oro-facial surgery 470
Academic organisation: Maxillo-Facial and Oral Surgery
Contact time: 1 dpw 1 lpw 2 ppw
Period of presentation: Year
Language of tuition: Both Afr and Eng **Credits:** 13

ORD 170 Orthodontics 170
Academic organisation: Orthodontics
Contact time: 1 dpw 1 lpw 1 other per week 1 ppw
Period of presentation: Year
Language of tuition: Both Afr and Eng **Credits:** 10
Module content:
The module in dento-craniofacial anomalies, will empower the newly qualified oral hygienist to recognise and refer limited developmental and structural abnormalities of the growing and mature dento-craniofacial structures.

ORD 171 Orthodontics 171
Academic organisation: Orthodontics
Contact time: 1 ppw
Period of presentation: Semester 2
Language of tuition: Double medium **Credits:** 9
Module content:
This module will empower the oral hygiene student to recognise and refer limited developmental and structural abnormalities of the growing and mature dento-craniofacial structures. It will furthermore provide the student with the knowledge and skills to perform orthodontic procedures pertaining to the scope of oral hygiene. This module will comprise lectures only.

ORD 271 Orthodontics 271
Academic organisation: Orthodontics
Contact time: 1 p (2 h) (30 weeks)
Period of presentation: Year
Language of tuition: English **Credits:** 6
Module content:
This module will empower the oral hygiene student to recognise and refer limited developmental and structural abnormalities of the growing and mature dento-craniofacial structures. It will furthermore provide the student with the knowledge and skills to perform orthodontic procedures pertaining to the scope of oral hygiene. The module consists of lectures and clinical work.

UNIV2 – Example of a page from rulebook



	• be able to participate in elementary verbal communicative interaction in the dental care context • have the vocabulary and grammatical competence needed in this context • have the basic reading and writing skills required in the dental care context
Pre-requisite Modules	None
Co-requisite Modules	None
Prohibited Module Combination	None
Breakdown of Learning Time	Contact with lecturer / tutor 42 hours Assignments and tasks 12 hours Tests and examinations 4 hours Self-study 42 hours Total learning time: 100 hours
Methods of student assessment	Class tests/tasks Examinations 50%

XHO003	**Introduction to Xhosa**
Home Department	Xhosa Department
Module Topic	Introduction to Xhosa
Generic Module Name	Introduction to Xhosa (BOH)
Alpha-Numeric Code	XHO003
Credit Value	10
Duration	Semester
Proposed Semester/ Term	Semester 2
Programmes in which the module will be offered	BOH
Level	5
Main Outcomes	At the end of this module the learners should: • understand the position of Xhosa relevant to the other languages in South Africa and in the immediate professional environment • demonstrate adequate proficiency regarding the four basic language skills, i.e. Listening, speaking, reading and writing • be able to participate in elementary verbal communicative interaction in the dental care context • have the vocabulary and grammatical competence needed in this context • have the basic reading and writing skills required in the dental care context
Main Content	• greeting and asking after well being • getting acquainted and exchanging pleasantries • establishing a professional relationship • questions and responses • requests, suggestions, and explanations with particular emphasis on appropriate structures within the dental care context • taking leave
Pre-requisite Modules	None
Co-requisite Modules	None
Prohibited Module Combination	None

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Breakdown of Learning Time	Contact with lecturer / tutor	42 hours
	Assignments and tasks	12 hours
	Tests and examinations	4 hours
	Self-study	42 hours
	Total learning time:	100 hours
Methods of student assessment	Class tests/tasks Examinations	50%

ORB101	**Oral Biology for Oral Health**
Home Department	Oral Hygiene
Module Topic	Oral Biology for Oral Health
Generic Module Name	Oral Biology for Oral Health
Alpha-Numeric Code	ORB101
Credit Value	20
Duration	Semester
Proposed Semester/ Term	Term 1
Programmes in which the module will be offered	BOH
Level	5
Main Outcomes	On completion of this module, students will be able to: • explain human embryology from conception to birth • describe the organization of the human body in terms of the different systems of the body (cardiovascular, respiratory, digestive, nervous and endocrine) • label the anatomical structures of the head and neck • explain oral histology and physiology of the oral cavity • explain tooth morphology • interpret the oral structures • describe the microbial deposits of the oral cavity
Main Content	• organization of the human body. • human embryology from conception to birth • the cardiovascular, respiratory, digestive, nervous and endocrine systems • theory and practicals of head and neck anatomy • development of the oral facial structures, genetics and embryology • the oral environment • microorganisms of oral cavity • dental biofilm and other soft deposits • calculus • chemistry of plague, calculus and fluorides • the periodontium and the oral mucosa • development of the hard tissue • the nerve supply • oral physiology • calcium metabolism
Pre-requisite Modules	None
Co-requisite Modules	None
Prohibited Module Combination	None
Breakdown of Learning Time	Contact with lecturer / tutor 90 hours Assignments and tasks 40 hours Practicals 30 hours Tests and examinations 20 hours

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APPENDIX 6

Questionnaire of full time Oral Hygiene lecturers on knowledge, curriculum and the profession

Demographical information

1. Age: ☐ 25 – 35yrs ☐ 36 -45yrs ☐ 46 – 55yrs ☐ 56 - 65yrs

2. Gender: ☐ Female ☐ Male

3. What year did you qualify as an oral hygienist? ……..

4. Qualifications and year obtained

5. How many years of experience do you have teaching Oral Hygiene students? .....yrs.

6. Indicate the degree to which any one of the items below has prepared you to teach Oral Hygiene students?

Practice experience

Very much ☐ ☐ ☐ ☐ ☐ Not at all

OH diploma / OH degree

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Other qualification

Very much ☐ ☐ ☐ ☐ ☐ Not at all

In- house educational courses (specify)……..

Very much ☐ ☐ ☐ ☐ ☐ Not at all

7. Indicate the **teaching** area(s) / subject(s) / modules you are most specialised in.

8. Indicate the **research** area(s) you are most interested in.

Knowledge

9. Indicate which resources you get your Oral Hygiene knowledge from?

Dental companies

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Textbooks

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Internet websites

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Journal publications

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Conferences

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Other (specify)……

Very much ☐ ☐ ☐ ☐ ☐ Not at all

10. Which text books are you currently using? (*Tick each textbook used, specify whether prescribed or recommended and tick most frequently used)* **Add any other not on this list.**

Title & Author	Yes, I use this book	Prescribed or recommended	Frequently used
1. Clinical practice of the dental hygienist. E. Wilkins			
2. Dental hygiene theory and practice. Darby and Walsh			
3. Dental assisting- A comprehensive approach. Phinney and Halstead			
4. Primary preventive Dentistry. Harris, Garcia-Gordoy and Nielsen Nathe			
5. Fundamentals of periodontal Instrumentation. Nield-Gehrig			
6. Comprehensive review of dental hygiene. M. Darby			
7. Contemporary dental hygiene practice. Phagan-Schostok and Maloney			
8. Periodontology for the dental hygienist. Perry and Beemsteboer			
9. Primary Health Care. C. Pine			

10. Health Promotion Practice and Theory. McDowall, Bonell and Davies			
11.			
12.			

11. Explain *why you think these textbooks are relevant* to your course/module.

12. Think about the course/module you are teaching this semester and *name the journals* you are most using articles from.

13. Do you believe that Oral Hygiene has a distinctive specialisation compared to dentistry or other disciplines? Explain what it is and why you say so.

14. Oral Hygiene knowledge has been borrowed from various disciplines; indicate how much knowledge / content you think comes from each of the following below.

Dentistry

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Anatomy

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Pathology

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Microbiology

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Nursing

Very much ☐ ☐ ☐ ☐ ☐Not at all

Psychology

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Sociology

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Education

Very much ☐ ☐ ☐ ☐ ☐ Not at all

Other (specify)……

Very much ☐ ☐ ☐ ☐ ☐ Not at all

<u>Curriculum</u>

15. Which courses / subjects/ modules do you regard as the most and least important in your Oral Hygiene curriculum?

16. Name the key concepts your students are taught in **your** course (choose the course **you like teaching most**, name the course and list the key concepts/ models from that course)

Course/ module	Key concepts

17. How much involvement have you had with curriculum planning and design?

Very much ☐ ☐ ☐ ☐ ☐ Not at all

18. What type of involvement have you had in curriculum planning and design?

Professionalism

19. What kind of qualified oral hygienist do you want to produce in the South African context?

20. According to the ADHA the main roles of an oral hygienist is; clinician, educator, advocate, manager, and researcher. What do you regard as the main roles of the practicing oral hygienist in South Africa?

Role	**Tick which applies**	**Rank in order of importance - most important (1) to least important (5)**
Clinician		
Manager		
Researcher		
Educator		
Advocate		

21. There are two models of clinical practice an oral hygienist could take (Darby). The Occupational model, here Oral Hygiene is viewed as technical and the oral hygienist is perceived as an auxiliary who performs duties under the supervision of a dentist. The Professional model on the other hand, views Oral Hygiene as knowledge based, the hygienist is perceived to be responsible in decision making about the care being offered. *Which model do you think oral hygienists use in practice in SA? (Explain why you think so)*

22. What do you think of our links / relations with other professional fields? (e.g. Nursing)

23. Does SA Oral Hygienists value research activity as basis for practice? Explain your answer.

Thank you for participating in this survey and for your valuable time and inputs!!

APPENDIX 7

Participant information letter

27 August 2012

Dear Colleague in Oral Hygiene Training

I am currently undertaking a Master's thesis in Education at the University of Witwatersrand, and have to complete a research project in fulfilment of this degree. The aim of this project is to examine South African Oral Hygiene lecturers' perceptions of knowledge and curriculum and its implications for the status of the profession. I hope that the findings of this study will be useful to all Oral Hygiene lecturers and will support our efforts to improve teaching and learning strategies.

I would like to invite you to participate in this research study. In the initial phase of this study, you will be asked to:

- complete a questionnaire which should require approximately 30 – 45minutes to complete, and
- provide curriculum documents (e.g. course outlines and assessment tasks) for analysis by me.

After this process two or three participants from your institution will be selected to participate in a once-off audio recorded semi-structured interview which should be carried out in approximately 45 – 90minutes. The audio-recording of the interview will enable me to record your responses and transcribe them verbatim and thus will enhance the accuracy of my analysis. The data collection will take place during the months August to November 2012.

Please note that your participation is voluntary, and should you decide to participate you will be allowed to withdraw from the study at any time without any disadvantage. Your anonymity and confidentiality will be protected through the use of pseudonyms and your name will not be used in the final report. Any reference to your personal information that might allow someone to guess your identity will be removed. I would also like to ensure you that this study will not be evaluating your teaching for any purpose outside of this research study and the information will not influence or be used as an evaluation of your professional development within the institution. Data from this study may be used for publication in journals or academic conferences.

Your participation in this study will be greatly valued and appreciated. Should you require any further information, do not hesitate to contact me, my contact details are provided below. If you agree to participate in this research project please complete the consent forms attached and sign in the spaces provided.

Yours sincerely

Glynnis Vergotine