GRADUATES' PERCEPTIONS OF AN UNDERGRADUATE OPTOMETRY PROGRAM AT A TERTIARY INSTITUTION: A QUALITATIVE STUDY

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I Nishanee Rampersad declare that

(i) The research reported in this dissertation, except where otherwise indicated, is my original work.

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_____   _____

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To my mother and father, thank you for bearing with me through this journey.

I am extremely grateful to my supervisor Ms Frances O' Brien for accepting me as her student. I will always be indebted to you for your generous support, kind words of encouragement and guidance throughout this project.

Bhagwan, all of this is possible by your grace. I am only your servant and you are my guiding light; my shepherd.

To my dearest friend Bharat, no words do justice to the gratitude owed to you … please accept this as sign of my appreciation for showing me the light and rescuing me from the darkness.

Abstract

The aim of this study is to explore the views of recent optometry graduates, from the University of KwaZulu-Natal, towards the professional education and training program they had experienced. The optometry program aims to produce graduates who are equipped with the necessary knowledge and clinical skills to contribute to the health care needs of society within the field of eye care (Discipline of optometry, 2005). Within this program, individual modules are evaluated biannually by registered students. Thus far, there has been no attempt to explore the views of graduates once they have entered professional practice. Previous studies involving optometry students and graduates focused more on expectations and perceptions of the profession with little emphasis on perceptions of their education and training experiences in preparing them for professional practice.

This study is an attempt to find out the relevance of the educational program in preparing graduates for professional practice. In addition, graduates are asked to make recommendations for ways in which the educational program can be strengthened to assist novice professionals to meet the demands of professional practice.

This study involved the graduating class of 2009 presently working in professional practice. Of all participants who were willing to participate in the study, 8 were selected using purposive sampling. Semi-structured interviews are used to explore graduates' perceptions of their undergraduate educational experiences as preparation for professional practice and their recommendations for strengthening the program to provide for the needs of novice professionals. These interviews are conducted individually and last between 35 and 72 minutes. They are analysed qualitatively using the conceptual framework of communities of practice (Wenger, 1998) in which learning is considered as a four-fold concept: learning as (1) engaging in practice, (2) belonging to a community, (3) interrogating the meanings of experiences, (4) becoming and thus creating an identity.

The findings reveal that in general graduates find the content of their professional education and training program to be relevant to their preparation for professional practice and were able to make suggestions for improvement. They were particularly satisfied with their clinical experiences as it allows them to engage with, gain exposure and develop professional identities. Additionally participants value these experiences for the development of other work related skills such as communication, time management, team work and problem solving. Recommendations for strengthening the optometry program are made in light of the proposed program restructuring.

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CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION TO THE STUDY

This study focuses on recent optometry graduates' perceptions of their professional education and training in preparing them for professional practice. Optometry is a primary eye care profession that is concerned with the correction of vision errors, detection and prevention of ocular diseases and the co-management of eye related surgeries. The practice of optometry is often compared to both art and science (Adams, 2007). Professional practice requires the art of careful observation and integration of presenting symptoms (reported by the patient) to clinical signs revealed through the performance of clinical tests in order to work through the process of multiple hypothesis testing. In this way, both critical thinking and problem solving skills are used to make a diagnosis and subsequently formulate an appropriate management plan.

Optometry education is currently offered at four universities in South Africa. These universities include the University of KwaZulu-Natal (UKZN), the University of Limpopo, the University of Johannesburg and the University of the Free State. Since its humble beginnings at a tertiary educational level in 1930 (Penisten & Hesselmark, 1992), the optometry profession has experienced vast growth within its scope of practice under the auspices of the South African Optometric Association. This expanding scope of practice has challenged both optometrists and professional educational programs. Ongoing program evaluations of these educational programs at universities are important in light of the challenges of an expanding scope of practice together with enhancements in technology.

Specifically the optometry educational program in KwaZulu-Natal started in 1980 at the former University of Durban-Westville. On the 1st of January 2004, the University of Durban-Westville and the University of Natal merged to form the UKZN. From its inception, in 1980, the optometry educational program has been offered annually and requires a minimum period of four years for completion.

The first two years of the optometry educational program consists of basic science and preclinical modules, followed by two years of intensive clinical training. The basic science and preclinical modules are necessary for a sound foundational basis for clinical modules and to teach ways of 'how to think' or engage in problem solving processes (Super, 1989). Examples of basic science modules include introductory biology, mathematics and statistics for natural sciences, physical science for optometry, computer literacy, general principles of chemistry and chemical reactivity, biochemistry for optometry, microbiology for optometry, anatomy and physiology. The basic science modules are taught by service disciplines across the university and are concentrated more in the first and second years of the optometry program.

On the other hand, the preclinical and clinical science modules are taught throughout the second, third and final years of the program and may be further sub-classified as either visual science or clinical optometry. The visual science modules, for example physiological optics and neurophysiology of vision, have a greater focus on the neural and physiological basis of vision and being able to see. The clinical modules consist of theoretical, practical and clinical components. The practical component entails students learning specific practical skills and linking these skills to their theoretical knowledge in preparation for the clinical component whereby they perform visual and ocular examinations on patients.

Clinical training includes both the generalized and specialty areas of optometry education. The generalized area consists of learning about and performing visual and ocular examinations on patients that present for contact lenses and routine eye examinations. The specialty areas consist of learning about and performing visual and ocular examinations on patients in paediatric vision, low vision and binocular vision clinics. Exposure to clinical training has long been recognized as vital to the development of novice optometrists as it exposes students to the types of environments, patients and responsibilities that they are likely to encounter in professional practice (Super, 1989).

Clinical training occurs in the UKZN in-house (internal) optometry clinic whereby students perform visual and ocular examinations on patients. The patients that attend the internal clinics are examined, in the respective areas outlined above, depending on their cognitive levels, visual characteristics and needs. Additionally, students perform visual and ocular examinations on patients at clinical sites off campus (external clinics). These external clinics take the form of community based programs and include performing visual and ocular examinations at public hospitals, community care centers and the Phelophepa health care train. The Phelophepa health care train was established in 1993 by the State as a primary health care train to provide eye care services to rural communities in South Africa. Hansraj (2009) reported that clinical training at the internal and external clinics served as a source of both experience and knowledge for undergraduate optometry students. In the final year of the program, students working in groups, also undertake a research study in which they are required to conceptualize, conduct and produce a report of the study undertaken. The figure below represents an outline of the current optometry program at UKZN as described above.
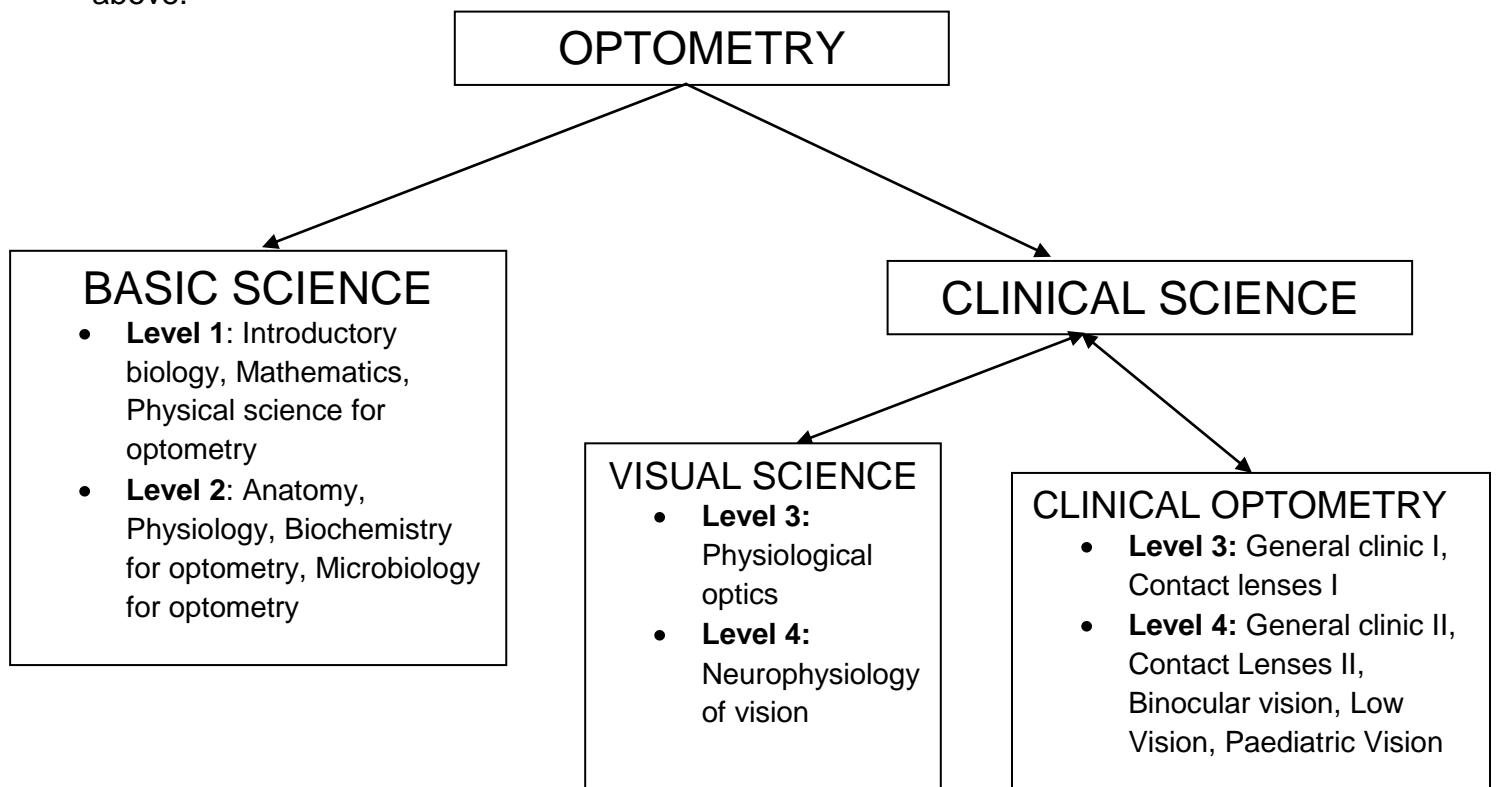
Figure 1: **A schematic illustration of the current undergraduate optometry program**

For each of the four years of the program there are predetermined modules that students are required to successfully complete in order to proceed towards the qualification. Upon completion of all the modules and requirements of the degree program, students are thereafter permitted to enter professional practice. Unlike with other health care professions, for example medicine, pharmacy and occupational therapy, this occurs immediately after the period of study as optometry graduates are not required to perform a community service component to their qualification. Though, similar to other health care professions, optometrists are mandated to engage in professional development activities whilst in professional practice.

There are different sectors within which a graduate may practise within the scope of optometry. This includes working within the academic sector, working within the public sector or lastly working within the private sector as either a locum (temporary) or a permanent optometrist. Due to the different contexts and job demands of each of these sectors of employment, the resulting identities of optometrists may be slightly different even though they all revolve around the central core of being able to provide quality eye care.

Within the program, students' knowledge and skills are strengthened by consultation with various textbooks, journal articles and recommended readings throughout the four years of training. There are a total of twenty optometry related modules that are taught in-house within the discipline and on completion are evaluated, by students, using a structured questionnaire. Thus far there has been no attempt to either evaluate the entire optometry educational program as an entity or to evaluate graduates' levels of satisfaction with their professional education and training in preparing them for professional practice.

From the time of its inception, the optometry program has been accredited by the Health Professions Council of South Africa (HPCSA) with the last accreditation taking place in 2006. In 2008, an initiative headed by the Faculty of Health Sciences (FHS) at UKZN, aimed to evaluate the health science education and training programs (optometry

included). This was achieved using a questionnaire in which employers of graduates, professional associations and key role players in the professions were surveyed regarding the educational programs. Interestingly this study by the FHS excluded recent graduates from the study sample (T. McInerney, personal communication, May 1, 2008). To date the results of this study have not yet been made available.

1.2 RATIONALE FOR THE STUDY

This study aims to give recent optometry graduates a voice and enable them to disclose their perceptions of their professional education and training from the advantageous position of having worked for a short while in profession practice. The intent is to go beyond the routine practice of module evaluations, which unlike this study, focus on specific modules of the program in isolation. Examining the optometry program more broadly allows a profile of the strengths and weaknesses of the program as an entity, as perceived by recent graduates to be developed. Thus this study attempted to find out the relevance of the content of the professional education and training program and the degree of satisfaction recent optometry graduates feel towards the current program at UKZN. Systemic evaluations of health care educational programs are important as they assess the ability of education and training programs to prepare its graduates for professional practice (Hodgetts et al., 2007)

Few studies have focused on optometry graduates' perceptions of their professional education and training at university. Previous studies related to optometry students have considered other aspects of the optometry profession for example, students' expectations for employment and remuneration together with concerns over lifelong learning (Fine, 1997; Oduntan, Madu & Baker, 1999; Oduntan, Louw, Moodley, Richter & van Poser, 2007).

Two such studies have been conducted at the former University of the North (UNIN) (Oduntan et al., 1999) and the former Rand Afrikaans University (RAU) (Fine, 1997) with the focus being students' perspectives of the profession and their expectations and anxieties associated with entering professional practice the following year. Moreover,

none of these studies have examined the perceptions of these students once they had made the transition from university to the workplace and in essence have some sense of what is required in the workplace. Interestingly, consistent with the methodology used in the initiative by the FHS in 2008 to evaluate the optometry program, both of these studies used self administered questionnaires for data collection. Additionally, final year optometry students were used in both study samples and thus these studies focused more on their perceptions of the profession and less on their perceptions of their professional education and training.

Descriptive research concerning optometry graduates' perceptions of their professional education and training is scarce within South Africa and internationally. Specifically at UKZN, evidence is often limited to pass rates throughout the four years of training. What is more concerning is that, as mentioned previously, a great majority of optometry graduates, with the exception of a few who chose to enter other degree programs, enter directly into professional practice immediately after taking the Hippocratic oath on completion of the program. As a result, these optometry graduates are required to make the transition from student to professional within a relatively short period of time and essentially move from one "activity system" (university) to another (workplace) in this period (Le Maistre & Paré, 2004).

In general the complexity of this transition from university to the workplace has been the focus of much literature (Candy & Crebert, 1991; Graham & McKenzie, 1995; Holton, 1999; Illeris, 2009; Le Maistre & Paré, 2004; Martin, Milner-Home, Barrett, Spalding & Jones, 2000; Perrone & Vickers, 2003). Specifically for the health care professions, this transition from student to professional has been well documented for example in occupational therapy (Rugg, 1996; Sutton & Griffin, 2000; Tryssenaar, 1999; Tryssenaar & Perkins, 2001), medicine and nursing (Cave, Woolfe, Jones & Dacre, 2009; Holden & Hamblett, 2007; Macnab, Martin, Duffy & Murray, 1998), physical therapy and sport science (Sleap & Reed, 2006). However, when considering the optometry profession as one of the health care professions, limited information is available on the transition students make into professional practice.

As a result of optometry graduates directly entering the workplace, with little if any supervision following their professional education and training, issues of competence and preparedness, reflection of their education and training together with self evaluation are always highlighted from an educational perspective. All practicing optometrists within South Africa are required to be registered with the HPCSA and there are various rules which govern how one is expected to conduct oneself within professional practice.

Statistical data obtained from the HPCSA showed a steady rise in the number of practicing optometrists from 2401 in the year 2004 to 2915 in the year 2008 (Health Professions council of South Africa, n.d.). Unfortunately because all practicing optometrists are required to be registered irrespective of the sectors of employment, the data from the HPCSA was unable to indicate exactly how many optometrists are within the academic, public and private sectors. Anecdotal reports suggest that the vast majority is located within the private sector and the least amount within the academic sector of employment.

1.3 IMPACT OF THE STUDY

Optometry like many of the other health care professions has undergone various changes within its scope of practice. These changes are as a result of significant advances in health-related technologies as well as the concurrent changes in expectations of health care professionals from people and society. Specifically, the optometry scope of practice, within South Africa, has transformed in the last 5 to 10 years. Qualified optometrists are now in a fortunate position of being able to examine school going children and prescribe and use certain diagnostic drugs and medication. Furthermore qualified optometrists will soon be allowed to include therapeutics into their scope of practice (Health Professions Council of South Africa, 2008). As a consequence of the above, the optometry professional education and training program at UKZN is going to be restructured to incorporate the instruction of therapeutics.

It was thus an opportune time to undertake this study as it could assist in tailoring the optometry education and training program at UKZN such that graduates are given every

chance to succeed in any relevant workplace. Therefore it is vital that graduates be given voice so that their perceptions of how their professional education and training prepared them for professional practice become apparent. Thus this study may have important implications for the professional education and training program at UKZN, current and prospective students, graduates and staff.

Considering the above, an innovative approach was used to explore recent graduates' perceptions of their professional education and training as such a study design aimed to provide insight and add to the limited literature available. In addition, as a staff member involved in the teaching and learning practices at UKZN, one is often left wondering whether graduates are satisfied with their professional education and training in preparing them for professional practice. In my association with the discipline at UKZN, thus far no study has been conducted to assess graduates levels of satisfaction with their professional education and training. As a result, I cannot help but feel that such research studies can only serve to benefit the UKZN optometry program at a micro-level and the optometry profession at a macro-level. Thus the purpose of this study is to explore the perceptions of recent optometry graduates of their professional education and training at UKZN and subsequently make recommendations for strengthening the current optometry educational program. It is felt that this will assist with the process of program development and restructuring which is planned.

1.4 KEY RESEARCH QUESTIONS

This research aimed to ascertain the perceptions of graduates towards the UKZN optometry program as preparation for professional practice. To achieve this aim, the following key research questions were posed:

1. In what ways do graduates perceive that the knowledge and clinical skills comprising the optometry program provide for the needs of professional practice?

2. How do graduates believe the program can be strengthened to meet the demands of professional practice?

1.5 OVERVIEW OF THE DISSERTATION

In chapter 1, the background, rationale and context of the study were outlined. A gap in the knowledge of how optometry graduates perceive the professional education and training program at UKZN as preparation for professional practice was identified.

This dissertation continues with a literature review and sets out a conceptual framework for the study in chapter 2. Thereafter, the research methodology and methods used in this study are described in chapter 3.

In chapter 4, the data produced in this study are presented in the form of data tables. These data tables are interspaced by sections of analytical text which facilitated description, discussion and interpretations of the data. The final chapter contains the conclusions of this study, recommendations for program planners and suggestions for future research.

1.6 CONCLUSION TO THE CHAPTER

This chapter presented the background to this study by providing a description of the current optometry program at UKZN. Additionally the need for such studies focusing on optometry graduates after they have entered professional practice was highlighted. The discussion then proceeded to the impact the findings of this study are likely to have in light of the proposed restructuring of the optometry professional education and training program at UKZN. The chapter ended with the key research questions and an overview of this dissertation.

CHAPTER 2
LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 INTRODUCTION TO THE CHAPTER

As set out in chapter one, this study focuses on the optometry education and training program at UKZN. In exploring the nature, relevance, structure and extent to which the optometry program prepares a student for professional practice, I have prioritized the views of recent graduates. Thus this chapter contains a discussion and review of the relevant literature as it related to this study. This process involved exploring related research studies focusing on students' and graduates' feedback and evaluation of educational programs to provide the background to this study. To this end, aspects of relevant research studies involving both optometry and non-optometry students and graduates have been highlighted. Thus the purpose of the chapter is to present a review of the literature related to the following:

- student and graduate feedback at universities
- current practices of feedback in optometry education at UKZN
- methodology and findings of previous studies involving optometry students and graduates
- methodology and findings of previous studies involving non-optometry students and graduates
- studies focusing on the transition from university to the workplace
- perception of skills required in the workplace

2.2 STUDENT AND GRADUATE FEEDBACK AT UNIVERSITIES

Considering optometry graduates' views of their professional education and training as the focus of this study, it was deemed appropriate to begin the discussion with a brief overview of the process of feedback and evaluation of educational programs at universities. Student and graduate collection of feedback has increasingly become a practice of normality at universities (Harvey, 2001a; Harvey, 2001b; Kerridge & Mathews, 1998; Martin et al., 2000; Teichler, 2000). Possible reasons suggested for engaging in such processes include massification (Tynjala, Valimaa & Sarja, 2003),

evolving roles of institutions and an emphasis on issues of quality, quality assurance and accountability (Harris, Adamson & Hunt, 1998; Kerridge & Mathews, 1998; Palihawadana & Holmes, 1999; Teichler, 2000).

Common areas in which student and graduate feedback are collected include perceptions of teaching and learning (Kerridge & Mathews, 1998; Leckey & Neill, 2001; Shevlin, Banyard, Davies & Griffiths, 2000), learning environments and provision of and access to learning and support facilities (Harvey, 2001b; Leckey & Neill, 2001). There are many levels at which student and graduate feedback may be collected and these include, but are not limited to, institutional, faculty, program and module levels. To obtain student and graduate feedback, both quantitative and qualitative methods may be used. Some of these methods include questionnaires, focus group discussions, interviews and student-staff consultative committees (Kerridge & Mathews, 1998; Leckey & Neill, 2001).

Questionnaires, particularly at the module level, are the most commonly used method for the purpose of feedback and evaluation (Leckey & Neill, 2001; Shevlin, Banyard, Davies & Griffiths, 2000; Winter-Hebron, 1984). Even though there exists a heightened interest in student and graduate feedback at universities, some researchers (Kerridge & Mathews, 1998 Rowley, 1995) have argued that methodologies used for these purposes are sometimes inadequate in that information generated is often superficial and limited. This view was supported by Palihawadana and Holmes (1999) who claimed that the use of standardized questionnaires, for purposes of feedback and evaluation, fail to provide the necessary insight needed.

Kerridge and Mathews (1998) and Rowley (1995) further argued against the validity of considering students as one homogenous group and secondly the extent to which this group are able to provide apt judgments on issues of evaluation and feedback. Thus Spiel, Schober and Reimann (2006) proposed that for comprehensive information of an educational program, one has to engage in practices beyond just conducting evaluations using questionnaires completed by students.

Additionally the subsequent group from which information for the purposes of feedback and evaluation are obtained and the timing of this process are also recognized as important. According to Kerridge and Mathews (1998), students may be unaware of the conceptual and theoretical basis of the module or program they are attempting to evaluate. As a result, they suggested, students are more likely to concentrate and place emphasis on peripheral issues such as seating, physical environments, lighting, provision of refreshments and access to module content rather than the core conceptual and theoretical understandings inherit in the module or program of study (Kerridge & Mathews, 1998). Shevlin et al., (2000) further supported this point, arguing that students are not trained in ratings, evaluations and psychometrics and thus questioning their abilities to successfully negotiate an evaluation questionnaire.

From the discussions above, it seems like both the timing and the group from which feedback and evaluation information are obtained, should be seen as an amalgamated concept and not as separate entities. For this reason it was recommended that graduates' involvement in such studies was an improved approach for evaluation of educational programs in terms of their content, relevance and structure in light of preparation for the workplace (Macnab et al., 1998; Spiel et al., 2006).

2.3 CURRENT PRACTICES OF FEEDBACK IN OPTOMETRY EDUCATION AT UKZN

As mentioned above student and graduate feedback is an important facet of universities. Within the domain of optometry education, student and graduate feedback has a twofold function. Firstly this information can be used to guide program planning decisions aimed at improvement. Secondly it can be a valuable source of information to potential students and major stakeholders within the profession (Harvey, 2001b).

To this end, the optometry discipline at UKZN uses two questionnaires for the purpose of feedback and evaluation. The first is aimed at the module level involving students whilst the second at institutional level involving graduates. A brief discussion of these questionnaires highlights that the frequency, purposes and content of these two questionnaires differ vastly.

<u>Questionnaire one: The module evaluation questionnaire</u>

At UKZN, module evaluation questionnaires are given to registered students for completion towards the end of the module concerned. This questionnaire forms part of the discipline's quality assurance procedure. The standardized questionnaire currently used was constructed internally within the discipline of optometry in 2005 (R. Hansraj, personal communication, July 21, 2010). There are 48 items in total, 4 of which are open-ended questions whilst the remaining 44 statements utilize a Likert scale. This questionnaire is designed to provide feedback and evaluation in the following areas:

- organization, administration and delivery of the module
- the characteristics and availability of staff involved in the module
- student participation in the module
- assessment and teaching practices in the module
- tutorials and practicals linked to the module

Completed questionnaires are collected via an administrator and sent to the Quality Promotion and Assurance (QPA) unit at UKZN for analysis. The completed student evaluations are then processed and the results, in the form of percentages with responses transcribed verbatim, are sent to the staff involved in the module and the head of the discipline.

For the purposes of module evaluations, Harvey (2001a) re-affirmed that standardized questionnaires are the most commonly used method. Kerridge and Mathews (1998) criticized this method and labeled it inadequate for improving educational programs, even though they argued that standardized questionnaires allow for the production of results. To add to the argument against this method, questionnaires can be completed by any student who is registered for a module. This occurs irrespective of whether that student had engaged with the module in any critical way or even attended! This was consistent to the views of Harvey (2001b) who echoed that module level feedback was too superficial and insufficient for discussion aimed at improvement of educational and training programs.

Yet despite the process of feedback and evaluation being of benefit to academic communities of students and staff, professional governing and regulatory bodies and individuals of society, the module method of evaluation is generally preferred rather than evaluating the entire program as an entity. The optometry discipline at UKZN is no exception and thus far has limited data available on graduates' perceptions of the undergraduate program, whereas individual modules within this program are evaluated biannually in each semester. Spiel et al., (2006) suggested that amongst research studies on feedback and evaluation, there is limited information and a need for evaluation of educational programs as entities. From the literature there are various reasons given for the preference of module evaluations using standardized questionnaires as opposed to evaluating entire programs using qualitative methods. Some of the most common reasons sighted will be briefly outlined below.

Firstly, questionnaires are described as a useful method to gather information in ways that are easy to obtain and handle (Sander, Stevenson, King & Coates, 2000). Secondly questionnaires are a valuable method when trying to obtain information on a large scale (Maree & Pietersen, 2007). Furthermore, by nature of the data collection method, standardized questionnaires allow for a consistent format of raw data. As a result, the data generated are relatively straightforward to analyze and easily subjected to statistical analysis (Sander et al., 2000). Qualitative feedback methods (such as interviews) when compared to standardized questionnaires require more time for data production. Thus it was summarized that qualitative methods for feedback and evaluation are more time consuming in terms of organization, implementation and analysis as opposed to standardized questionnaires (Harvey, 2001a; Harvey, 2001b).

Considering that the aspect of time should also be taken into account especially when evaluating education and training programs, a recommendation was made for feedback and evaluation to be obtained after a period of employment (Sander et al., 2000; Spiel et al., 2006). Thus according to researchers (Kerridge & Mathews, 1998, Sander et al., 2000; Shevlin et al., 2000; Spiel et al., 2006) student evaluations at the end of modules

were considered inadequate for the type of insights needed for purposes of improvement of education and training programs.

Questionnaire two: The graduate opinion questionnaire

At UKZN, the graduate opinion questionnaire is given to all graduates on the day of graduation for completion. Unlike the module evaluation questionnaire which is implemented biannually, the graduate opinion questionnaire is implemented once each year. This questionnaire forms part of the universities quality assurance procedure. The standardized questionnaire used was constructed internally at the QPA unit in 1999 and is reported to have been modified since (Walker & Zank, 2009).

There are 42 questions, 2 of which are open-ended and have space allocated for graduates to respond. Eighteen statements based on graduates' opinions of their educational experiences require responding to a Likert scale. The remaining 22 questions are close-ended and require responding to fixed alternative answers, most of which are yes/no options. This questionnaire is designed to provide feedback and evaluation in the following areas:

- graduates' perceptions of their degree in terms of education, quality of teaching and workload
- graduates current employment status
- graduates plans for further study

Completed questionnaires are collected via research assistants. The findings of this questionnaire, in the form of percentages, graphs and responses transcribed verbatim, are presented in an overall report as well as reports for individual faculties. The FHS report contains the feedback and evaluation obtained from optometry graduates. A major limitation of this report is that since all disciplines within the FHS are included, its results are not specific to optometry graduates. Thus in reading this report it is difficult to determine to what extent graduates from the optometry discipline are being represented and what are their perceptions of the optometry education and training program at UKZN.

2.4 METHODOLOGY AND FINDINGS OF PREVIOUS STUDIES INVOLVING OPTOMETRY STUDENTS AND GRADUATES

A review of the literature showed that most of the previous studies which explored optometry graduates' and students' views of their professional educational and training experiences were conducted within the positivist paradigm. These studies (Fine, 1996; Fine, 1997, Hansraj, 2009; Oduntan et al., 1999; Oduntan et al., 2007) used survey methodologies and self administered questionnaires as data collection methods. Interestingly four of the five previous studies (Fine, 1997; Hansraj, 2009; Oduntan et al., 1999; Oduntan et al., 2007) within the optometry profession have used final year students in the study samples and not graduates working within professional practice.

Fine (1996) is used as a reference in all of the more recent research studies related to optometry education in South Africa. This was the first study in South Africa to trace optometry graduates once they left university and entered professional practice. In this study, Fine (1996) surveyed the 250 graduates, graduating over a period of 10 years at the former RAU, in terms of their involvement, development and financial trends within the profession. The idea to use graduates stemmed from a claim by the researcher that only once optometrists are involved in professional practice can they be critical and provide feedback on their preparation, competence, professional education and training.

In this study by Fine (1996), of the total respondents (93) just under half (48%) replied negatively towards the professional education and training program they had experienced. Specifically, graduates highlighted the inadequacy of the program in terms of their exposure to ocular pathologies. Unfortunately no details were provided in terms of what questions were asked, concerning graduates' perceptions of their education and training, or what types of responses lead to these findings.

From the other results presented in this study by Fine (1996), it seemed that there was greater emphasis on the social and economic development of these graduates after entering professional practice. Thus his results pertained to practice profiles, working hours, income and asset (car, home and practice) ownership rather than their views of

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their professional education and training. Even though he claimed that graduates should be reflective of their education and training upon entering professional practice, this was overshadowed by their economic and financial developments in this study.

Subsequent to this study, four further studies (Fine, 1997; Hansraj, 2009; Oduntan et al., 1999; Oduntan et al., 2007) have been conducted with final year optometry students within South Africa. Fine (1997), surveyed the 1995 final year optometry students (86) at the former RAU. The researcher considered final year students to be most appropriate since they were on the verge of entering professional practice. As a result, he concluded, they were in an ideal position to provide feedback on their educational and training experiences in preparation for professional practice. This in contrast to a previous claim above where the same researcher (Fine, 1996) suggested that only once optometrists are involved within professional practice can they be analytical of their professional education and training in light of their preparation for professional practice.

Additionally in this study, Fine (1997) argued that the optometry profession needed to prepare for the future taking into account the prominent student voice. Thus this was to be the first study in South Africa to explore the attitudes and concerns of final year optometry students towards their chosen profession of optometry and their educational experiences in preparation for professional practice. A response rate of 76% was reported. The results presented primarily dealt with students' future plans for professional practice and perceptions of their final year training and clinical supervision. The questions concerning students' perceptions of their training and clinical supervision were highly structured with most requiring either a 'yes' or 'no' as a response.

In the study by Fine (1997), 63% of respondents reported being dissatisfied with the clinical supervision they received and only 34% considered the profession to be what they originally thought it entailed. About two-thirds (65%) reported being inadequately prepared to enter professional practice and perform visual examinations on patients the following year. The majority of the respondents (84%) evaluated the Phelophepa health care train as a valuable experience in terms of exposure to the profession. In

concluding, Fine (1997) recommended that such research studies should be conducted annually and expanded across other universities that offer optometry education. This he believed would be of benefit in terms of program planning and improvement.

Similar quantitative analytical techniques were used by Oduntan et al., (1999), where the 1997 final year students at the former UNIN were surveyed two years later. These researchers (Oduntan et al., 1999) claimed to have used a questionnaire similar to the one used by Fine (1997) in the abovementioned study. According to these researchers (Oduntan et al., 1999), the questionnaire primarily concerned student demography, financial support and evaluation of the professional education and training they had received. Similar to the argument by Fine (1997), Oduntan et al., (1999) reasoned that it was most appropriate to use students in studies which aimed to improve optometry education and training programs.

Of the total 51 final year students, 46 completed and returned the questionnaire boasting a response rate of 90%. Oduntan et al., (1999) reported that most of the respondents rated their experiences and training in the educational program as fair and good. Interestingly, 63% of respondents reported receiving clinical supervision that was judged to be fair or good. This is in contrast to the same percentage of students at the former RAU who reported being dissatisfied with the clinical supervision they had received.

The respondents in this study agreed with those in the study by Fine (1997) as almost all (98%) evaluated their experiences at the Phelophepa health care train as good or very good. Sixty one percent reported being inadequately prepared to perform visual and ocular examinations on patients in professional practice the following year. Both of these studies required participants only to rate the quality of the supervision received and their preparation for professional practice. They did not have to comment on aspects they felt were limited or missing in their supervision and preparation. When reading these results I was often left wondering as to what were the possible reasons for such responses.

Thus far the two studies (Fine, 1997; Oduntan et al., 1999) reviewed involved final year students in a specific year at individual universities, namely 1995 at the former RAU and 1997 at the former UNIN. In contrast, Oduntan et al., (2007) undertook a national study in which all final year optometry students at all institutions in South Africa were surveyed. This study by Oduntan et al., (2007) aimed to determine the perceptions, expectations, apprehensions and realities of these students. A questionnaire focusing on practice preferences for employment, expected remuneration, future career plans and areas of the optometry scope of practice students felt most and least prepared for was administered to all final year optometry students.

In this study by Oduntan et al., (2007), the researchers presented their results with emphasis on respondents' perceptions of the profession and expectations associated with entering professional practice. Thus the results included, amongst other things, respondents' views of employment opportunities related to financial security, the role of government in providing employment opportunities for optometrists, the scope of optometry practice and their preparation for entering professional practice. By focusing only on perceptions and expectations of the profession, this study omitted students' professional education and training experiences. It can be argued that students' experiences and exposure to the profession during the course of their training can impact on their perceptions of the profession and their preparedness for entry into that profession. In this regard, the study by Oduntan et al., (2007) is in contrast to my study which will take into account participants' educational experiences and their preparation for professional practice.

Hansraj (2009) also reported on a national study in which she surveyed all optometry students (177) attending the Phelophepa health care train. The focus of this study was to determine students' perceptions of the Phelophepa health care train as an external clinical site. For this study, a response rate of 57% was reported with more than 70% of the respondents reporting that the experiences and skills obtained at the Phelophepa health care train were superior to those they had obtained at the internal clinics at their respective universities.

Hansraj (2009) believed that students rated these external clinical experiences as more beneficial due to the varied patient cases, especially ocular pathologies, that they were likely to be exposed to when compared to the patient cases encountered at internal clinics. In this respect, these findings are similar to those reported by Fine (1996) in which graduates recommended that increased exposure to cases of ocular pathology should be incorporated into students' clinical education and training at the university.

Apart from clinical skills, interpersonal, communication and intrapersonal skills were also rated as improved after attending the Phelophepa health care train. Hansraj (2009) thus concluded that clinical training was a vital part of students' professional education as it allowed for them to be sensitized to the needs and problems of their patients. For this reason, the Phelophepa health care train was recommended as a valuable external clinical site for all optometry students. Becoming sensitized as a result of clinical exposure is not specific only to optometry students and was also reported by medical students in other studies (Wilkes, Milgrom & Hoffman, 2002; Satishkumar, Thomas, Tharion, Neelkantan & Vyas, 2007).

In reviewing the optometry literature, it was found that very little emphasis was placed on students' perceptions of the professional education and training program they had experienced. Much of the focus of the previous studies was on students' expectations and perceptions of the optometry profession. Additionally, limited attention has been directed towards graduates in professional practice and their perceptions of the professional education and training program they had experienced.

Specifically within the optometry profession in South Africa, no previous studies were found that linked training experiences with graduates' perceptions of their professional education and training. Cave et al., (2009), argued that perceptions of health care professionals and their levels of preparedness to function as professionals were likely to be influenced by their training experiences in the educational programs they had experienced.

2.5 METHODOLOGY AND FINDINGS OF PREVIOUS STUDIES INVOLVING NON-OPTOMETRY STUDENTS AND GRADUATES

The nature of optometry programs comprising of basic science, preclinical and clinical science modules is consistent with that of medical and nursing programs. When reviewing the literature, it was found that medical schools often engaged in the process of self review of its programs from the perspective of students and graduates. Some of the studies reviewed will now be briefly discussed.

<u>Studies on medical students' and graduates' perceptions of their educational program and professional training</u>

Eyal and Cohen (2006) conducted a comparative study in which medical students and graduates of a Hebrew medical school were surveyed. The study explored the effectiveness of the medical educational program in preparing its graduates and students for professional practice. A questionnaire which focused on the effectiveness of the basic science and clinical science modules in preparation for professional practice was designed. Additionally respondents were asked to rate their overall satisfaction and levels of preparedness for professional practice.

A response rate of 49% was obtained from the 794 questionnaires mailed to students and graduates. The majority of respondents (60-77%) indicated that modules such as physics and chemistry had little relevance to their clinical preparation. On the other hand, anatomy and physiology were rated as vital basic science modules for clinical preparation by 89% of respondents. Overall 60% reported being satisfied with the medical education and training they had received, however only 33% reported that the fundamental knowledge, skills and attitudes needed for professional practice were acquired at the time of graduation. Just over one third of the respondents (40%) indicated that they were not taught sufficient skills needed for professional practice. It was also reported that graduates rated their learning experiences higher when compared to students.

Olupeliyawa et al., (2007), researchers from Sri Lanka, explored the perceptions of recent graduates concerning their final year of training at a Columbian medical school. A mixed method was employed, using focus group discussions and a questionnaire for data collection. The themes of the focus group discussions were used to construct the questionnaire which was mailed to 180 graduates. For this study, a response rate of 33.33% was achieved. It was found that students perceived the learning activities in their final year of training as useful for professional practice. Student-doctor and student-patient relationships had positive influences on student's learning, although some students felt disempowered when supervising doctors criticized them in front of patients. In terms of social environments, students reported being stressed by the high workloads and expectations during the final year.

Hoppe, Persson and Birgegard (2009), researchers from Sweden, explored the views of medical interns towards their educational preparation for professional practice. The researchers (Hoppe et al., 2009) reasoned that, it was most appropriate to include interns in the study sample as they had recently graduated and started work in professional practice. A web-based questionnaire focused on perceptions of the overall structure and content of the program, extent to which the program prepared graduates for practice and the development of essential skills was created. The questionnaire was emailed to 102 graduates and yielded a response rate of 68%. The results indicated that most graduates (82%) were satisfied with the clinical and more especially the final semesters of the medical educational program as opposed to those (38%) who reported being satisfied with the preclinical semesters. A positive correlation was found between graduates who reported being satisfied with the clinical aspects of the program and graduates who reported being prepared for professional practice.

Interestingly, graduates reported being better prepared for communication, history-taking, clinical diagnostic and examination skills as opposed as to skills needed for administration and economic matters. In this respect, these findings are similar to those reported by Sleap and Reed (2006) on sport science graduates who also reported that personal and interactive skills (problem solving, self-confidence, time management,

presentation and communication) had been developed to a greater extent when compared to business skills (commercial awareness, work culture, entrepreneurial and financial skills).

Eighty percent of graduates in this study by Hoppe et al., (2009) reported the link between preclinical and clinical aspects of the medical program as insufficient. Just over half of the respondents (54%) reported being treated respectfully by their supervisors and teachers. Consequently many respondents suggested that improved attitudes and more respect for students, on the part of their supervisors and teachers were needed in the program. Suggestions for improvement outlined by Hoppe et al., (2009) included earlier patient contact in the program, improved integration between preclinical and clinical education and improved clinical supervision for students.

<u>Studies on nursing students' and graduates' perceptions of their educational program and professional training</u>
Similarly studies aimed at exploring nursing students' and graduates' views of their educational programs and training experiences have also been reported (Baramee & Blegen, 2003; Grealish & Ranse, 2009; Happell, 2008; Henderson, Happell & Martin, 2007; Hickey, 2010; Wood, 2010; Zhang & Petrini, 2008).

Wood (2010) reported on a study in which 36 nursing students were surveyed regarding the nursing program they had experienced. Respondents were required to make recommendations for improvement of the program. Similar to other studies (Baramee & Blegen, 2003; Hickey, 2010), students reported clinical exposure, specifically working with more experienced practitioners, as a favorable aspect of their educational program. Even so, a recommendation for improved support at these clinical experiences was suggested. It was further reported that nursing students experienced challenges when required to apply their theoretical knowledge in practice during these clinical experiences. Thus a previous suggestion for improved support and earlier clinical exposure in the program were re-affirmed as possible solutions to this challenge (Wood, 2005).

Australian nursing students' perceptions of clinical experiences were surveyed in a quasi-experimental research study undertaken by Henderson et al., (2007). Questionnaires were administered to 229 nursing students prior to (when undertaking the theoretical aspects) and after being exposed to clinical experiences. The results suggested that students felt better prepared in terms of knowledge, skills and attitudes post their clinical experiences. Additionally, it was recognized that the role of theoretical knowledge was crucial for preparation and success at clinical experiences. It was suggested that students who reported being better prepared theoretically also reported quicker adaption and maximal learning at these clinical experiences, when compared to students who reported being less prepared theoretically.

Nursing students' perceptions of mental health clinical experiences was the focus of a survey study reported by Happell (2008). Results indicated that due to their clinical experiences during their educational training, students reported feeling more prepared overall for their roles within the mental health field. This seemed to support the findings presented above by Henderson et al., (2007) in which better preparation was linked to clinical experiences. Furthermore, it was reported that respondents who rated their preparedness as higher were less likely to feel anxious towards their clinical experiences and professional practice. For this reason, Happell (2008) suggested that clinical experiences are likely to favorably affect health care professionals' preparations and attitudes towards practice, their patients and their chosen professions.

Multidisciplinary studies on graduates' satisfaction towards their educational experiences and preparation for work

Nasser and Abouchedid (2005) studied Lebanese graduates' views of their professional educational and training in light of their preparation for the workplace. In this study a wide range of graduates from disciplines of engineering, medicine and information science were included. The researchers decided to use graduates' levels of satisfaction with their education and training as a proxy for the quality of training these graduates received. As a result, a recommendation to determine other ways in which professional education and training experiences at universities could be evaluated was made.

Similar to the study by Olupeliyawa et al., (2007) a mixed method was employed by using focus group interviews, the themes of which were used to design a structured questionnaire. The study reported that graduates from the medical profession rated their levels of satisfaction with their professional education and training as high. Unfortunately this finding has to be interpreted with some caution as the researchers (Nasser & Abouchedid, 2005) do not report among other things, how many of the sample of 604 graduates were specifically from the medical profession, what types of questions resulted in this finding or what findings were reported by other graduates in terms of their levels of satisfaction with their professional education and training.

Martin et al., (2000), researchers from Australia, conducted a similar study in which they surveyed graduates to determine their levels of satisfaction with their educational experiences and preparation for employment. Graduates ranged from various disciplines including commerce, health, art, humanities, science and technology. Martin et al., (2000) reasoned that exploring graduates' perceptions of their educational experiences and preparation for employment was useful for understanding the relationship between university and the workplace. A structured questionnaire, focused on academic and student support resources, staff attributes and competency development during their education and training was used.

According to the researchers (Martin et al., 2000), respondents reported being satisfied with all aspects of the questionnaire. Students were more satisfied with the development of competencies, staff attributes and academic resources than with student support services. In terms of preparation for employment, respondents from health orientated programs rated their preparation higher as compared to respondents from art and humanities programs. The researchers suggested that this finding may be attributed to health orientated programs providing more of a training experience, with authentic work exposure, as compared to the more generalist programs. To conclude, the researchers (Martin et al., 2000) acknowledged that it is difficult for universities to prepare their graduates for all dimensions of the workplace. However exploring graduates' perceptions of the extent to which they were prepared for the workplace,

could assist universities in increasing the relevance of their educational programs for improved preparation for the workplace.

Thus it seems that very little literature exists on graduates' perceptions of their professional training experiences once they are in the workplace (Nasser & Abouchedid, 2005). Aldrige and Rowley (1998) recommended that studies should be conducted regularly to follow up on graduates and explore the extent to which their professional education and training had equipped them for the workplace. The rationale proposed was that only after entering the workplace, would graduates have a better idea of the skills and knowledge they require to function effectively, thus allowing them to be more critical of their educational and training experiences.

All of the previous optometry studies and most of the non-optometry studies discussed above were similar in that survey methodologies and questionnaire methods were used. Even when open-ended questions were asked (few and far between), probing of students' and graduates' responses was not possible. This probing is important to explore in-depth and subsequently understand the reasons for students' and graduates' responses. The issues of *why* and *how* pertaining to students' and graduates' responses are absent when the nature and methodologies of the abovementioned studies are considered.

2.6 STUDIES FOCUSING ON THE TRANSITION FROM UNIVERSITY TO THE WORKPLACE

One of the major themes of the relationship between university and the workplace is the transition of students between these two environments (Teichler, 2000). This transition from university to the workplace has been the focus of many studies (Agllias, 2010; Cave et al., 2009; Holden & Hamblett, 2007; Le Maistre & Paré, 2004; Schoessler & Waldo, 2006; Smith & Pilling, 2007; Staffan, 2010; Sutton & Griffin, 2000; Tryssenaar, 1999; Tyrssenaar & Perkins, 2001). These studies have featured across many different disciplines including medicine, nursing, commerce, physical therapy, social work and occupational therapy. Particularly within the health care domain, the transition from

student to professional is reported as one that is particularly challenging (Smith & Pilling, 2007; Tryssenaar, 1999; Tryssenaar & Perkins, 2001).

Tryssenaar and Perkins (2001) reported on a qualitative study which involved six occupational and physical therapy graduates. These graduates wrote reflective reports during their final practical experiences as students and then as graduates during their first year in professional practice. Tryssenaar and Perkins (2001) argued that the first year of professional practice, for heath care graduates, consisted of four stages. These included transition, euphoria and angst, reality of practice and adaptation. Analysis of the reflective writings yielded the following themes, which included great expectations about entering practice, issues of competence and reflection on their professional education and training, internal and organizational politics, shock and strategies of adaptation (Tryssenaar & Perkins, 2001). Major challenges identified by the graduates included time management, workload, job searching and administration.

Smith and Pilling (2007), Australian researchers, reported on a study involving fourteen new healthcare graduates from the disciplines of occupational therapy, physical education, physiotherapy, podiatry, social work and speech pathology. Focus group discussions were conducted during these graduates first year of practice to explore the challenges experienced during their transitions to professional practice. The challenges identified included inappropriate time management and communication skills, coping with full time work, patient accountability, decision making related to patient care, reduced access to supervision as compared to being a student and lowered confidence associated with professional practice (Smith & Pilling, 2007).

These findings seemed to be in contrast to those reported by Agllias (2010) concerning new social work graduates. In the study undertaken by Agllias (2010), graduates reported being well prepared for professional practice in terms of communication, teamwork and self-directed learning skills and reported having access to high levels of supervision. These supportive environments were recognized as important to the overall

well-being of new graduates in terms of their adaptation to the workplace (Agllias, 2010; Graham & Shier, 2010).

Studies within the nursing profession have also highlighted the transition students make to professional nurses. Oermann and Moffitt-Wolf (1997) described a study which involved thirty five new nursing graduates. This study aimed to explore their perceptions of clinical practice particularly the stresses and challenges experienced. The most common stresses identified included lack of experience as health care professionals, difficulties with medication and its administration, lack of support and supervision and striving towards personal goals. The challenges experienced included adapting from student to graduate, being exposed to new procedures and situations, interactions with other health care professionals and engaging in problem solving and clinical decision making related to patient care.

Additionally even though the first year of professional practice was identified as stressful, these graduates reported positive emotions such 'excitement', 'being pleased' and 'improved confidence' as being associated with their initial clinical experiences. The excitement, fulfillment and sense of pride reported by these nursing graduates on being able to successfully complete examination tasks and manage their patients has also been reported with other nursing graduates (Schoessler & Waldo, 2006). Oermann and Moffitt-Wolf (1997) recommended that in order to successfully make the transition from student to graduate nurses, opportunities should exist which allow for new graduates to discuss their decisions and patient care with more experienced co-workers and other graduates. Such opportunities were believed to aid in the development of self confidence and promote critical thinking skills.

Godinez, Schweiger, Gruver and Ryan (1999) reported on a similar study, in which the daily feedback sheets (logs) of 27 new graduate nurses were analysed. The analysis revealed the following themes: real work experiences, guidance, transitional processes, institutional context and interpersonal dynamics. According to these researchers, all of the identified themes were interlinked, as real work experiences and guidance from

more experienced nurses provided opportunities for new graduates to develop in terms of their experiences and confidence in the practices of the profession. Additionally as graduates developed in the transitional process, they were constantly engaged in practices within the institutional context in which they were located. Thus institutional context can be thought of as an integration of specific procedures, practices, policies and routines within which these graduates were developing. All four of these themes take place within and contribute to the final theme of interpersonal dynamics.

Graham and McKenzie (1995) reported on a qualitative study which focused on the transition new graduates experienced when entering the workplace. The researchers described this transition as psychologically demanding due to the mixed emotions of optimism and anxiety new graduates experienced when entering the workplace. As a result, this period has been identified as very stressful in the lives of new graduates (Perrone & Vickers, 2003; Polach, 2004). Other factors identified which are believed to exacerbate this transitional process includes personal insecurities in terms of educational experiences, qualifications earned, the change in culture in moving from university to the workplace and loss of contact with friends (Graham & McKenzie, 1995; Polach, 2004).

The change in cultural, between university and the workplace, was believed to have the most significant impact early in a graduates' working life, particularly on the first day of work (Graham & McKenzie, 1995) and then decrease as graduates become familiar with and start to make active contributions to the new environment. Understanding the transition from university to the workplace can also be facilitated by understanding the link between educational programs and its preparation of graduates for the workplace. Two significant issues were identified by Graham and McKenzie (1995) and these included:

- the ways of working and learning in university.
- the match of knowledge and skills to employers' and workplace needs.

Le Maistre and Paré (2004) suggested that both university and workplace knowledge were essential for the career development of professionals. They indicated knowledge gained at university served as a foundational basis on which practical workplace knowledge is built. They reasoned that the objects of learning at university, for example theories, are the means of practice in the workplace (Le Maistre & Paré, 2004). In other words, while in the educational institution, students must understand the theories (that is the outcomes of their endeavors) and in the workplace those theories enable practice to take place.

Optometry students perform visual and ocular examinations on patients under the supervision of qualified optometrists during the course of their professional education and training, and then undertake these visual and ocular examinations on patients unsupervised when in professional practice. Researchers (Magolda, 2008, King, Magolda, Barber, Brown & Lindsay, 2009) have advocated for students development of 'self-authorship' whilst engaging in educational programs. It is believed that self-authorship as an attribute is instrumental to the professional lives of graduates, as, in the workplace, graduates are expected to work independently and engage in decision making processes (Magolda, 2002; Magolda, 2008).

Similar to Le Maistre and Paré (2004), Tynjala et al., (2003) also called for an enhanced relationship between learning at university and learning in the workplace. It was felt that providing opportunities for students to participate in authentic work-like experiences not only fostered the development of professional expertise (Tynjala et al., 2003), but also exposed students to the nature of learning activities characteristic of the workplace. In terms of professional expertise, it was proposed that there exists three essential parts which include theoretical knowledge, practical knowledge and self-regulative knowledge (Tynjala et al., 2003).

Participation in authentic enterprises allowed students two valuable experiences, firstly to engage in experiential learning experiences. That is 'learning by doing' (Kolb, 1984) and secondly to integrate theoretical and practical knowledge (Bromme

& Tillema, 1995; Leinhardt, McCarthy-Young & Merriman, 1995).

The integration of theory and practice was recognized as vital to the development of professionals (Bromme & Tillema, 1995). Thus the two metaphors of learning that Sfard (1998) proposed, namely learning as acquisition and learning as participating, are seen as complementary in the development of professional expertise by students.

2.7 PERCEPTION OF SKILLS REQUIRED IN THE WORKPLACE

Changes in both the university and workplace are forging new relationships between these two environments, particularly in terms of educational experiences, skills development and its transfer to the workplace (Harvey, 2000; Le Maistre & Paré, 2004). The purpose of this section is to highlight some of the skills that are recognized as important for the workplace from the perspectives of employers, graduates and students.

Employers' demands and expectations of graduates have dramatically changed over the last decade. Graduates in the twenty-first century are required to posses both generic and specialist skills (Harris et al., 1998; Hawkins & Winter, 1996). For most professions, including optometry, specific disciplinary knowledge is no longer the only type of knowledge needed to succeed in the workplace. While the specialist knowledge and skills are easier to define and still largely dependent on the field of occupation, it is the generic skills that seem to be attracting more attention from employers (Coll & Zegwaard, 2006; Graham & McKenzie, 1995). Throughout the literature, these generic skills are also referred to as core skills, transferable skills, soft skills, key competencies and attributes (Bridgestock, 2009; Hernandez-March, Martin del Peso & Leguey, 2009; Lane & Bogue, 2010; Mundhenk, 2006; Plack, 2006; Reid, Dahlgren, Petocz & Dahlgren, 2008).

The South African Qualifications Authority (2000) referred to these as critical outcomes and motivated for their inclusion into all educational programs, irrespective of the field of learning, as they are believed to be foundational to the development of lifelong learning.

Some of these skills include but are not limited to the ability to work as part of a team, to be self critical and evaluative, effective use of language and communication, mathematics literacy, effective use of science and technology, critical thinking and problem solving skills (Hawkins & Winter, 1996; South African Qualifications Authority, 2000).

Thus it seems that in addition to specific discipline based knowledge, there is a need for generic competencies to be developed at universities as well (Hernandez-March et al., 2009; Mundhenk, 2006). Specifically for health professionals, the most important generic skills included problem solving and adaptability (Harris et al., 1998). Considering the dynamic nature of a health care professional's career, these skills were believed to facilitate quicker responses to change together with a solution orientated approach (Harris et al., 1998). Additionally, communication skills, both written and verbal were also valued for the development of a health professional (Hilton, Morris & Wright, 1995; Spiel et al., 2006). Plack (2006) described professional behavior as vital for professional practice. For this reason, access and participation of students in clinical environments were valued as significant experiences which contributed to the development of interpersonal, communication and adaptability skills (Harvey, 2000; Plack, 2006).

Employers' perspective of graduate's skills was the focus of a study reported by Hernandez-March et al., (2009). Both interviews and questionnaires were used for data collection from company directors and human resource personnel of 872 Spanish companies. Similar to the motivations by South African Qualifications Authority (2000), employers in this study believed that developing skills, beyond discipline specific skills, was likely to ensure that new graduates would engage in lifelong learning. That said employers still valued graduates who possessed firm understandings of disciplinary specific theoretical and practical knowledge and skills.

From the results presented by the researchers (Hernandez-March et al., 2009) it seemed that generic skills such as teamwork, flexibility, time management and problem

solving coupled with positive personality traits such as motivation, dedication, professional behavior, willingness to learn and the ability to work under pressure were regarded as desirable from the perspective of employers (Hernandez-March et al., 2009). Employers proceeded further to identify skills they felt were lacking in new graduates and these included decision making, negotiation, time and stress management, problem solving, leadership and organization skills. Furthermore employers suggested that the best approach to develop these generic workplace skills included work-like experiences undertaken during the course of students' education and training.

In a study in which 664 graduates were surveyed regarding generic skills development, it was found that graduates valued their work integrated learning experiences during their educational training as significant to the development of these skills (Crebert, Bates, Bell, Partick & Cragnolini, 2004). Additionally graduates identified group work experiences and being given responsibilities as important factors which facilitated the development of communication, critical analysis, evaluation, problem solving and teamwork skills. Suggestions for improvement of these generic skills included greater practical emphasis during training experiences, more importance ascribed to business administration skills and more tasks in the form of oral presentations and written assignments.

Athiyaman (2001) reported on 1000 business graduates who were surveyed regarding their perceptions of skills required for the workplace. From the results presented, graduates reported six skills as important yet deficient in the educational training they had received. These skills included communication, leadership, teamwork, negotiation, interpersonal skills and supervision. Interestingly it was found that the younger participants rated these skills as most important to their careers and strongly felt that they were not developed during their educational experiences. The researcher (Athiyaman, 2001) postulated this could be due to an inability of younger graduates to cope with the demands of the workplace or their inability to transfer their theoretical knowledge into practice once in the workplace.

Kruss (2004) explored the expectations of various public and private sector stakeholders concerning educational institutions and graduates' skills development therein. Through the use of focus group discussions and interviews, it was reported that private sector stakeholders expected graduates to be equipped with what they referred to as 'employability' skills. Harvey (2001b) also referred to these employability skills and considered them to be most important for new graduates trying to enter the workplace and develop their careers. Rather than just skills, Ashton (2009) preferred the use of 'employability attributes' which he indicated included punctuality, good attendance records, genuine work ethic and professional attitudes.

Bridgestock (2009) concurred and described such attributes as a combination of generic and discipline based skills required to succeed in the workplace. Thus she proposed that rather than just listing generic competencies, a broad range of employability skills focused on personal and career management would better serve in developing graduates for the workplace. Similarly Griesel and Parker (2009), in a recent report on graduates attributes from the perspective of employers, also opted for the use of terms such as 'employability' and 'graduateness'.

Kruss (2004) further reported that both private and public sector stakeholders expressed dissatisfaction with the lack of generic skills graduates possessed when entering the workplace. Thus educational institutions were criticized for not broadening their scope to take into account the generic skills needed by graduates. It was felt that students should be taught these skills as part of their education and training rather than employers investing in and developing these skills when graduates enter the workplace. In this respect, these results are similar to those reported by Crebert et al., (2004) whereby graduates also recommended that skills development should be improved during their education and training at universities. As a conclusion, educational institutions acknowledged that they needed to be more responsive to the needs of the workplace in terms of generic skills development and recognized the need for students to be exposed to the workplace prior to leaving the educational institutions.

Griesel and Parker (2009) undertook a baseline study in which employers rated skills graduates entered the workplace with against the level at which they expected these skills to be developed. The broad categories of skills identified in the study included, basic skills and understanding, workplace skills, interactive and personal skills (Griesel & Parker, 2009). It was found that across all skills identified, the levels at which graduates entered the workplace was always lower than the levels employers expected graduates to be performing at. The largest gaps between expected and current levels of skills development were reported for the following: communication, use of technology and understanding of corporate and economic realities. Interestingly the smallest gap between expected and current levels of graduates' skills was reported with respect to interpersonal skills and the desire to engage in continued learning.

In summary there seems to be limited literature available on optometry students' and graduates' perceptions of their professional education and training for professional practice. Literature concerning non-optometry students' and graduates' perceptions of their education and training showed that varied accounts may be found. In general it was found that students valued their experiences in authentic work-like environments as beneficial to learning. The literature also suggested the importance of considering the relationship between university and the workplace as well as the development of skills needed for the workplace.

2.8 CONCEPTUAL FRAMEWORK

The rest of this chapter will outline the conceptual framework used to support this study especially during the analysis of the data produced. Frameworks used for qualitative studies can be simple or complex, established from theory or derived from common sense. The purpose of a conceptual framework is to explain "either graphically or in narrative form, the main things to be studied - the key factors, constructs or variables - and the presumed relationships among them" (Miles & Huberman, 1994, p. 18).

2.8.1 Communities of practice

With the aim of this study being to explore optometry graduates' perceptions of their undergraduate education and training for professional practice, a theory of learning and development of professional identities was used in this study. Communities of practice, as a social theory of learning proposed by Lave and Wenger (1991), supported both the rationale and data analysis for this study.

Communities of practice as a concept, describes a social learning system formed by individuals who as result of possessing shared interests in certain activities, interact, form relationships and inevitably learn from and with each other (Wenger, 1998). It is further proposed that these interactions give rise to both meanings and identities (Wenger, 1998). Barab and Duffy (2000) contended that the production of meanings and identities are not necessarily separated and should be viewed as interrelated.

Wenger (1998) stated that institutional notions of learning have certain characteristics, which are that learning:

- occurs as an individual process characterized by a beginning and an end.

- is the product of teaching.

- occurs best when separated from the rest of the world and thus the rest of the activities in our lives.

The idea of communities of practice however modifies this institutional notion in that learning is considered to be an innate part of human nature (Wenger, 1998). As a result, learning is experienced as a function of our existence and participation in and with the world. In this sense, learning within a community of practice is not necessarily formalized and often occurs inadvertently (Schlager & Fusco, 2003). Consequently the argument by Wenger (1998) was that as human beings we encounter various communities of practice in all aspects of our lives (at home, at work, at school, at social events). Therefore, it would make sense that in certain communities of practice we function as central members, whilst in others we function more at the periphery (Smith, 2009; Wenger, 2000).

The elements of communities of practice that supported this study included considering learning as a four-fold concept. Thus learning was considered to be:

- engaging in practices
- belonging to a community
- interrogating the meanings of experiences
- becoming and thus creating an identity
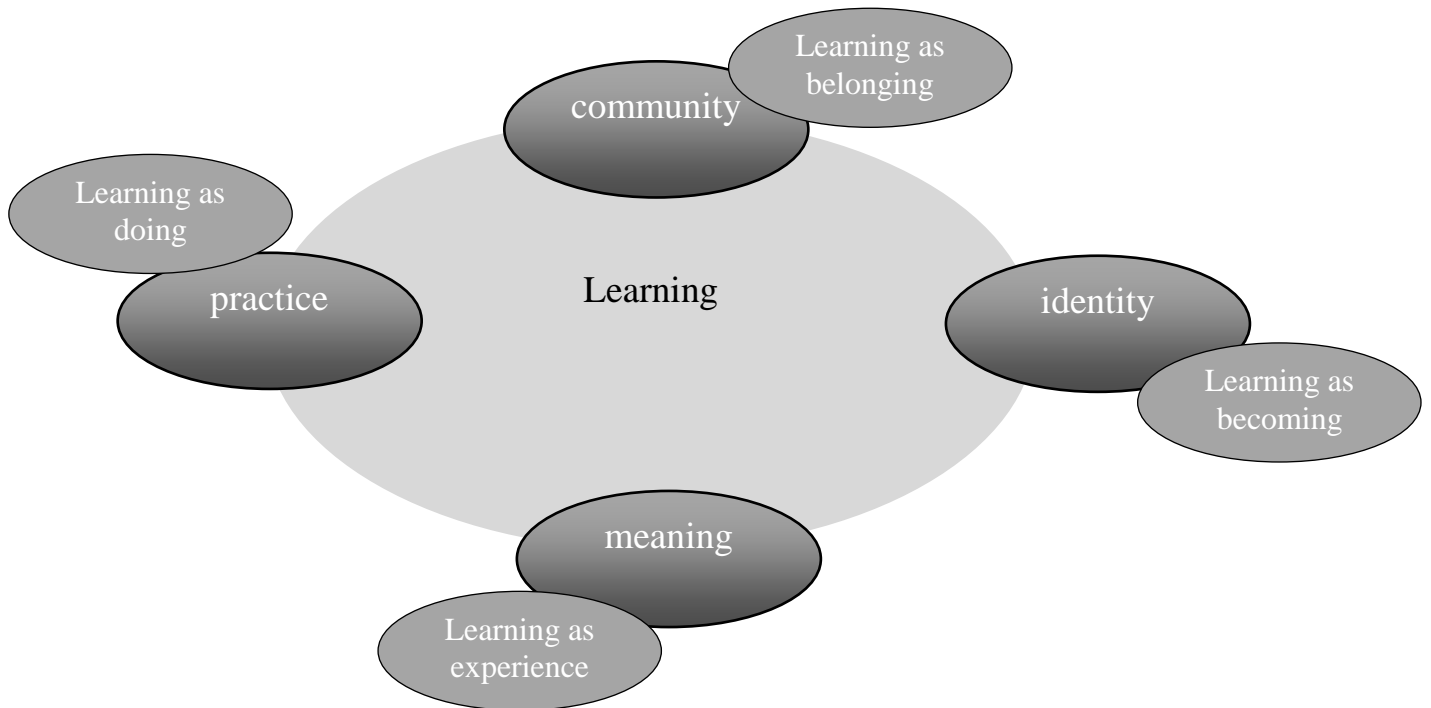
Figure 2: **Elements of a social theory of learning, communities of practice (Wenger, 1998, p. 5) (reproduced with permission)**

The figure above depicts a theory of learning as social interaction. Learning is seen as a central hub influenced by elements of practice, community, meaning and identity. To demonstrate the fundamental relationship between these elements, Wenger (1998) claimed that one can easily replace learning (central hub) with any one of the four peripheral components and the social theory of learning would still exist! Thus within a communities of practice framework, learning can be seen as the process of doing, belonging, interrogating meanings of experiences and lastly becoming.

As a social perspective of learning, communities of practice have implications for both members within the community and the community of practice itself. Wenger (1998) stated that learning for members within a community, implied being engaged in and contributing to the practices of that community, whilst learning for a community of practice, as an entity, implied enhancing its practices and ensuring that new members (from the newcomers) are produced.

Legitimate peripheral participation referred to the learning experiences that newcomers are exposed to initially when coming into contact with the practices of a community of practice (Lave & Wenger, 1991). In this sense, legitimacy implied the acknowledgment of the potential of these newcomers to become central members and peripherality implied the types of sheltered environments in which exposure to these practices occurred in. Thus learning for newcomers takes place through participation and observation of the practices of a community but within a low risk type of environment. In terms of the professional education and training that optometry students are exposed to, these types of environments are created by the use of more experienced optometrists, serving in the role of supervisors, when students undertake practices associated with the profession. These learning experiences involve newcomers (optometry students) being exposed to authentic activities which allows them the opportunity to produce meanings and identities as a result of their interactions. In this way, legitimate peripheral participation serves as a means of inducting newcomers into a community of practice (Case & Jawitz, 2004).

Bearing this in mind, as the newcomers' competencies increase and they gain exposure to more complex practices, their responsibilities also increase as they engage in various micro-processes. These include but are not limited to refinement of their practices and skills and expansion of their identities as they further start to belong to that community. These two implications of learning suggest a cyclic process in that as newcomers learn within a community, it affords them the opportunity to move from the periphery and become central members and at the same time contribute to the evolution and learning of the practices of that community.

The four elements that characterize learning within a community of practice will be discussed individually and the relationships between them will be highlighted.

2.8.1.1 Learning as engaging in practice

As human beings, we are constantly interacting with one another and with the world we live in. These practices that we engage in could range from simple exercises to secure our existence in the world to engaging in extravagant ventures (Wenger, 1998). Thus engaging in practices is an element of a community of practice. As a result of these mutual interactions with each other and the world, members engage in the process of learning. In this sense, learning is denoted as 'doing'. For this reason, engaging in practice has vast potential to influence, shape and support learning and personal development (Brown & Duguid, 2000).

Over a sustained period of time, a history of practices and thus learning develops between members of a community of practice. The primary factor responsible for the development of this history is the sustained mutual interactions between individual members. The resulting shared history of learning practices thus become a property associated with that community of practice (Wenger, 1998). The development of a history of practice also allows for certain objects, items, codes, terms, styles, vocabularies and procedures to become part of interactions between members and the history of that practice as well. Wenger (1998) referred to these artifacts as a shared repertoire associated with the practices within a community of practice. Additionally, during this period of time, continuity and familiarity with the practices and artifacts of a community of practice are likely to occur even across boundaries encompassing that community.

However Wenger (1998) cautioned against the notion of learning as just 'doing'. Rather the perspective put forward is one of understanding. Practice involves interacting with the world (participation) and deciding what is significant in that process of participation. Wenger (1998) called the latter process 'negotiation of meaning'. Thus understanding why we engage in the practices we do and our abilities to negotiate the meanings of

these practices are emphasized as more critical to the learning process rather than just undertaking the practice. Thus learning is defined as a process of understanding as a result of our participation (Lave, 1996). The process of interpreting our interactions as significant and thus negotiating their meanings calls on participation and negotiation on the part of individual members. Schlager and Fusco (2003), in their study of professional teachers, argued that both these processes are essential for the development of competent practitioners. They suggested that students, training to be professional teachers, should engage in learning practices associated with the profession and secondly reflect on and try to understand these experiences from inside the practice.

2.8.1.2 Learning as belonging to a community
The second element of the foundation of a community of practice is that of the community. Thus it is of interest to show the relation between practice and the development of a community. According to Wenger (1998), there are three ways in which practice is associated with a community namely:

- mutual engagement
- joint enterprise
- shared repertoire

As indicated above, engaging in practices is not an abstract concept. Rather as individuals we engage with each other and the world and interpret these interactions as significant. Thus the argument by Wenger (1998) is that practice is located within a community of individuals that over a period of time interact with each other, assign meanings to these interactions together and start to belong to that community. In this way, membership is gained through the process of mutually interacting with other individuals belonging to that community.

Mutual engagement is of particular significance for two reasons. Firstly by mutually engaging with each other, members are afforded the opportunity to develop meaningful relationships with each other. Secondly within the process, individual members

negotiate their distinctive positions and identities within the community. Wenger (1998) cautioned against assuming that these mutual engagements are all harmonious, peaceful and cordial. Rather the disharmonious nature of mutual engagements was seen as essential to the negotiation and participation processes inherent within a community of practice.

Joint enterprise referred to the sense of accountability that individual members develop towards the practices associated with a community of practice (Wenger, 2000). This notion draws again on the idea of mutual engagement and negotiation in that over a period of time, members are able to better understand and contribute to the valued practices associated with a community. As mentioned above, the shared repertoire referred to the items, codes, terms, styles, vocabularies and objects that come to be associated with the practices of a community over a period of time. To extend the latter point further, Gee (2005) made reference to the term Discourse, which was described to include more than just language.

It was proposed that Discourse encompassed individuals' actions, interactions, interpretations, gestures, use of symbols and tools in addition to the language associated with practices (Gee, 2005). Thus he suggested that for individuals to be successful in their endeavors, their participation needs to take into account aspects beyond just language. In these three ways (mutual engagement, joint enterprise and shared repertoire), individuals are able to better understand a community of practice, negotiate their identities and essentially belong to that community of practice.
In this sense learning is achieved via the process of 'belonging' to that community. Belonging as a concept and the desire to be accepted are recognized as crucial undertakings of human beings attributed mainly to our social natures (Levett-Jones & Lathlean, 2008). Studies on nursing students, training to be professionals, have suggested that belongingness has a key influence on learning. Firstly a positive sense of belonging and social acceptance, in professional nursing teams, was recognized as a prerequisite to successful student learning experiences (Levett-Jones & Lathlean, 2008).

Additionally, in a separate study, the experience of belonging was acknowledged as positively impacting on students' future career decisions and strengthening their potential for learning (Levett-Jones, Lathlean, McMillan & Higgins, 2007). The manifestations of positive experiences of belonging included optimistic affective orientations (feelings of comfort, safeness and satisfaction), enhanced motivation and positive orientations towards learning (Levett-Jones & Bourgeois, 2007; Levett-Jones & Lathlean, 2008)

2.8.1.3 Learning as interrogating the meanings of experiences
It has been suggested that "practice is about meaning as an experience of everyday life", (Wenger, 1998, p. 52). For this section learning as interrogating the meanings of experiences within a community, implies that meanings are not pre-established but rather that individuals construct and assign meanings to their experiences. As mentioned previously, these meanings of experiences are found within a process referred to as negotiation of meaning (Wenger, 1998). Negotiation of meaning relies on the interaction of two distinct yet complementary processes namely, participation and reification.

As mentioned above participation draws on our abilities to interact with each other and the world we live in. Participation is a complex process which involves our cognitive, affective and psychomotor skills as we negotiate our way through our everyday activities. Reification on the other hand refers to the process by which we project our thoughts, concerning our participation, into the world and as a result allow abstract concepts to take on meanings of concreteness (Wenger, 1998). The interaction of these two separate yet corresponding processes allows for individuals to negotiate the meanings of their experiences. Consequently, individuals produce and interpret meanings, both positive and negative, associated with their everyday experiences. In this sense, negotiation of meaning provides an opportunity for members of a community to reflect on and make sense of their practices (Brown & Duguid, 2000; Wesley & Buysse, 2001).

Wenger (1998) recognized negotiation of meaning as a powerful process with a great capacity for transformation. Thus negotiation of meaning as a process allows individuals to influence the meanings of their experiences, how they define and perceive themselves and inevitably the communities they belong to. As a result, negotiation of meaning, as a process, is instrumental to the development of members' personal identities and the identities of the communities of practice to which they belong. By being members of a community of practice and engaging in the processes of participation and reification, one is included in the negotiation of meaning process associated with that community.

Wenger (1998) proceeded further to suggest that a community of practice is a negotiated system of competence. In this sense competence is defined as that which is experienced through one's interactions in practice and the associated process of negotiation of meaning. Relating to the optometry profession, competence means being able to perform a visual and ocular examination and formulate a diagnosis and appropriate management plan. This is aligned to the aim of the program which is to produce competent optometrists who are able contribute to the eye care needs of society (Discipline of optometry, 2005; South African Qualifications Authority, 2009). Thus within the optometry profession, a demonstration of competence would include an integration of appropriate cognitive, affective and psychomotor skills in order to engage with its practices.

In this sense, learning within a community of practice, is achieved by having an experience of meaning and competence (Wenger, 1998). Wesley and Buysse (2001) strongly recommended that the training and education of professional practitioners take place within the communities of practice framework. They advocated that using this framework to inform teaching and learning practices would extend students' understanding and knowledge through the means of reflection. By promoting knowledge through reflection, this aligns closely to trends in the fields of professional teacher and medical education in which reflection is recognized as a valuable means of enhancing learning (Cochran-Smith & Lytle, 1993; Cook, 2009; Sandars, 2009). Furthermore,

knowledge which occurred as a result of experiences and observations was recognized as imperative to the development of professionalism (Wesley & Buysse, 2001; Zink, Wagstrom-Halaas & Brooks, 2009).

2.8.1.4 Learning as becoming and thus creating an identity

Wenger (1998) cautioned against the concept of identity being viewed as separated from the elements of practice, community and meaning. In fact he argued that the development and refinement of identities was inevitably shaped by these elements. Our experiences of participation as members within a community of practice and thus learning as doing, belonging and interrogating the meanings of experiences, has the potential to develop and transform both our identities and practices. In this sense learning through participation serves as a source of identity (Wenger, 1998).

This notion aligns closely to the concept of identity outlined by Clegg (2008), who suggested that identity should be viewed as a complex and 'shifting' term influenced by how people understand and interpret their existence and participation in the world. In this respect identity can be further viewed as an experience of belonging in the world (Wenger, 2000). Furthermore, our identities, within a community of practice, are also influenced by what we do not do and as a consequence are not (Wenger, 1998). In this sense, both participation and non-participation, can serve to either facilitate or inhibit the process of professional identity development (Davis, 2006).

The nature of the relationship between participation and identity development within communities of practice has been described as complex (Clegg, 2008; Jawitz, 2009). The relationship becomes complex because members' participation and consequential identities within a community are likely to be entangled with other members within that community (Schlager and Fusco, 2003). Thus according to Plack (2006), members' participation and negotiation within a community will ultimately influence their professional identities. It has been reported that students engaging in professional development opportunities, in the form of clinical placements had feelings of enhanced

well-being, confidence and positive orientations towards the workplace and the perceived roles of professionals therein (Davis, 2006; Graham & Shier, 2010).

Another process valuable to the development and refining of professional identities is that of a generational encounter. This was described as the process in which newcomers interact with established members within a community of practice and consequently shape their own identities through this interaction (Wenger, 2000). These generational encounters are thought to facilitate the process of "inbound trajectories", (Wenger, 1998, p. 101) that newcomers may be on. Lave and Wenger (1991) reported that apprentices working and interacting with more experienced individuals, to whom they refer as masters, allowed for the identities of the apprentices to expand as they developed a sense of trajectory.

The same idea can easily be transferred to optometry students as they gain exposure to the profession and consequentially develop their professional identities whilst being supervised by qualified optometrists. This was supported by other researchers (Davis, 2006; Reid et al., 2008; Thrysoe, Hounsgaard, Bonderup Dohn & Wagner, 2010; Wesley & Buysse, 2001) who reported that specifically for professional educational programs, student participation in authentic learning experiences provided opportunities for engagement in meaningful experiences and consequently identity development whilst interacting with more established professionals. In this way students' professional identities are formed when learning the theoretical knowledge and then extended when they put into practice their theoretical knowledge in authentic work-like situations (Davis, 2006; Marchese, 1998). Thus it can be argued, taking into account practice and its relation to identities, that identity development is also influenced by one's experiences of meaning and competence.

Identity development is also thought to be influenced by the institution and more so by the discipline students belong to (Neumann, 2001; Reid et al., 2008). Becher and Trowler (2001) regarded disciplines in universities as 'vehicles' through which identities can be developed and shaped. Reid et al., (2008) concurred and suggested that the

beginning of a trajectory of professional development occurred when students entered universities. Studies of nursing educational programs, explored within a community of practice framework, suggested that participating within professional nursing communities was essential for students training to become professional nurses (Andrew, Tolson & Ferguson, 2008; Thrysoe et al., 2010). In this way, participation linked to identity, aligns closely to the view by Sfard (1998) that participation and engagement in activities, with the perspective of becoming full members, were foundational for the learning process.

Within a community of practice, individual members develop ways of handling themselves, working with other members and understanding the meanings of the practices associated with that community. In this way, practices within a community of practice, can be seen as a means for negotiation of identities and ways of being a person (Wenger, 1998). The negotiation of identities also involves a complex process situated within a certain context. In this respect, communities of practices can be identified as 'homes' for identity development and transformation (Wenger, 2000). It is for this reason that I have outlined in chapter one that subtle differences may be noted in the professional identities of optometrists as a result of the different sectors of employment together with the different demands of these sectors.

Peripheral forms of participation within a community of practice have the potential to radically influence the process of negotiation of identities. Particularly for newcomers, peripheral participation affords the opportunity for them to be exposed to the valued practices and competences of the community with the intention of an inbound trajectory towards becoming central members (Smith, 2009). Thus, through peripheral experiences of participation, complementary to the process of negotiation of meanings, newcomers are also able to negotiate their identities.

Hence in this sense learning can be thought of as the process of becoming and developing an identity through the fundamental elements of practice, belonging and meanings. Thus it seems that students' engagement within professional communities of

practice, aids in their development as professionals and contributes to the development of the profession (Ashton, 2009; Davis, 2006; Ezer, Gilat & Sagee, 2010; Jawitz, 2007; Moore, 2006; Reid et al., 2008).

2.8.1.5 Summary

In contrast to traditional institutional notions of learning as an individual process, communities of practice values learning as a social process. This social theory of learning draws people together in a system of learning. The fundamental principle is the focus on knowledge, learning, identity and development which are viewed as the products of participation and negotiation within a community of practice (Wenger, 1998). The flexible nature of a community of practice allows for facilitation of learning, knowledge generation and identity development in many different environments (Amin & Roberts, 2008). It has been reported that students' involvements in activities, perceived to be relevant and meaningful for their career paths, has the potential to facilitate an enhanced understanding of their profession, develop various skills related to the profession, develop a sense of students' professional identities and improve their confidence and self-worth (Benor & Leviyof, 1997; Case & Jawitz, 2004).

The knowledge and learning that occurs through mutual participation is constructed by members interacting with each other to achieve the practices of that community. The resulting relationships between individual members are recognized as fundamental for learning to take place (Lave & Wenger, 1991). In the process of mutual participation, a number of micro processes are at work simultaneously and these include:

- the negotiation of the meanings of experiences.

- the occurrence of a sense of belonging or acceptance.

- the development of a trajectory possibly towards becoming a full member.

- the development and refining of identities.

As mentioned above these opportunities for shared learning serve to refine and improve the practices of that community and at the same time ensure that new members who can identify, belong and participate within that community of practice are produced.

The current optometry program involves different types of learning, in varied contexts, with the aim of developing competent eye care professionals who are able to contribute to the eye care needs of the community (Discipline of optometry, 2005; South African Qualifications Authority, 2009). The program prides itself on developing graduates who will eventually belong to the profession, practice both ethically, competently and in the process become reflective eye care practitioners. As a result, communities of practice, as a conceptual framework seemed appropriate to explore the process and products of engaging, belonging, experiencing and identifying with the practices of the optometry education and training program from the perspective of recent graduates.

2.9 CONCLUSION TO THE CHAPTER

This chapter provided a review of the relevant literature in terms of feedback and evaluation at universities and the current practices at the optometry discipline at UKZN. More especially, an in-depth discussion of the limited literature pertaining to the optometry profession was carried out. In addition, relevant studies within the medical, nursing and other healthcare professions were highlighted in light of the limited optometry related literature. The discussion then proceeded to the transitional process students undertake when entering the workplace together with the skills that are considered necessary for the workplace. Finally the chapter ended with a discussion of the selected conceptual framework, communities of practice.

CHAPTER 3
METHODOLOGY AND METHODS

3.1 INTRODUCTION TO THE CHAPTER

This chapter addresses the research methods and procedures used for this study. The discussion begins with how I came to locate myself as an interpretivist researcher and selected a qualitative approach for this study. This is followed by an in-depth discussion of the sampling, data collection technique (interviews) and data analysis procedures used in this study. The chapter ends with the limitations of this study together with the measures used to minimize their effects on my interpretations.

3.2 MY PARADIGMATIC JOURNEY

Prior to embarking on this Master of Education degree, my opinion and role as a researcher could easily be labeled under the positivist approach to research. The positivist approach is commonly regarded as the 'scientific method' of research as it uses science as its foundation and draws on its numerous laws for verification (Maree, 2007). The most significant factor contributing to my initial views of research was my science orientated background through the learning, training and teaching I had received over many years. However this soon changed as I was introduced to other approaches that could be used to conduct research within the human and social sciences. Social science research may be defined in various ways, however the definition used by Sarantakos (2005) is holistic and clearly articulates what I hope to achieve in this research study. Sarantakos (2005) noted that:

> *Social research is the purposive and rigorous investigation that aims to generate new knowledge. It (social research) is the intellectual tool of social scientists, which allows them to enter contexts of personal and/or public interest that are unknown to them, and to search for answers to their questions.*
> (Sarantakos, 2005, p. 4).

Whilst engaging in this Master of Education program, I soon realized the value and richness other approaches (interpretivist and critical) could give to a research study. I must admit that initially when conceptualizing this study, I often found myself torn between two methodological approaches.

The most uncomplicated definition of the word paradigm was provided in a discussion with one of the facilitators in a research methodology module. He described it (paradigm) as the way in which you, as a researcher, view the world (L. Ramrathan, personal communication, August 14, 2008). Additionally, the choice of methodology for any study is also dependent on the views and assumptions of the researcher concerning the world and the phenomenon being observed (Creswell, 1994).

Whilst conceptualizing this study to investigate graduates' perceptions of their professional education and training, a qualitative approach was chosen. Research using a qualitative approach is described as naturalistic, holistic and inductive (Terre Blanche, Durrheim & Painter, 2006). The decision to use a qualitative approach was based on the added richness and depth it gives to a research study. Furthermore a review of literature on similar studies, concerning optometry students' and graduates' perceptions of their professional education and training, showed that most were conducted using a quantitative approach. Thus taking these two factors into account together with the notion of 'fitness for purpose' (Cohen, Manion & Morrison, 2007) and the aim envisioned for this study, I decided to position myself as an interpretivist researcher and undertake this study using a qualitative mode of enquiry.

Maree (2007) explained that such an approach can also be described as ideographic. This implies that emphasis is placed on understanding the uniqueness and detail of each participant in the study. This in itself is an attribute of undertaking research using the interpretive paradigm in that it is a comprehensive approach that yields data which is more exhaustive and detailed (de Vos, Strydom, Fouche & Delport, 2005; Maree, 2007). However it may be argued that this occurs at the expense of providing a broad

overview of the phenomenon being observed as well as the development of general laws which allow for prediction and/or generalization.

3.3 THE INTERPRETIVE PARADIGM

The interpretive paradigm as described by Maree (2007) is derived from the study of theory and its practice (hermeneutics). The roots of this paradigm lie in the work of Max Webber which was in relation to *Verstehen* (understanding). *Verstehen* is concerned with views and perceptions of people as they are experienced and expressed in everyday life (Sarantakos, 2005).

Research studies undertaken using the interpretive paradigm are concerned with understanding the uniqueness of each situation as perceived by study participants (de Vos et al., 2005). Unlike in the positivist paradigm where emphasis is placed on the production of general universal laws for purposes of explanation and /or prediction, the primary aim of research undertaken using the interpretive paradigm is to gain a better understanding of the complexities of human interactions (Sarantakos, 2005). This in itself is important as it suggests that the researcher using this paradigm needs to be perceptive to the many factors that must be considered when trying to better understand human behavior.

Aligned to the ontological assumptions of an interpretive researcher, I believe that the realities of this study are diverse and socially constructed. In this sense, these realities are considered to be multiple, unique to each participant, constructed differently and as a result take on different meanings for the participants in this study. This aligns well to the notion of 'negotiation of meaning', outlined by Wenger (1998) in that the understandings and meanings assigned to our experiences are influenced by our interactions with each other, the world and our negotiations therefrom. This then implies that each individual's perspectives or realities are likely to be different. Furthermore in order to understand these multiple realities, consideration needs to be given to the contextual factors that encompassed the participants of the study. Wenger (1998) cautioned against the idea of learning as merely 'doing' and strongly advocated for a

process of understanding our interactions and the environments in which they take place. For this reason, communities of practice, similar to other social learning systems, acknowledge that interaction of individuals within different communities and with their surrounding environments directly influences the meanings, experiences, identities and learning that occur as a consequence of these interactions. As a researcher, adopting this stance it was vital that I reflected and made meaning of the information gathered thus enabling me to better understand the interpretations that were being produced by the participants. Therefore throughout the study, I did not see myself as a separate entity from the research project and considered myself to be an instrument through which data was produced thus consistent with the notion of intersubjectivity.

Within the interpretive paradigm, there are various methodologies that can be used. These include phenomenology, life histories, ethnography and case studies. For this study, I chose a phenomenological approach as it aimed to explore the perceptions of individuals concerning phenomena in their everyday lives (de Vos et al., 2005). According to McMillan and Shumacher (1997), phenomenology is the exploration of an individual's experience with a particular phenomenon. In this case, an attempt was made to understand optometry graduates' perceptions of their professional education and training in preparing them for professional practice. This study was inductive as it was not concerned with attempting to confirm or refute any established hypothesis, but rather aimed to explore optometry graduates' perceptions of their socially constructed realities.

3.4 SELECTION OF PARTICIPANTS

The 2009 graduating class from the optometry discipline was used as the study population. This population comprised of 34 graduates, 13 males and 21 females. In terms of professional practice experience, I anticipated that when I began data collection, these graduates would have at least five months of experience in professional practice as newly practicing optometrists. Spiel et al., (2006) suggested that there exists no optimal time lag between the completion of professional educational programs and graduates' evaluation of their education and training experiences.

A non-probability sampling strategy was used to determine the study participants. From the study population, only graduates that were currently practicing as optometrists were considered for the study. There were 2 non-practicing graduates that at the time of the study were known to be pursuing medical degrees as full time students. As a result, these 2 graduates were excluded from the study population. All practicing graduates were grouped according to race (Black or Indian) and gender (female or male). In terms of racial groups, there were no White or Coloured graduates in the 2009 class.

Thereafter these graduates practicing as professional optometrists were contacted telephonically and asked to confirm their current employment, informed about the study and invited to participate. During the telephonic conversation participants were advised of the aim, nature and data collection method of the study. In addition participants were also advised that their decision to participate in the study was not needed immediately and a time frame of two weeks was mutually considered to be adequate to take a decision.

Most graduates chose to respond immediately as to whether they wanted to be part of the study or not. At the end of two weeks, a total of 22 graduates responded positively for wanting to be part of the study. Graduates were then grouped according to their sectors of employment and gender (see Table 1 below). As mentioned previously, the different sectors of employment are public sector, academic sector and private sector. In this study, the private sector was further sub-divided into employment as either a locum or permanent optometrist.

Sector of employment	Number of graduates	Gender	
		Female	Male
Public sector	4	0	4
Academic sector	3	3	0
Private sector:	15	11	4
Locum	6	6	0
Permanent	9	5	4

Table 1: Optometry graduates' distribution in terms of sectors of employment and gender

Two participants from each of the sectors of employment were selected for the final study sample. It was felt that including graduates from all sectors of employment would allow for a diverse range of realities and perspectives to inform this research study. This decision is aligned to the assumption pointed out in chapter one, where I indicated that the different sectors of employment are likely to influence the demands of the job and the resulting identities of these novice optometrists. Thus a method of purposive sampling was used to determine the final study sample of eight participants. It was believed that these participants would be able to provide the depth and richness anticipated for this research study. Purposive samples are "deliberately and unashamedly selective and biased" (Cohen et al., 2007, p. 115). The final study sample comprised of four females and four males of whom four were Black and four were Indian.

Follow-up emails were sent to those participants who had telephonically expressed willingness to participate in the study and subsequently were selected for the study sample. The email contained the information document for the study (appendix A) as well as the confirmation of participation and contact details (if needed). Thus this study included eight optometry graduates from different racial and cultural backgrounds, employment sectors and geographical areas of practice.

One participant in the study was not among those originally selected from the population of 22. However she enthusiastically requested to be included and her request was acceded to as I believed that her comments would surely add to the understanding of the phenomena of the study. Prior to the actual interviews taking place, I shared with the participants the information document, the nature and aim of the study and obtained written consent. Unlike with the other participants whom received the information document at least one week before the actual interview took place, the participant who enthusiastically requested to be included in the study, only received the information document on the day of the interview. Even though this participant had the information document for a lesser period of time compared to other study participants, she still seemed to appreciate the nature and aim of the study.

During the process of data collection, the interview with another participant who had been selected for the final study sample could not be conducted due to time constraints. Since the characteristics (gender, race and employment sector) of this participant matched the characteristics of the participant who enthusiastically wanted to be part of the study, it was decided that the unplanned interview would replace the one that could not be conducted.

A method of purposeful sampling was preferred to convenience sampling in order to select a sample that would be reflective of the different sectors of employment within the optometry profession. Throughout the sampling procedure, it was acknowledged that such a sample would be too small to make any generalizations from the data and interpretations produced. However I hoped to have countered this by selecting a sample that would produce rich and detailed data in order to understand how these participants' perceived their professional education and training in preparing them for professional practice.

3.5 DATA COLLECTION METHOD

From the various data collection instruments available to an interpretivist researcher, interviews were selected for this study. Maree (2007) described interviews as a means by which an individual, in the capacity of a researcher, is able to 'see' the realities of study participants. Denzin and Lincoln (2000) argued that interviews are one of the most powerful instruments for trying to understand human behavior. To further support the logic of using interviews in this study, Kvale (1996) reported that:

> *Interviews are particularly suited for studying people's understanding of the meanings in their lived world, describing their experiences and self-understanding, and clarifying and elaborating their own perspective on their lived world.*
> (Kvale, 1996, p. 105).

Interviews have multiple functions and can be used for exploratory purposes where the main aim is to add a new dimension to the phenomenon being observed (Denzin &

Lincoln, 2000). It has been suggested that when there is more than one participant in the study, interviews as a method, allow for a diverse range of information and opinions to be created (Marshall & Rossman, 1989). There are various types of interviews namely, open-ended, semi-structured and structured (Maree, 2007; Saranatakos, 2005).

For this study, semi-structured interviews were used to produce data. Maree (2007) described such interviews (semi-structured) as conversations that allow the researcher to explore the perceptions of participants regarding the phenomenon being investigated. When semi structured interviews are used for phenomenological purposes, Denzin and Lincoln (2000) reported that the aim is to establish in detail the meanings which participants assign to their everyday experiences.

Semi-structured interviews are by no means neutral and rigid data collection methods but rather can be portrayed as active transactional events between the researcher and the participant on a phenomenon of mutual interest. As a result of this interactive nature, a major advantage is that as a data collection method, interviews allow for clarification and immediate follow-up on omissions (Marshall & Rossman, 1989). Coupled with this, is the opportunity to observe the non-verbal data in the form of facial expressions and body movements. In this respect, semi-structured interviews allow the researcher to improvise and adjust depending on the participant's initial responses. Aligned to the assumptions of the interpretive paradigm, interviews allow for data to be produced in a natural setting.

In this study, interviews lasting between 35 and 72 minutes were conducted at the site of choice of the participants. All participants were informed of their rights to withdraw from the study and to refuse to answer any of the questions asked. All interviews were tape recorded, using an Olympus digital recorder, only after obtaining permission to do so from each participant. The interviews concentrated on graduates' perceptions of the professional education and training program they had experienced. In addition, the extent to which they were satisfied with their clinical experiences in preparing them for

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professional practice was explored. Participants were also encouraged to express their views on the strengths and weaknesses of the optometric program in preparing them for professional practice.

As laid out in the interview schedule (appendix B), the more generalized questions were posed first. The initial questions asked were of a personal nature, probing for demographic details and confirmation of their current sector of employment. The questions which followed focused on the areas of the study which were identified in the conceptualization of the study. These areas included perceptions of one's professional education and training and exploration of the strengths and weaknesses of the current optometry program.

The interview schedule was designed such that it allowed for probing of the participants' initial responses. The interview ended with a question on recommendations for improvement of the current optometry program. A member check was done with the participant immediately following the interview. This provided an opportunity to review the preliminary themes gathered in the interview process. The participant was then thanked for being part of the study and informed that he/she would soon receive a copy of the interview transcript.

After transcribing the interview, electronic copies were emailed to the study participants to read, comment on and verify. Participants were further advised that if the transcription did not reflect the contents of the interview as they remembered it, arrangements would be made for the tape recording to be heard together and the transcription amended. None of the participants chose to make any changes to the transcripts. One participant requested for a section of her transcription to be omitted from the data analysis and this request was acceded to.

3.6 DATA ANALYSIS

Data analysis in qualitative research studies is concerned with two processes, description and discussion of the process described (interpretation) (Thorne, 2000). The

data produced in this study was analysed using selected strategies proposed by Miles and Huberman (1994). These included identifying codes and noting themes and grouping codes and themes which then provided the means to understand the similarities and differences in the data produced.

Tape recordings of the interviews were transcribed verbatim and analysed using interpretive analysis. Maree (2007) describes this as a process that is inductive and allows the researcher to look for similar and dissimilar themes in the transcripts. The research question and elements of the conceptual framework were used as a guide for conducting the data analysis.

The process of analysis involved reading the transcripts as many times as needed to generate codes related to the content and organisation of the transcripts. The initial impression of the data revealed that there existed a great deal of convergence between the participants, yet at the same time subtle nuances were evident. Each code that I identified, when working with hard copies of the transcripts, was marked with a pen and notes were written in the margin of the pages related to that particular code. When working with electronic copies of the transcripts, I assigned different codes a different text highlight color and again notes were inserted in the margin using the comment function on the word processor. Once all the codes were identified in the transcripts, the data analysis process proceeded to the identification of categories. Guided by the codes, elements of the conceptual framework and key research questions, I developed five categories that I set out in the form of data displays (Miles & Huberman, 1994).

Typically the findings of qualitative studies are reported in the form of extended text, as a result of segmenting the data by assigning codes, organizing the data and finally assembling conclusions from the data (Tesch, 1990). However Miles and Huberman (1994) argued that the extended text form of reporting is limited in certain ways. Firstly it may not be easy to appreciate the 'wholeness' of the data as it is often broken up into discrete segments. Secondly our human brains are not the most optimal processors of large amounts of information. As a result, when confronted with large amounts of data,

there may be a tendency to simplify the data into selective segments that are over simplified or easy to understand. For these reasons Miles and Huberman (1994) recommended the use of data displays.

These data displays allow the reader to view the 'full data set' but with an added dimension of creativity. This is thought to improve the presentation of the description and discussion of the results, and reduce reliance on oversimplified segments of data. In this sense the data display would include a condensed version of the data produced from the participants, events and processes in the study and not just completed field notes or transcriptions (Miles & Huberman, 1994). The format of these data displays are classified broadly into two categories:

- Matrices (comprising of columns and rows).

- Networks (comprising of nodes which are linked).

For the purposes of this study, I constructed data displays tables in the form of matrices. Miles and Huberman (1994) advised that the format of these displays depended on the imagination of the qualitative researcher but should be guided by the research questions and the researchers developed concepts from the data (usually the codes). Additionally the data entries into the data display can take many different forms such as text, quotes, phrases, ratings, abbreviations, symbolic figures, arrows and labeled lines. Thus when compared to extended text, data displays can appear to be somewhat busy.

When constructing data displays, the decisions of format and data entries are essentially influenced by what the qualitative researcher is trying to make sense of. Miles and Huberman (1994) contended that the potential to draw and verify valid conclusions is enhanced with the use of data displays. This is as a result of displays being constructed to allow for careful comparisons, detection of differences, recording of themes and patterns, and seeing trends.

Additionally, to allow for the process of drawing and verifying valid conclusions, data displays should be accompanied by analytical text (Miles & Huberman, 1994). The

purpose of these sections of analytical text is to discuss relevant concepts, associated with the displays, and allow for explanation of the processes described. In this study, the sections of analytical text, which have been guided by the elements of the conceptual framework discussed earlier, facilitated interpretations of the data produced.

3.7 LIMITATIONS

As a novice researcher I recognize that there are inherent limitations in this study. It is imperative that I acknowledge and highlight these limitations as well as measures used to control for them. In doing so, I hope that it allows the reader to view the study in a holistic way. Thus the limitations of this study in terms of the study approach, the researcher, the participants, and the data collection instrument form the main concerns of this section.

The study approach

Certain characteristics of a qualitative approach and working within the interpretive paradigm could be viewed as limitations. Choosing to investigate optometry graduates' perceptions of their education and training experiences in preparation for professional practice, meant that subjective issues such as beliefs, attitudes and values would be part of the research process. Thus my own subjective bias in interpreting these issues would form part of the research process, particularly the data analysis.

Additionally as mentioned earlier, the qualitative and interpretive study design implied that there could be multiple interpretations of the data produced (Maree, 2007). Clearly this implies that another researcher with a different background would most likely interpret the data differently. To increase the rigor of my study, however, I have tried as far as possible to remain honest and sincere as to my assumptions throughout the research process. The reader may thus evaluate how much my own assumptions have influenced the way in which I have interpreted the data.

Sarantakos (2005) highlighted the difficulty in asserting whether the researcher had fully captured the meanings and interpretations of the participants as a major limitation of

qualitative research in general. Recognizing that my understanding of my study's participants is influenced by my own perceptions and experiences, I attempted to stay as close as possible to their meanings by following McMillan and Schumacher's (1997) suggestions to enhance the study design. This included undertaking fieldwork over a prolonged period, performing an interim analysis of the data, using participants' actual language in creating verbatim accounts, member checking at the end of the interviews and the use of a tape recorder during the interview process (McMillan & Schumacher, 1997). Furthermore pertinent themes that emerged from the interview with one participant were followed up and expanded on in the interviews with other participants.

To improve the rigor of this study, additional strategies were employed. In terms of the data analysis, an iterative and reflective process was adopted. This involved constant shifting of the data between the elements of the theoretical framework and themes from the literature and interviews themselves, until a reasonable fit was established. These data analysis decisions were also influenced by the consultative feedback from my supervisor. As mentioned above, prior to data analysis, the transcripts were emailed to participants to check for accuracy, comment on and correct if needed. Lastly member checking, at the end of the interviews, allowed for participants to comment on the interpretations created during the interview. Another strategy, that could have enhanced the rigor of this study in addition to member checking, would have been to use participant checks of the realities created in this study.

The researcher

As a novice researcher together with my science orientated background, I was completely inexperienced when undertaking this study using a qualitative approach especially with respect to the data collection and analysis. Trying to make up for this lack of experience, I found myself always reading and literally trying to teach myself 'how to' conduct a qualitative research study. Even though I had read extensively around these procedures (data collection and analysis), I admit that no matter how much one reads and tries to prepare, the real lesson is learned whilst engaging in the actual process.

For example, when undertaking a pilot study (as part of an assignment for a research proposal module), I asked too many closed ended questions that did not allow for much probing with respect to the participants initial responses. This was subsequently improved in the interview schedule (appendix B) with the help of a few textbooks and the guidance of my supervisor and facilitators. In addition after I had transcribed the first few interviews and starting the coding process, I could easily relate to the 'information overload' that confronts qualitative researchers as described by Miles and Huberman (1994). Concerning the rest of the data analysis process and interpretations that have been created, I have in the paragraphs above outlined my thoughts.

My role in the research study and the effect of this also deserves some attention. My relationship with the participants prior to this research study was as a clinical tutor for one year. As a clinical tutor, I would like to think that I shared a reasonable relationship with the students. Having been a student not so long back and subsequently being one of the 'newer' staff members, I adopted a more collegial relationship with students (even though I was advised not to by the more senior staff). At the time of this study, both the participants and I were at the same level in terms of qualification as well as around the same age group. It is for this reason, that I believed that I was not viewed by them as an authority figure. Sarantakos (2005) recommended that a similarity in background facilitates an easier entry into the participant's world. In addition to entry, this similarity in background "promotes trust; understanding and cooperation; and allows the development of a close and rewarding relationship" (Sarantakos, 2005, p. 4).

The data collection instrument
Interviews as a data collection instrument for qualitative research have many advantages as discussed earlier on in this chapter. However considering the intimate nature of interviews, it only makes sense that coupled with its advantages there are some inherent limitations that need to be acknowledged. For example, Sarantakos (2005) views interviews as a time intensive data collection instrument. Thus only a limited number of graduates could be interviewed.

Maree (2007) regarded interviews as conversations with questions. Even though a semi-structured interview has probes which encourage participants to elaborate, it is to some extent still limiting and restrictive. The spontaneous nature and probes of semi-structured interviews assumes the study participants to have some opinion and comment on the phenomenon being discussed. This spontaneity leaves little time for reflection on the questions, which then could imply that participants could have answered differently had time elapsed for them to think and reflect. One particular question in the interview schedule regarding recommendations for strengthening the current program, may have been answered differently to some extent had participants been given time to reflect on what was being asked of them and possibly what challenges they may have faced when at UKZN or in professional practice.

Some of the other problems that deserve to be mentioned include the influence I had as the interviewer, the environment in which the interview was conducted and the interviewee's perception of what they thought was required of them. To counterbalance some of these factors, participants were informed of what was involved in the study via the information document (appendix A) that was first emailed to them as well as presented again just prior to the actual interview.

This was felt necessary to allow participants the opportunity to voice any concerns or apprehensions prior to data collection. In addition, there was a time period of one week between when the participants were given the information document and followed up as to whether they still wanted to be involved in the research study. This time period was considered to be necessary and sufficient to allow participants time to consider and contemplate their involvement in the study (even after expressing willingness to be part of the study).

Participants were also encouraged to seek advice and clarity on any matters concerning the study during this period. To offset the problem of environment, I decided to let the participants decide on the site of the interview. My reasoning for this, is that studies within the interpretive paradigm acknowledge that the multiple realities of the

phenomenon being observed are socially constructed, thus data collection is usually conducted in a natural setting (Maree, 2007). In addition considering the different sectors of employment, within the optometric profession, coupled with the specific demands of each as well as the personal time commitments of each participant, it was only fair that the scheduling and environment of the interview was set up around the convenience and availability of the participants.

Participants

I acknowledge that a major limitation of this study was the small number of participants. However, considering the aim and methodology of this study, this may be counterbalanced if rich, in-depth and detailed data is produced to address the research questions in this study. Another limitation may be that data was collected from optometry graduates from only one cohort and of only one educational institution that is UKZN. However the data collected and understanding created was not meant to be generalized to the other educational institutions which offer the optometry program. The results obtained in this study are specific to the group of UKZN graduates that participated in this study.

3.8 ETHICAL CONSIDERATIONS

Prior to approaching the participants, ethical approval for the study to be undertaken was granted (on 12 February 2010) by the UKZN Ethics committee. However the ethical approval certificate (see appendix C) is different, in terms of its date, as it reflects the amendment to the title of this study. In addition, consent was sought and obtained from all participants, including the participant from the unplanned interview. On the information document, participants were advised of their rights to withdraw from the study without any prejudice. Permission to record the interviews was obtained from each participant. Information gathered was collated and reported such that it did not lead to the identification of any participants. In addition the identity and personal details of the participants remained confidential throughout the study procedure.

3.9 CONCLUSION TO THE CHAPTER

This chapter contained the discussion of the methodology and methods used in this study. This included an in-depth description of the participant selection, data collection and data analysis procedures of the study. The chapter ended with a discussion of the limitations as well as ethical considerations for the study.

CHAPTER 4
FINDINGS AND DISCUSSION

The purpose of this chapter is to present the data produced in this study and the interpretations and discussions that arose therefrom. Using the guidelines for creating data displays discussed in chapter three, five data display tables were constructed and are interspaced by sections of analytical text. Each data table represents a category guided by the elements of the conceptual framework and research questions. Within each table, themes guided by the data are denoted in bold text. The data entries for these tables are coded data thematically organized into categories. Participants' verbatim responses in the interviews were included in the form of supporting quotes. In this way, the data entries allow the reader to appreciate participants' responses in an authentic manner, and as a result, make their own interpretations.

Consequently as stated previously, I do acknowledge that the reader's interpretations may not necessarily be the same as those I have discussed in the sections following the tables. This in itself is a characteristic of qualitative research in that interpretations are not fixed. To ensure anonymity of participants' identities, each participant was assigned a number, ranging from 1 to 8, guided by the order in which the interviews had taken place. This facilitated an easier way of keeping track of the participants especially during the analysis of the data. The entries into the data tables have also occurred using the same numerical sequence.

4.1 LEARNING AS ENGAGING IN PRACTICE

This section begins with table 2 which contains a brief description of participants' personal details to allow the reader to get a sense of the participants and their experiences of learning as 'doing' within the professional education and training program they had experienced. The analysis for this section was structured using the concept of practice, which was understood to mean one's interaction in the world, and the resulting shared history of learning and continuity that occurred over a period of time extending beyond boundaries of space and time.

Table 2 - Learning as engaging in practice

Participant number, demographic details	Additional significant personal details	Learning as doing
Participant 1, Asian Female, 21, working in academic sector	Very passionate and dedicated to her learning and development as an optometrist. Passionate about the profession yet modest in accepting praise. Seemed anxious to answer and at times appeared agitated about whether she had answered appropriately.	**Practical and clinical exposure**: "mostly practical exposure, being able to go out to public sector … two hospitals and being able to handle the patient alone that groomed us" **Confidence**:"seeing it (the pathology) yourself gives you a little more confidence" **Procedural skills**:"the skills and the techniques definitely learnt on campus, ethically how to treat the patient that is learnt in our clinics (clinical exposure)" **Link between theory and practical**: "… any course we did had a practical component to it so if we did theory in class and we would have theoretical notes on something that was supposed to be done practically then we would perform the test so we had practical sessions on how to perform the technique …"
Participant 2, Asian Female, 21, working in the academic sector	Very confident and quite determined about what she wanted to speak about. At times strayed away from the focus of the interview, whenever possibly I tried to recapture the focus but with some difficulty.	**Practical and clinical exposure**: "I think that it (the clinical exposure) was really nice because you do the clinics in here (internal clinics) which is the fully long concentrated clinics which is the full work up and then you go to the external clinics which is much shorter. But in both you are exposed to the worst case scenarios and the good ones too, not only the bad. It's very nice that you are exposed as a student. I like the fact that here in our clinics we expose students and me myself I was exposed to the internal and the external clinics" Appreciated the practical nature of the program: "it really helps (be)cause practice makes perfect … the fact that a practical course is done practically ..."
Participant 3, African Male, 25, working in private sector (permanent)	Mature, well spoken individual. I was really surprised by the transformation he had made from being a casual student to a mature forthright optometrist. Seemed like he really was enjoying working in professional practice.	**Practical and clinical exposure**: "what I have been practising out there in private sector practice, is exactly the same like the things we were taught during the year of study, no during the years of study" Appreciated the practical nature of the program and the link between the theory and practical skills: "you know everything's related and it's like exactly what you reading in your theory its exactly what you going to do in clinics" **Difficulty with administrative work**: "I'm not having any difficulties besides … the business side of the practice, more like doing invoices and things like that"
Participant 4, Asian Female, 21, working in private sector (locum)	Outspoken, confident female. Very expressive about the lack of recognition for the optometry profession and deficiency in remuneration.	**Practical and clinical exposure**: "starting seeing patients in third year and those two years built up … gave us the confidence to practice. So I think that in that regard it would have prepared me for going out and practicing and being more confident" **Difficulty with respect to managing patients**: "…my biggest problem I think I had in practice was prescribing for patients ... for the specialist clinics like binocular vision ... we saw a lot of patients but I didn't honestly prescribe for a lot of my patients"

Table 2- Learning as engaging in practice (continued)		
Participant 5, African Male, 23, working in public sector	Usually a very outspoken jovial individual but seemed very tired and preoccupied at the time of the interview. My feelings were that he did not really want reflect on his education and training and possibly concentrating on graduation.	**Practical and clinical exposure**: "in Phelophepa (health care train) most of the cases are the same as in public sector. You have patients with a lot of pathology, and high myopes(short sighted people) and ... so you do learn a lot from those especially of you gona (going to) go to public sector (hospitals)" Appreciated the nature of the program: "clinics they do help a great deal. They do prepare you for ... work afterwards" **Confidence**: "I was not overwhelmed or anything, cause I had seen a lot of patients here (at clinics at campus)"
Participant 6, African Female, 24, working in private sector (permanent)	Pleasant, soft spoken female. Really allowed herself to reflect on learning experiences. Was the only participant that raised concerns over the dynamics of patient contact and the psychology associated with these experiences.	**Practical and clinical exposure**: "here (on campus) you have learnt most of the things that you need to. It's really good that we should do that. That we should always interact with patients before we go to the real world (professional practice)" **Confidence**: "in terms of testing the patient, I wasn't having a problem. It felt like it's a normal thing… I have been doing it forever! That's what we do very good here (on campus) that it feels good … It feels like you just taking (off from) where you left off"
Participant 7, African Male, 26 working in public sector	Mature, confident individual who was quite frank about how he had been treated unfairly in terms of remuneration. Also expressed how he was taking on responsibilities that were not within the scope of optometry and more administrative. Felt hard done by being thrown in the deep end with respect to these administrative procedures.	**Practical and clinical exposure**: expressed satisfaction with the exposure he got at the public hospitals-" … (students) spend much time there in the hospital than here on campus yes, I think it will make them strong … make them you know fit for the environment out there (professional practice). I would say it's (professional practice) not that much challenging (be)cause it's something that I have been doing (as a student) …" **Nature of program and link between theory and practical**: "you would be taught in class the technique. You would be taken down to the clinic to do it as practicals" **Difficulty with administrative work**: "it's more the admin that is more challenging more than the optometry part. I was only trained to you know, to do the optometry part, not the admin work"
Participant 8, Asian Male, 21, working in private sector (locum)	Calm, composed individual with an air of serenity to his entire personality and approach to life.	**Procedural skills**:"obviously if you seeing (examining) patients, your ret (a technique performed in the process of examining a patient) that you use over time … .like you'll get good, your skills would become better in terms of seeing patients" **Difficulty with respect to managing patients**:" I'm managing quite well except for one aspect that I find like dispensing" **Confidence**: "by fourth year you have seen more patients, you more confident in terms of your optometry knowledge, your skills as a whole. You refined most of your skills that you weren't sure of in third year"

The purpose of this section is to discuss the data presented in Table 2- **Learning as engaging in practice**.

Practical and clinical exposure

All of the participants' indicated their satisfaction with the practical and clinical exposure they had experienced whilst training as students. What was most apparent was that participants were relating their experiences as students to their experiences now as professional optometrists when examining patients. As a result, it seemed like these optometry graduates perceived their professional education and training experiences as essential in preparing them for professional practice. This finding concurs with results reported on medical graduates who also rated their professional training experiences as vital for their preparation for professional practice (Eyal & Cohen, 2006; Hoppe et al., 2009; Nasser & Abouchedid, 2005).

For these study participants, their practical and clinical sessions were clearly important to them as many participants indicated positive benefits therefrom. Some of the benefits mentioned included confidence in examining and managing patients alone, improvement and refining of practical skills and just a general feeling of being equipped to deal with the challenges of professional practice. Participants reported that they established links between their theoretical knowledge and practical skills through their clinical experiences. As mentioned previously, these links are recognized as fundamental to the development of professionals (Bromme & Tillema, 1995).

In this regard, three participants (3, 5 and 6) mentioned that due to their extensive clinical and practical exposure whilst training, examining patients in professional practice as a novice optometrist was not very different. In fact, one of the participants (6) indicated that it had become "like a normal thing, I have been doing it forever!" This aspect of continuity of practices across the boundaries of being a student at university to being an optometrist in professional practice was also mentioned by participants 3, 5 and 7.

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Administrative aspects of the profession

In contrast, most participants mentioned not being prepared for the administrative aspects of the optometry profession. This is in accordance with results from Hoppe et al., (2009) who also reported medical graduates being unprepared for administrative and economic aspects of the profession. With the exception of the two participants that worked in the academic sector, difficulties with respect to administrative tasks (invoicing, salaries, purchasing of optometric supplies, medical aid benefits and claims) were mentioned by all participants. This did not come as a surprise as the academic sector is more concerned with the theoretical and practical aspects of the profession of optometry rather than the commercial aspects of the profession. Even though no difficulties were reported, one of the participants from the academic sector (2) said that she would need to attend a management course before opening her own optometry practice. The commercial aspects seemed to get more emphasis from participants working in other employment sectors of the profession, more especially the private sector.

Nature of the program

In general participants seemed to be happy with the nature of the optometry program including both theoretical and practical aspects. It seemed that participants appreciated being exposed to the theoretical and practical aspects of the profession concurrently as it lead to enhanced confidence in their skills and knowledge. For example one participant (1) indicated that when examining patients, she used the presenting symptoms and clinical signs to select appropriate clinical tests to be performed, worked through the process of multiple hypotheses testing and finally generated a diagnosis and management plan. In this sense she expressed linking the theoretical knowledge with the practical skills to enable her to perform visual examinations on her patients. For example, "… at a particular clinic I see pigment on the fundus (posterior part of the eye) and then I'm like let's do (visual) fields (an optometry test) … then you diagnose retinitis pigmentosa (ocular disease)".

Overall participants viewed the clinical sessions as important in facilitating a link between theory and practical skills. In this regard, the role of theory, practical skills and clinical exposure can be summed up by a comment of one of the participants (1), "… not having that extra exposure (in clinical sessions) on campus as a student, it limits you".

It seemed that most participants regarded the clinical modules, especially the final year optometry modules, as most beneficial to their preparation for professional practice. As a result, the participants in this study seem to be in agreement with the graduates in the study by Olupeliyawa et al., (2007) who also rated the activities in their final year of study as most useful towards their preparation for professional practice. This was not surprising as the emphasis of the final year, in the current UKZN optometry program, is clinical training and performing visual and ocular examinations on patients rather than engaging in theoretical and practical sessions. The most useful clinical modules reported for professional practice were general clinic and contact lenses.

4.2 LEARNING AS BELONGING TO A COMMUNITY

This section begins with table 3 which contains participants' experiences of learning as 'belonging' and in a sense identifying with the communities that they were trying to become part of or were being exposed to throughout their professional education and training experiences. The concepts of mutual engagement, joint enterprise and shared repertoire informed the selection of content for this section. By mutual engagement implies participation in the practices of a community. Joint enterprise takes into account the accompanying sense of accountability that develops towards the practices of a community and its members, while shared repertoire includes all associated aspects such as language, equipment, behavior, items and objects that come to be associated with that community over a period of time. To some extent the professional activities of these participants are also highlighted in the new communities that they were being exposed to whilst in professional practice.

Table 3 - Learning as belonging to a community

Participant number, demographic details	Learning as belonging
Participant 1, Asian Female, 21, working in academic sector	**Mutual engagement**: appreciated the opportunity to engage in practices that facilitated development for role as an optometrist- "… the chance of performing the entire test yourself with your preceptor supervising towards the end to confirm the results, I think that (i)s what we do now in (professional) practice excluding the preceptor (supervisor) being there" **Joint enterprise -accountability to patients**:"… as an individual and the standards that you set for yourself, the management that you want to take ... you want to provide 100% for your patient … being in practice means that you have to manage the patient solely by yourself ... you don't want to be left in a position where after you see the patient, you feel uneasy about how you managed" **Joint enterprise -enhanced understanding**:"…I think most understanding with other people's feelings, I think that in your (research) group, you learn to communicate better and understand each other better … the respect that you start having for each other … my understanding of people (developed) in that very close knit (research) group and learning and adapting comes in" **Group work**: mentioned the positive effects of group work, specifically referred to her experiences in their research group "we learn to understand our group members and we learn to work with our group members whether they are less hard working than you "
Participant 2, Asian Female, 21, working in the academic sector	**Mutual engagement:** appreciated being engaged in the practices of the profession whilst training as a student – "with optometry … (unlike) BCOM accounting, they only get exposed to it afterwards... here (in optometry) we have quota (patient numbers) ... it really helps" **Joint enterprise- accountability** to **other practitioners** in the profession: "you don't want to go and do something wrong at someone's practice and for me it's an issue too, I won't have an issue if it's my own practice" **Shared repertoire**:"... the last time I saw my own patient was like when I was getting my 120" **Positive feelings of belonging:**"… before I used to go to university and pay fees but now I go and I get paid … its home for me" **Group work**: positive in that it facilitated bonding and a greater understanding -"when students get together and learn, that (i)s learning on a different level" Also made specific reference to learning that occurs at case presentations - "(in) the case presentations, you get hit hard sometimes. You really learn from it … when they (other students and supervisors) give off their suggestions … the only way you learn is after you say what you think it was then other people give their of their thoughts"
Participant 3, African Male, 25, working in private sector (permanent)	**Mutual engagement**: recognized the importance of having experiences of examining patients whilst training –"it (examining patients) needs a bit of experience to know, like experience as a student" **Joint enterprise -accountability to other practitioners**: "… as much as it's not my practice, they (patients) don't know that … so if I do a flop they will say it's not good ... the doctor, it's just bad" **Joint enterprise-enhanced understanding**: mentioned the benefits of team work and how it had positive consequences -"I think to work as a team … I learnt that in our study groups … like we working here and in order for us to work … you have to be together" **Shared repertoire**:" ... like a dendritic ulcer right ... like the va (visual acuity) was dropping and everything and I thought it was another anterior uveitis but I just stained you know" **Positive feelings of belonging:** expressed positive feelings towards experience in professional practice "I know for sure that I did a good job, the ophthals (ophthalmologists) were happy ... now it feels like home … I'm waking up to go and see my family…(to) do a good job and have fun"

Table 3- Learning as belonging to a community (continued)	
Participant 4, Asian Female, 21, working in private sector (locum)	**Mutual engagement**: "(Optometry) being a very practical profession and on campus being very practical … if you learn things theoretically, you cannot apply the same thing practically unless you have done them and practiced" **Joint enterprise-understanding**: indicated that the extended interaction with classmates and their exposure to similar environments facilitated a shared understanding-"… because you (the class) share the same interests, you have the same fears (for) the same things, you're all nervous for an assessment and that bonds you …" **Joint enterprise-accountability to patients**: recalls first day at work and the feelings experienced when examining her first patient: "... I never expected to see a patient and I was very scared ... very, very scared you know because he was the first paying patient. He could come back and say 'what have you done … " **Belonging and collegial relationships**: acknowledged the support of other optometrists and the feeling of being respected: "… they (other optometrists) tell you, you studied four years, you capable of doing it yourself. I was fortunate they treat you like an equal and … you see your patients as they would see their (patients)" **Group work**: mixed reactions towards group work, reported that she preferred to work alone but did learn to understand people better by working in a research group -"… you spent literally your entire year with them (research group), and you get to know them, and you get to know what their cultural differences are and its nice, its good"
Participant 5, African Male, 23, working in public sector	**Mutual engagement**: content with being exposed to training environments that stimulated work experiences -"... there was plenty of time to learn and do what you learnt properly" **Joint enterprise-accountability to patients**: seemed disappointed in not being able to help all patients-"… I felt really sad (be)cause there was nothing, I couldn't help the patient … in some cases there (i)s nothing we can do" **Belonging and collegial relationships**: appreciated working with optometrist that he could ask for help, if needed. Referred to them as a team- "… I personally do have people that I can go back to if I'm not sure about something, if I have problems so they help me out … there is not much problems between the optometrists and the ophthalmologist" **Positive feelings of belonging**: content with the role that he is carrying out in the health care team they had established-" … I try and do my best and I think that I do an adequate enough job" **Group work**: mixed reactions to group work but did indicate that it was beneficial- "they were very helpful ... (be)cause you would learn things that maybe you just read through. You just didn't know this was quite important and (it) would come out in the tests, and you would remember it, (be)cause someone was saying it, so it does help a lot"
Participant 6, African Female, 24, working in private sector (permanent)	**Mutual engagement**: valued the practical nature of the program and preparation for different work environments - "… you go to the hospital and you learn differently and then you get to Phelophepa (heath care train), it's a combination of everybody … here (on campus) you have learnt most of the things that you need (for professional practice)" **Joint enterprise-accountability to patients and the profession:** very conscious of her role - "you dealing with people's eyes where you can't do something to somebody's eyes … by knowing new stuff, also increases your knowledge ... because if you don't know new stuff you will always be limited (in the) way to work … is very important that you address the patients' complaints" **Shared repertoire**: "the ICD 10 codes … it wouldn't be good for a frontliner (optical assistant or receptionist) to be telling you that when someone has myopia, then the ICD 10 code is this"

Table 3- Learning as belonging to a community (continued)	
Participant 7, African Male, 26 working in public sector	**Mutual engagement**: valued the clinical exposure gained whilst training- "… they (the clinics) have got a role that they are playing … we cannot get everything in one place … so we can get this thing here and you will grasp other things as you go along (to other clinics)" **Joint enterprise-accountability to the profession**: "you tend to learn new, more things (in workshops and seminars). New things that you never knew or you knew but you know, you never really noticed the importance of it. I mean they would emphasis those things" **Joint enterprise-accountability to patients**: strong emotions expressed when he was unable to help his patients- "they want spectacles and you are there and you employed and you get paid every month, yet you cannot do what you supposed to do ... you cannot help them yah, so… that was quite disturbing" **Collegial relationships- a lack of understanding**: was very disturbed by being thrown in the deep end by his colleagues and employers with respect to certain aspects-"since they have got that mentality that you are an eye doctor here, you have to do everything. They would just put you in the deep end " **Group work**: benefitted from an enhanced understanding of optometry knowledge and skills -"even some things that are there, but you couldn't understand or you couldn't explain … they (other students) would be able to tell you ... you know they would just make it easier"
Participant 8, Asian Male, 21, working in private sector (locum)	**Mutual engagement**: "external clinics you would be more on your own … it's good in a way ... you don't always have people behind you … like the learning especially, it's a learning experience, the (Phelophepa health care) train, the hospitals … " **Shared repertoire**: "… like the minimum seg(ment) heights for this multifocal, that multifocal. Whether to give the patient the short corridor or the long corridor…" **Belonging and collegial relationships**: "… actually for me it's (examining patients without a supervisor) not so bad … I can just pick up the phone and call him (another optometrist who works in the same practice) if I have like any problem" **Group work**: "so sometimes when you read something, like you interpret it in a different manner … you don't know whether you interpreting it the right way. So if you explain it to me like this is what I'm feeling and someone would say 'I don't think it's that, I think it's this'. Then you learn from it … its (group work) beneficial in that way"

The purpose of this section is to discuss the data presented in Table 3- **Learning as belonging to a community**. As mentioned previously in the discussion of the conceptual framework, being part of a community is strongly linked to practice. Furthermore this association is facilitated by the concepts of mutual engagement, joint enterprise and shared repertoire.

Mutual engagement

Mutual engagement is probably the most significant factor in associating practice with community. As mentioned previously, all participants valued the opportunity of being exposed to the practices of the optometry profession whilst training. In particular three participants (1, 6, and 8) associated specifically their experiences in the external clinics with that which is required of them currently in professional practice. This is very encouraging as learning at these external clinics serves as the experiential learning (Kolb, 1984) component of the program. That is where students perform visual and ocular examinations on patients as part of their training and education. In this respect, the graduates in this study agree with the views of the medical graduates in the study by Martin et al., (2000) who reported being better prepared for the workplace as compared to humanities graduates, as a result of being exposed to authentic work-like training experiences.

Study participants' positive regard of these experiences, implies that their exposure and learning at these external clinics were meaningful to their training and development as professionals. The affirmative responses of study participants to external clinics align well to the results reported by Hansraj (2009). In that study, Hansraj (2009) reported that undergraduate optometry students in South Africa regarded the external clinical experiences, especially the Phelophepa health care train, as useful for their learning. Such opinions may be due to these clinical sites allowing opportunities for students to engage in the practices associated with the optometric profession. This is achieved by students putting into practice, in a professional work-like environment, the knowledge and skills taught during their professional education and training.

Exposure to these clinical sites facilitates various micro-processes. These include students being allowed to interact with qualified optometrists as they perform visual examinations on patients. This can be compared to the generational encounter that Wenger (1998) valued as a means of newcomers gaining entry into a community. Equally important is the enhanced experience that these external clinical sites provide to students as mentioned by two participants (2 and 4). It was felt that these clinical sites allowed participants the opportunity to familiarize themselves with the optometric profession in terms of patients they likely to encounter, expectations of patients and the roles which they, as optometrists, are expected to carry out. Thus these participants also recognized the value of these clinical experiences in a similar manner to Super (1989). Furthermore these experiences seemed to be important as participants were quick to mention the overall value of external clinical experiences. For example participant 4 said, " … I have learnt, you know, seeing more patients (in the clinics) like that, I have learnt, ok this is what I can do, this is how I can help".

Joint enterprise and accountability

 All participants seemed to be conscious of their responsibilities towards their patients and in some way or the other spoke very passionately in this regard. The need to perform the visual and ocular examination and then manage appropriately was talked about by most participants. For example, one participant (1) initially expressed some concern over the management of her patients, "... you hope that you did the right thing for them (the patients) to give you the credit".

But as the interview progressed, she showed confidence as she suggested that now she is more comfortable with examining patients as a result of the increased time spent in professional practice. For instance she reported, "it's just change as well as a first time professional out of the student bracket. I think that it's just a bit of adapting needed to the new world". This time needed to adapt and become more comfortable with their new roles and the workplace was also reported by participants (3, 4, 6 and 8) in this study as well as other health care graduates (Oermann & Moffitt-Wolf, 1997; Smith & Piling, 2007).

Feelings of accountability were also extended to the optometry profession and other practitioners. Even though none of the participants worked in their own optometry practices and essentially were employed by other optometrists, it was rather surprising to find that only two participants (2 and 3) expressed feelings of accountability to their optometric employers. Even so, all participants reported in some way strong feelings of accountability to the optometry profession. Similar to findings reported by Graham and Shier (2010), all participants were quick to report wanting to keep abreast with the developments in their professional field in terms of equipment, skills development and knowledge. The need to constantly want to learn and improve their levels of patient care is very enlightening as inculcation of lifelong learning is one of the aims of the current optometry program (South African Qualifications Authority, 2000; South African Qualifications Authority, 2009).

Additionally the concept of 'togetherness' as a class was raised by four participants (2, 3, 4 and 8). The idea put forward was that their spending so much time together and being faced with similar situations, challenges and fears, seemed to have facilitated bonding between them as a class. For example, participant 2 reported, "... no matter what background, we are learning together and we are learning the same thing. So I personally felt that my class thought the same. When it came to learning we would learn as a big group. The whole class in that lecture venue everyone, one person (to) go to the front ... I think that we helped each other to pass. From first year, you know from the days of chemistry, when you didn't even know who was in optometry, we had an optom(etry) table so everyone could find each other". This was supported by the views of participant 8 where he reported, "… actually we quite close if you see our class as a whole".

Shared repertoire
All participants seemed to speak with reference to their roles as optometrists and with a clear association to their professional education and training. Throughout the interviews, participants often made reference to certain aspects that were clearly associated within an optometry Discourse. These aspects, for example the names of diagnostic tests,

procedures, medication, codes, ocular related conditions and terms where familiar to me as a result of my optometry background and training. For example participant 2, when asked about her interactions with patients, reported "... the last time I saw my own patient was like when I was getting my 120". The use and understanding of the number 120 in relation to patients seemed so obvious to this participant that there was no attempt to explain further what this meant.

Similarly, other participants (3, 6 and 8) made reference to various aspects, the meanings of which were not shared, even though they were very specific in terms of what they meant within an optometric Discourse. This seemed to support the argument by Gee (2005) that individuals' participation extends beyond just the use of language but also take into account their use and reference to aspects of tools and technologies, gestures, interpretations and actions. A possible reason, for these participants making reference to aspects within an optometry Discourse, could be the assumption that the interviewer should understand the meanings of these concepts, which I admit were familiar to me. I do acknowledge that this Discourse is likely to seem foreign to an individual without an optometry background. I further propose that these participants seemed comfortable enough to use this Discourse as a result of their prolonged exposure to the practices and resulting meanings of the optometry profession.

<u>Belonging</u>
Overall participants seemed to experience some sense of belonging to the communities they either experienced as students and/or the communities they were now encountering as optometrists in professional practice. The participants appeared to appreciate the closeness, support and encouragement of the UKZN optometry discipline in the development of its students. For example, one participant (2) reported that "… in optometry it felt like home, it felt like school again and you don't get that in BCOM (bachelor of commerce degree). That we are like home (be)cause they cushion us, like these are your kids and you don't want them to go astray".

One participant (7) mentioned that in comparison to other institutions, he appreciated the efforts of the UKZN optometry discipline in terms of its training and teaching and felt that its students were in an advantageous position in this respect. However he rather cynically expressed that he would like the discipline to show more of an interest in its graduates after they qualified "… at least if they can have that communication ... instead of just producing graduates". Clearly the need to associate and identify with the UKZN optometry discipline even after graduating was important to this participant.

In terms of encounters, relationships and communities of practice in professional practice contrasting accounts were reported by participants. For example, participant 7 reported feeling troubled by being 'thrown in the deep end' by his employers in terms of assembling an optometry clinic. In contrast, other participants (3, 4 and 5) reported sharing quite harmonious relationships with their employers, optometric assistants and ophthalmologists. These harmonious relationships clearly had encouraging effects as these participants used positive words to denote these relationships such as 'team' and 'family'.

It was found that across the various sectors of employment within the optometry profession, participants valued the support of others in the communities they found themselves in. This support can be viewed as constructive in the sense of belonging to these communities as suggested by Levett-Jones and Lathlean (2008). Additionally it seemed that these participants were learning from other members (optometrists, optical assistants and ophthalmologists) in these supportive environments. This finding supports the results by Levett-Jones et al., (2007) in which it was reported that graduates, who experience positive associations of belonging, expand their potential for learning and adaptation, as was reported by the participants in this study. Some of the participants (3, 4, 5 and 7) in my study had also established links with other communities such as ophthalmology, medicine, pharmacy which are outside the scope of practice of optometry. Wenger (1998) referred to this as multi-membership and was recognized as a means by which members negotiate their participation across the various communities to which they belong.

<u>Group work</u>

Most participants reported positively about working in groups as students. Specifically it seemed that the experience of working together in research groups resulted in an enhanced understanding of themselves and other members in their groups (1, 2 and 4), the development of teamwork skills (3), respect (2), communication skills (1, 3 and 4) and an enhanced understanding of their optometry knowledge and skills (3, 5, 7 and 8). Specifically participants reported these group discussions as beneficial to their learning. For example participant 3 reported, "… you find that the things that you talk (about) as a group, they stay there for life! It will stay with you for life".

4.3 LEARNING AS INTERROGATING THE MEANINGS OF EXPERIENCES

This section begins with table 4 which contains participants' accounts of their experiences encountered during the course of their professional education and training. In addition, the table also reveals participants' interpretations of these experiences as meaningful or without meaning. To some extent the experiences of these participants, whilst in professional practice are also highlighted, particularly the experience of their first patient examination. Additionally the concept of reification, which implied participants' projections of their thoughts concerning their participation into the world, also helped structure this section. Furthermore experiences of competence and incompetence will also be presented and discussed. Thus the analysis for this section was structured using the concepts of participation, reification and experiences of meaning and competence.

Table 4 - Learning as interrogating the meanings of experiences

Participant number, demographic details	Learning as experience
Participant 1, Asian Female, 21, working in academic sector	**Participation**: "when you are in the public sector (hospitals), you are seeing new things ... I think you gain most of your knowledge and skills from that ... when I went out to the public hospital I was lucky enough to see the same things seen on campus (as a student) …" **First patient experience**: "the first patient is very overwhelming … even though it was a normal patient … you are still overwhelmed! Being left alone (without a supervisor) for the first time is challenging" **Reification and realization**: "my training basically, I knew that whatever I did on campus is going to help me now. When you are in (professional)practice and you do a technique … it still comes back to you and helps you and aids you in your management" **Experience of meaning and competence**: "I guess that going to the hospitals so regularly gives you the experience to improve your confidence because you see more cases (patients) and you are able to make quicker decisions (for patient management). Being able to see pathology in campus clinics as a student that groomed us mostly" **Experience without meaning**: "I don't think that learning botany or zoology or whatever … I don't see the need or how that influences us as healthcare professionals"
Participant 2, Asian Female, 21, working in academic sector	**Participation**: "we have our clinics and you are exposed to it (be)cause optometry is very practical … you have to have a balance ... not everything revolves around the textbook … you have to have both sides (theory and practice) to deal with something (patients complaints)" **Reification and realization**: "you may not have thought of it at that time at the external (clinical) site but you are doing stuff the way it is supposed to be done at (professional) practice …you know those take home messages, they glare at you when you are seeing patients" **Skills developed through practice**: "it (the optometry program) made me grow up as an individual … taught me human skills, it taught me how to manage time, it taught me how to deal with stress. It has taught me how to I think develop … (and) think at the level of an adult" **Experience of meaning and competence**:"as a student you just want to get through and over with it (the visual examination on patients) but when you complete it, you realize 'Oh, you know what I have experienced that' and I know when I had that this is what I had done wrong and this is what my supervisor told me"
Participant 3, African Male, 25, working in private sector (permanent)	**First patient experience**: related his first patient examination to his experiences of examining patients at the clinic and expressed mixed feelings - "good excitement … I'm seeing my first patient and I'm doing everything right … this (first patient) is just like me going around on campus and just see(ing) the patient" **Skills developed through practice**: "I also learned that I have to be patient with patients. To tolerate whatever they saying (and) understand … be in the shoes of your patient and understand their problems (but that) you get with experience" **Experience of meaning and competence**: recalled experiences of patients with ocular pathology. Seemed to be internally motivated to make the diagnosis- "I need(ed) to see this and then there was this thing that was like pushing, find out what's really happening … when I finally stained (part of the optometric visual examination), it was like the light (in terms of making the diagnosis)" **Experience without meaning**: "in optometry what I found that I have to know (for example) what reaction the eye would have if I put that solution in it, not trace it back to chemistry and find out what carbons and how many carbon bonds or whatever, not that alright"

Table 4- Learning as interrogating the meanings of experiences (continued)	
Participant 4, Asian Female, 21, working in private sector (locum)	**Participation**: appreciated being exposed to the clinics as it allowed for refinement of techniques-" my technique … whether it's too long or too short but the technique is there and I was confident of that" **First patient experience**: "I don't know if they can tell that this is my first day! I just got into it and did what I was supposed to and I was fine after that, and my next patient was like I had been practising for years …" **Reification and realization**: recalled feeling overwhelmed by the volume of work but then a refreshing realization dawned-"you take in so much and you feel that you can't remember everything but when you get to the situation (patient examination) it sort of just falls into place" **Skills developed through practice**: "when you do something over and over you get better at it and you can do it faster … I just think that experience also plays a part in the way you solve (patient problems)" **Experience of meaning and competence**: briefly described experiences with patients that were unable to adjust to their spectacles and how she would go about and manage these patients. **Experience without meaning**: "Neurophys(iology) (a module in the program) isn't very realistic and you don't practice it in any way and so learning it was very difficult"
Participant 5, African Male, 23, working in public sector	**Participation**: content with the exposure however would have preferred to spend more time in the hospitals to see more patients with ocular pathology -" we could be more exposed to difficult cases, more pathology instead of seeing it in slides … (and) pictures that you get out of a book … (maybe) you could see it on a patient" **First patient experience**: was unable to recall specifically his first patient examination, but was comfortable that he was prepared- "well I felt I was prepared enough because I had enough knowledge to deal with the patients … and I do" **Skills developed through practice**: mentioned the development of skills from the clinical sessions: "from general clinic, (be)cause they do stress on communication and time, so you do learn to work faster and more accurately" **Experience without meaning**: recalled learning to perform certain optometry tests "instead of doing BIO (binocular indirect ophthalmoscopy- a test to check the health of the eye) on ourselves who don't have anything wrong, maybe we could do BIO on someone with diabetic retinopathy"
Participant 6, African Female, 24, working in private sector (permanent)	**Participation**: "the clinics are good … they just good the way they doing them. We (as students) are taught in a way that ... I feel like is sufficient to deal with a patient in (on a) daily basis" **First patient experience**: recalled feeling composed and confident when examining her first patient and related it to the experience of examining patients on campus-" It feels like you just taking (off from) where you left off (on campus)" **Skills developed through practice**: appreciated the development of time management and patient management skills when examining patients whilst training. Also enhanced her confidence- "It builds up confidence when you see that the patients actually appreciate what I'm doing" **Experience of meaning and competence**: cognizant of both theory and practical aspects needed for the profession- "optometry is more practical … let's say that you understand the theory of something, it's a lot easier to, to do it practically" **Experience without meaning**: "(Be)cause when we were studying it (psychology) … we (as students) thought it was just another module, but when you working in (professional) practice, in real life you see that it is not just another module"

Table 4- Learning as interrogating the meanings of experiences (continued)	
Participant 7, African Male, 26 working in public sector	**Participation**: relevance of training experiences to professional practice- "in those external clinics out there … they are training students to do what is required out there (in professional practice)" **Skills developed through practice**: "we were developed to have those solving skills … after refracting (patient examination) you have to know ... you cannot just say 'ok now I have refracted' You have to know what you gona (going to) do next about that (patient management skills) … we cannot get everything in one place. Yah so we can get this thing here and you will grasp other things as you go along (to other clinics)"- transferability and learning from different patient cases **Experience of meaning and competence**: recalled the experience of seeing a cataract (ocular pathology) on a patient and being surprised as to how different it appeared when compared to the textbook pictures- "when I went to the hospital out there … some of the cataracts, they won't be the same as that on the picture that you used to see" **Experience without meaning**: "I have never used biochemistry. I know nothing about biochemistry … If you can ask me anything about biochemistry I think I won't know anything"
Participant 8, Asian Male, 21, working in private sector (locum)	**Participation**: was satisfied with the opportunities to engage in the practices of the optometry profession, particularly with being given the reign to perform visual examinations and manage patients on his own by final year – "I mean in fourth year … basically like you on your own … like to come up with your own clinical decision (managements of patients) and they (supervisors) guide you from there" **First patient experience**: recalled first day and related it to him examining patients at an external clinic- "the first day actually it felt like I was on the (Phelophepa health care) train … I never really think about it, just going through the motions. Only after the day then I realized … first day gone and saw (examined) like nine patients" **Reification and realization**: realization of role as optometrist in professional practice and contrasted it with that of student whilst training- "you would only realize (that you are an optometrist) like after when you go into private practice, but students will be students" **Skills developed through practice**: related to the development of interpersonal and intrapersonal skills- "working like with patients, it's a bit like humbling" **Experience of meaning and competence**: recalled examining a patient with ocular pathology and how it seemed for the first time- "I saw asteroid hylosis (eye related condition) for the first time " **Experience without meaning**: commented on some of the aspects of the theoretical part of the optometry program-"from the process of birth congenital, this so many weeks that ... I don't think, ok for theory its fine to know it, but in (professional) practice you don't really apply it. I don't think we going to ever use all that molecules and all that structures ... I mean linked to optometry, I don't see any point in doing it"

When students perceive activities to be relevant and meaningful to their careers, their potential for learning from these activities is enhanced (Case & Jawitz, 2004). The purpose of this section is to discuss the data presented in Table 4- **Learning as interrogating the meanings of experiences.**

Participation and reification

As mentioned previously, all participants appreciated participating in the practices of the optometry profession during the course of their professional education and training. It was felt that these experiences of examining patients, under the supervision of qualified optometrists (supervisors), allowed participants entry into the optometry profession as well as the opportunity of putting into practice their knowledge and skills. Three participants (3, 6 and 8) specifically expressed satisfaction in being given the autonomy of examining and managing patients more so towards the latter part of the optometry program (final year). This concurs with the findings reported by Case and Jawitz (2004) in that access to authentic learning experiences was recognized and valued by students as positive for learning as opposed to simulated training experiences. For example, one of the participants (6) explained that, "it's really good that we should always interact with patients before we go to the real world (professional practice)".

Thus it seemed that these authentic learning experiences were perceived as meaningful by these participants for their current roles as optometrists in professional practice. These authentic learning experiences can be equated to experiences of legitimate peripheral participation which Wenger (1998) illustrated as a means for newcomers to negotiate meanings and identities as a result of their participation in the practices of a community. These study participants suggested that their participation in these authentic learning experiences were associated with positive outcomes such as enhanced confidence. These perceptions were similar to other studies (Case & Jawitz, 2004; Godinez et al., 1999; Oermann & Moffitt-Wolf, 1997).

Some participants also reflected on their experiences of participation and the associated roles that they were now carrying out as optometrists in professional practice. The most

commonly reported was the realization that their participation in external clinical sites was the same as what is required in professional practice. Whilst other participants (2, 3 and 8) reported that the realization of 'being an optometrist' only dawned when actually working in professional practice even though they acknowledged that what they were doing as students when training was connected with what they are doing currently in professional practice. Additionally in terms of reification, participant 2 reported, "it (the optometry program) made me grow up as an individual …". For me this implies that her participation within the program allowed for her maturation, as an abstract concept, to take on meaning as if it was a concrete object.

First patient experience

Some participants (3, 4 and 6) seemed to be more aware of their roles particularly during their first few days in professional practice. This is not surprising because when graduates enter work environments, such as professional practice, for the first time they experience many emotions (Graham & McKenzie, 1995). For example participant 2 reported, "at first I was really scared because I was just coming out from being a student and a few months ago, I wasn't sure and everything was like you know miss (for her supervisors) will you please come (and) check, I am not sure".

The other participants in my study were no different and reported experiencing mixed emotions of excitement and anxiety. For example participant 3 reported when examining his first patient, "there was this intimidating thing like 'hey where is Veli (a supervisor), where is Ms Rampersad (a supervisor), where is so and so you know to make sure". Thus it seems in terms of their emotional states, when entering the workplace, these participants were similar to the nursing participants in the study by Oermann and Moffitt-Wolf (1997).

Particularly for optometry graduates, these emotional states may be accentuated due to the absence of a supervisor when undertaking visual examinations on patients in professional practice. In fact, four participants (1, 3, 4 and 6) recalled feeling initially intimidated with the realization that there was no supervisor in professional practice to

assist if needed. For example, one of the participants (4) reported, "you know that (having a supervisor) was your sort of 'safety blanket' because you knew that there was always someone to check. So you would not be sending the patient off without them being checked first … but you just have to take the plunge and you have to prepare to take the plunge … you have to go into work on that day and know that there is nobody else that is going to watch over you". This concern over the lack of supervision together with managing the full responsibility of their patients, as reported by these participants, is similar to the feelings that other health care graduates reported when making the transition from university to professional practice (Smith & Pilling, 2007).

In contrast, two other participants (5 and 8) who reported working closely with other optometrists in professional practice, expressed feeling more comfortable when examining their patients. This they claimed was due to the awareness of the support they had in their working environments and furthermore acknowledged that they were indeed fortunate to be in such a situation. Feeling more comfortable and in a safer environment, when working with the support of formal mentors and/or other more experienced practitioners is not surprising as such feelings were also previously reported by nursing (Godinez et al., 1999; Pollard, 2009) and social work graduates (Agllias , 2010). Additionally it has been reported that such forms of support positively impact on novice professional's abilities to cope and adapt to new environments (Graham & Shier, 2010), as was reported by participant 5 and 8.

Skills developed through practice

Participants mentioned that with examining more patients, time management as a skill improved, similar to another study (Sleap & Reed, 2006). However a common report was that whilst training, the time allocated to complete the visual and ocular examination varied from that of the time allocated in professional practice. For me this implies awareness of the change in the two environments in terms of time resources consistent with reports by other researchers (Le Maistre & Paré, 2004; Perrone & Vickers, 2003; Smith &Pilling, 2007). Participants (1, 3, 4 and 6) expressed concern that the time was much shorter in professional practice and this sometimes caused them to

feel pressurized. None the less, the overall idea put forward was that as their time in professional practice increased, they improved and were able to examine and manage patients in a short time period as can be interpreted by the comment of one of the participants (3), "… that (improvement in time management) you get with experience (be)cause now I am trying to get much more faster, I take about 30 minutes and you know I try to be much more faster now".

Coupled with an improvement in time management was also an awareness of improvement in patient management and problem solving skills. This seemed to be in contrast to the results reported in the study by Smith and Pilling (2007). In that study health care graduates reported such skills as challenges they associated with professional practice. A possible reason postulated for this difference is that, in the current UKZN optometry program, students undertake their clinical modules with much emphasis on patient management and problem solving skills. Thus it can be proposed, for this reason these participants considered their patient management and problem solving to be apt as a result of their intensive clinical exposure during the course of their professional education and training.

What came as a surprise to me was the idea that some students were probably more worried about fulfilling the criterion of the number of patients examined (quota) as compared to learning maximally from each patient. For example participant 8 commented, "as a student you worried about you making your patient numbers, (you) not really learning from the patients". I must admit that even though only two participants (4 and 8) raised this point, I personally felt disheartened that graduates felt this way. On the other hand, some other skills were developed through practice including, interpersonal, intrapersonal (understanding of other individuals and oneself, tolerance and patience) and communication skills.

Experiences of meaning and experiences without meaning
Some participants mentioned specific instances in which they had encounters with patients ranging from cases with ocular pathologies (1, 3 and 7) to patients who were

unable to adapt to their spectacles which were prescribed (4). Regarding these experiences, participants explained how they proceeded to make sense and essentially deal with them using their theoretical knowledge, practical skills and reflection on their professional education and training experiences as students. As a result, these can be interpreted as experiences of meaning and competence within the optometry profession. This can be interpreted from the comment by one of the participants (2) who said, "it (clinical exposure) was very helpful in that if you obviously saw something then when you see it the next time then you will know (it)". In this respect, these optometry graduates seem similar to the occupational therapy graduates in the study by Tryssenaar and Perkins (2001) who also reported reflecting on their professional training experiences when encountering patients in professional practice.

In addition to experiences of meaning, experiences without meaning were also reported by some participants. Whilst some basic science and preclinical modules like mathematics, anatomy and physiology were recognized as important for preparation in the clinical modules, modules such as chemistry, biochemistry and biology were perceived as irrelevant by five participants (1, 2, 3, 7 and 8). These responses are comparable to findings by Eyal and Cohen (2006) on medical graduates who also responded similarly in terms of the usefulness of these basic science modules for clinical preparation.

One participant (1) expressed very passionately her lack of understanding as to how the basic science modules were supposed to influence her development as an optometrist. This was interpreted by her comment, "I don't see the need or how that (basic science modules) influences us as health care professionals. I won't say optometrists because as first year students we have to do general biology and chemistry but plants (!) I don't see how that affects us at all (!)". This is in contrast to another participant (4) who regarded the basic science modules as important for a foundational basis and problem solving skills in the clinical science modules. For example she reported, "it is important to do it (basic science modules) because when you do a science course or science

courses, it allows you to think logically. It allows you to problem solve … and it's hard, it's really hard, but it opens your mind".

Aspects of the professional education and training program were perceived to be insignificant if they could not be transferred to professional practice. Interestingly thus far all participants reported benefitting from their generational encounter experiences however one participant (4) explained that at times she found these encounters as inadequate to her learning. For example she explained, "they (supervisors) do tell you sometimes that this is the area that you need to work on, but they don't tell you how to work on it! For example when you doing a technique wrong they tell you 'ok you need to work on this technique', but they would not necessarily show you how". Even though only one participant raised this as a concern, it is still nonetheless unfortunate and could have influence over academic program planning decisions related to supervision.

4.4 LEARNING AS BECOMING AND THUS CREATING AN IDENTITY

This section begins with table 5 which contains participants' experiences of learning as 'becoming' an optometrist within the professional education and training program they had experienced. The analysis for this section was structured using the concept of identity development in relation to practice, belonging and meaning. In this sense, participating in and interpreting the practices and essentially belonging to a community served as the source of identity development. Thus the developments of these participants' identities in relation to their experiences as students at university and as optometrists in professional practice will be discussed. In this respect, their experiences of participation, non-participation, competence and incompetence are also highlighted.

Table 5 - Learning as becoming and thus creating an identity

Participant number, demographic details	Learning as becoming
Participant 1, Asian Female, 21, working in academic sector	**Identity through participation**: "we were groomed to fulfill these challenges (of professional practice), mostly practical exposure" **Identity as a competent professional**: "it's exciting because you saw (examined) the patient and you could manage accordingly and when you have a patient that says 'thank you' or I had a patient who said 'it was the best eye test they had' … I think that campus prepares you to an extent that you can feel confident (as an optometrist) when you enter the room" **Identity as an independent learner**: "I don't expect my lecturers to fully supervise you … as a student, your reading has to come from yourself … as a student you have to work yourself and that is just one of those things"
Participant 2, Asian Female, 21, working in the academic sector	**Identity through participation and non participation**: related to engaging in the practices of the profession within its scope of practice- "the fact that I could identify a cataract and refer the patient, it makes you feel like, even though … I am not going to be the one doing the cataract operation ... the fact that you referred ... you're going to make a difference" **Identity as a competent professional**: "it's important that you detect whatever it is, and you have to be able to do what you qualified (for) you know for your profession otherwise it's pointless" **Identity as a active learner**: "it's a tertiary learning institution and sometimes, no not sometimes all the time you are expected as a student that you have to meet half way (in the learning process)" **Identity as a helper(self fulfillment)**: "at the end of the day you feel so much happier that you helped someone and you also learn … you learn something new every day"
Participant 3, African Male, 25, working in private sector (permanent)	**Identity through participation**: explained how patients recognized him and valued his work as a result of working at a practice- "one patient came in and they like 'oh your back' and I was like 'yah I'm back' and then he's like 'you so good I'm gona (going to) bring all of my family' … you as an optom(etrist) you feel good" **Identity as a competent professional**: "when I actually diagnosed acute anterior uveitis (eye related condition)and it was quite nice" **Being recognized**: "when you at varsity(university), then you doing optometry, you want to be recognized … you carrying that trial case and wearing that lab coat …"
Participant 4, Asian Female, 21, working in private sector (locum)	**Identity as an incompetent professional**: "ophthalmologists (eye specialists) they just don't think too highly of you (as an optometrist)" **Identity as a helper (self fulfillment)**: "as an optometrist its nice when you give a patient who has never worn specs before the ability to see" **Meta-awareness of self as a student**: "I can honestly say that campus can't prepare you in that regard for every possible situation that is going to come up in practice, you can't be taught experience" **Being recognized**: "I noticed that age is such a huge factor, if you look like a young girl, they'll tell you 'you know you look so young that I didn't expect you to be the optometrist' … I actually got asked once 'are you a real optometrist?' "

Table 5- Learning as becoming and thus creating an identity (continued)	
Participant 5, African Male, 23, working in public sector	**Identity as an incompetent professional**: "sometimes when you can't help the patient, you don't know what to say to them, and it's very difficult"
Participant 6, African Female, 24, working in private sector (permanent)	**Identity through participation**: "the thing that we are given the opportunity to go to hospital, prepares you as an optometrist in hospital, in that this is how you going to deal with this (situation)" **Identity as an incompetent professional**: "when patients come to complain, they mostly want to speak to the optometrist ... if you don't know what, when and how, then you confuse the patient … now the patient will start undermining you thinking that you don't know your work" **Identity as a helper(self fulfillment)**: related an experience she had with a patient who only wanted to be able read - "in a practical world what is more important is that the patient would want to see something and if they get to see that thing they become happy" **Identity as an active learner**: very expressive about how one should not limit oneself and use all opportunities to continue to learn - "if you get a chance to try it, you should go and try it … you as an optometrist will have to decide that 'am I willing to learn?'" **Identity related to institution (and program)**: "I think that they (the optometry discipline) have done quite a lot, cause that's when you firstly interact with the patient … where you get to interact with your patients from third year …"
Participant 7, African Male, 26 working in public sector	**Identity through participation**: "the time that I spent in the hospitals around Durban while I was a student, it really helped and equipped me a lot. You know (students) spend … much time there in the hospital than here on campus yes, I think it will make them strong. It will make them you know fit for the environment out there" **Identity as a helper (self fulfillment)**: "you know it always happens with spectacles, that once they (patients) get their spectacles they, will always be excited. You tend to raise that hope that was dead ... starting to vanish. The patient's facial expression …t hey will tell you everything … this patient is satisfied. I did my job correctly … it just feels great!" **Identity as an independent learner**: "I mean you have to tell yourself that I mean you on your own, so you have to do everything that you can to help the patient so I had to read as well …"
Participant 8, Asian Male, 21, working in private sector (locum)	**Identity through participation**: "like if I do a complete eye test on you and then I'm unsure … if I'm like battling towards the clinical decision ... your supervisor is going to say 'you know what come in and let's do it(clinical decision) … that sort of thing" **Identity as a helper (self fulfillment)**: "it's working like with patients, it's a bit like humbling; they can't really afford expensive glasses and stuff. Also in terms of vision … they have never seen that clear before, so it's like you see the expression on their face, those are the patients that you wait (for) ... those are the patients that make your day!" **Identity as an independent learner and meta-awareness of self**: "I think the continuous professional development it helps … (be)cause those articles are quite relevant. I think in that way I mean you learn a lot … you just have to go and read ... pick up a book or article … even if you practicing for years I mean the patients are different all over so you would expect to (learn)"

The purpose of this section is to discuss the data presented in Table 5- **Learning as becoming and thus creating an identity**. As mentioned previously in the conceptual framework, practice and identity development are linked via a complex yet complementary process.

<u>Identity through participation and non-participation</u>

It was observed that most participants indicated that their identities as optometrists were attributed to their clinical and practical experiences during their professional education and training. Specifically, three participants (2, 6 and 7) highlighted their experiences at the external clinical sites as instrumental to their identity development as professional optometrists. For example participant 6 reported, "… given the opportunity to go to hospital prepares you as an optometrist in hospital, in that this is how you going to deal with this (situation)". Thus it seems that participants from this study appreciated being exposed to clinical sites whilst training as it allowed them not only to put into practice but also extend their knowledge and skills consistent to the claims made by Super (1989). From the perspective of Sfard (1998), this aligns well with the notion that meaningful participation is fundamental to the development of an identity.

Hence gaining exposure to the practices and communities of the profession facilitated the development of professional identities. In this sense practice and community come to be associated with the development of a professional identity. Wenger (1998) concurred and argued that engagement in the practices of a community of practice, and the resulting negotiation that takes place thereof results in the development of a professional identity. Thus it appeared that these participants' learning experiences in authentic work-like situations, during their education and training, had a deep impact on them as professionals and their professional identities, similar to reports by other authors (Ashton, 2009; Case & Jawitz, 2004).

As mentioned in the conceptual framework, experiences have immense potential to influence one's identity as participant 4 related how some of her interactions had positively influenced her perceptions of herself as an optometrist. In this regard, she

said, "it (experience of working with ophthalmologists) made me want to be more considerate and it made me want to be someone who helps people more".

Parallel to this, other participants (1, 2 and 8) seemed to value the opportunity of interacting with other more experienced optometrists, in the capacity of supervisors in their clinical sessions. For example participant 2 explained, "when you come to your supervisor you have to present your (patient) case and in my days when you said anything you must be able to answer why. So that works very nicely because that is how they (supervisors) break the barriers away in that they are not feeding the answers to you". In this sense, participants were comparable to newcomers whilst their supervisors represented more established members within the profession.

As a result, these newcomers' professional identities were being created through generational encounters and experiences of legitimate peripheral participation. Relating to the argument by Wenger (1998), these generational encounters and experiences of peripheral participation are regarded as means of identity development and expansion particularly for newcomers on an inbound trajectory. Indeed, I assume that my study participants engaged in the UKZN undergraduate optometry program in order to develop into professional optometrists.

Even so, non-participation is also likely to influence one's identity. All participants seemed weary of the limitations in their scope of practice as professional optometrists. This was with respect to prescribing certain medication (7 and 8), diagnostic procedures (2, 4, 6 and 8) and sometimes not being able to help their patients with psychological problems (5 and 6). For example one participant (5) explained, "I did feel sad that I did not help that patient, psychologically there was nothing really I could do".

These experiences of participation and non-participation allowed for participants to adapt their interactions with others (patients, ophthalmologists, colleagues, employers and optometric assistants) in the world and in a sense create ways of being in world. This seemed to reinforce the notion of negotiation of participation but in this instance

beyond meanings alone and towards the development of a professional identity as well (Wenger, 1998).

Identity through competence and incompetence

As mentioned previously, identities are also likely to be influenced by experiences of competence and incompetence. In this study, most participants reported instances in which they demonstrated competence in their capacities as professional optometrists. These instances ranged from simply being able to perform visual and ocular examinations on patients, to being able to make a diagnosis and follow through with appropriate management. Additionally the need to be recognized as competent both internally by themselves, and externally by their colleagues and supervisors surfaced during the interviews. For example when relating one of his experiences in professional practice participant 3 explained, "I need(ed) to see this (abnormality in patient examination) and then there was this thing that was like pushing, find out what's really happening".

On the other hand, the need to be recognized externally as competent seemed to be very important particularly for participant 4. For example when relating her experiences in professional practice she explained, "you also need your colleagues to respect you and you also need your colleagues to know that they have hired someone who is competent". When asked about her experiences as a student she explained, "even in general sessions (internal clinics) where you're not being assessed, I think that I also felt the same way where you want to be seen as you doing things properly". Similar responses concerning external recognition were also reported by participant 3 who explained, "when you on campus, oh that person is wearing a white lab coat and carrying the trial case and the oscope (ophthalmoscope-optometric equipment), he must be a doctor!"

At the same time, experiences of incompetence were also reported. When undertaking the analysis, it seemed that experiences of incompetence could also be associated with experiences of non-participation. For example the comment by participant 5, "I did feel

sad that I did not help that patient, psychologically there was nothing really I could do", can be interpreted as an experience of incompetence which results in non-participation.

Self fulfillment through their identities as professional optometrists was commonly reported during the interviews. Most participants (2, 3, 4, 6, 7 and 8) expressed their delight when they found that they could help their patients. That inherent immeasurable sense of accomplishment seemed very important to them. For example participant 2 explained, "you put on that pair of spectacles and it brightens up their face, that language talks! The smile talks so much ... they don't need to tell me thank you … that was more than enough for me". In this regard, these participants seem to support the findings of researchers (Graham & Shier, 2010; Marchese, 1998) in that students' professional identities are extended as a result of experiences of personal meaning. Additionally Polach (2004) described instances of personal satisfaction as very important to the overall well-being of new graduates especially during their first few months in the workplace. It can be argued that these experiences also contributed to these participants' sense of belonging in the new communities they found themselves within.

Most participants (1, 2, 4, 6, 7 and 8) were well aware of themselves as learners, some more than others as can be interpreted by the comment of one of the participants (1), "I think that any student can only be fully prepared if they do work themselves, even if they assume the (optometry) curriculum to be 100%, then it does not mean that the student is 100% prepared if they do not work with it. For me it works both ways, as a student you have to work yourself".

Common points that were expressed included acknowledgement that as learners they also needed to work to ensure that they benefitted maximally in their professional education and training and that being thoroughly prepared for every patient they were likely to encounter in professional practice was idealistic. Rather the realization that with experience, in examining more patients, one is likely to become more familiar with the optometry profession was put forward. For example participant 1 commented, "as for

seeing different and new or varied conditions in patients, I think that will come with experience". Personally for me, this last point demonstrates a very mature outlook and great self awareness as a novice optometrist. These points align well to the notion of lifelong learning outlined Tuijnman and Bostrom (2002) in which learning activities were related to ongoing professional and personal development throughout one's life.

It was surprising to find that even though participants worked in different sectors of employment with the optometry profession, this did not affect their professional identities in any noticeable way, even though I thought it would. Participants, irrespective of the sectors of employment, spoke in general of their professional identities being influenced by experiences of participation, non-participation, competence and incompetence. When asked about examining and managing their patients, most participants reacted in similar ways in terms of their identities being extended through feelings of self fulfillment. Thus for these study participants, being employed in different sectors of the profession did not make any considerable differences to their profession identities.

4.5 GRADUATE RECOMMENDATIONS

This section begins with table 6 which contains participants' recommendations for strengthening the optometry program to meets the demands of professional practice.

Table 6 - Graduate Recommendations

Participant number, demographic details	Graduate recommendations
Participant 1, Asian Female, 21, working in academic sector	**Practical exposure**: " I would have liked more practical sessions" **Duration of program**: "sometimes as a student I used to feel that we might as well increase the study period from four years to five years because it is overwhelming … I guess if you increase it by a year including therapeutics it would be a little more manageable"
Participant 2, Asian Female, 21, working in the academic sector	**Duration of program**: "I think that it's (optometry program) just becoming like a whole lot more and with therapeutics … I think that the five year thing may be good" **Comment on program**: "I think that it (optometry program) has worked perfectly … as a student you don't appreciate it … I think that it was structured really well"
Participant 3, African Male, 25, working in private sector (permanent)	**Practical exposure**: "I just wish that I had a longer time to do BV (binocular vision- a module in the current program) … I was craving for more practicals" **Comment on program**: "everything was just quite ok ... it was excellent. There was nothing just besides the thing I said about BV (and) … like the invoicing which is something that you get out there ... it was very much excellent. Don't change anything ... its good it's excellent!"
Participant 4, Asian Female, 21, working in private sector (locum)	**Practical exposure**:"…maybe let us cut lenses …" **Comment on program**: "I feel bad that I never spent enough time in the quad and the cafe and making friends out of the health science profession ... that's the thing unfortunately there is so much and such little time … because it's (optometry program) so involved and it has to be …nobody tells you how much they earn …nobody prepares you for that!" **Module (Zulu)**: "it's so hard to give you just one semester and say 'there you go now you can speak a certain language … maybe if at all spread the course over the four years" **Prescribing**: "I am not equipped to help them and that makes me a bit sad in terms of pathology and you know prescribing and in terms of medication … (that) should have been instilled in us a little better" **Suggestion for improvement**: "sessions you would have with a few optometrists and their problems and how they solved it and you can only learn from that in that … how they thought about it so the logical steps that they went through" **Module (Dispensing)**: "I think dispensing is a very important course and I think that maybe it could be carried over, you know you do it in second year and in final year you sort of need to remember everything and there's too big a gap to do that" **Module (Practice management)**: "practice management does not prepare you … they really don't tell you how to start (a business) … prices, dealing with supplies, that sort of thing … people would ideally like to open up their own practice, but where do you learn that from? The technical aspect of it like how do you deal with suppliers … who's the best supplier, which labs do you go" **Module (Psychology)**: "you not really prepared … they don't teach you how to be equipped for handling the sort of the social aspects (of the patient examination) "

Table 6- Graduate recommendations (continued)	
Participant 5, African Male, 23, working in public sector	**Practical exposure**: "they could instead of showing pictures that you get out of a book, if they could, you could see it (ocular pathology) on a patient … I think that if people could go more to Phelophepa (health care train), they would gain a lot ... you get exposed to a lot of pathology … it's not the same as seeing the picture" **Comment on program**: "I think the other stuff it was ok, except that if we could be more exposed to difficult cases … more pathology instead of seeing it in slides" **Module (Psychology)**:"maybe if we could have a more intense module in psychology than the one that we did"
Participant 6, African Female, 24, working in private sector (permanent)	**Dispensing**: "it's very important that when we do dispensing … we do it practically" **Module (Practice management)**: "we have a whole year to do management …(they should) incorporate how you going to be making this money, how you going to be invoicing, how you going to be claiming from medical aids and what kinds of medical aids, we need to know all those stuff … I think that we should have been taught those things (be)cause they are concerning a practice, we should be knowing that (codes, medical aid procedures) as optometrists"
Participant 7, African Male, 26 working in public sector	**Prescribing**: "some of the medications, I was told that we can prescribe for example spersallerge (medication for allergic reaction in eye) … I never saw a spersallerge before up until I went to the train … you know prescribing something for the first time" **Suggestion for improvement**: "start optometry from first year … by that fourth year … then you would be able to feel yah confident enough … this stuff you can do it yah I started this things in first year, so I mean there is no way that I can't do it in fourth year" **Comment on program**: "when it comes to payments, salaries and all, you know we don't know ... we don't have an idea as students. I think it should start here at school (at campus)"
Participant 8, Asian Male, 21, working in private sector (locum)	**Comment on program**:"I think everything else was fine … the second year load with your physio(logy), anatomy is quite hectic" **Module (Zulu)**: "that (zulu) module basically is done in first year … but to be honest you can't obviously in one semester learn the whole language that you not accustomed to" **Suggestion for improvement**: "like an ophthalmologist teaching them path(ology). I think that would be beneficial … (be)cause I mean ophthalmologists interact with patients … they have firsthand experience. Maybe once a week, get an ophthalmologist in and he can put up like live cases like 'ok this is what I saw, signs and symptoms ok', and then a few differentials maybe it's this, maybe it's that" **Module (Dispensing)**: "I don't really think like that particular course is given much attention to on campus … you can do like the perfect refraction but if you don't round it off with a good dispensing, and especially if it comes to multifocals and stuff, it's a problem … there's not much time spent in the dispensing course"

The purpose of this section is to discuss the data presented in table 6- **Graduate recommendations.**

<u>Practical exposure and modules within the program</u>
As mentioned previously, all participants expressed a great awareness of the role and benefits of the practical and clinical aspects of their professional education and training. What was mostly pleasing was the awareness that the exposure obtained at the clinical sites were valuable in the sense that it is similar to professional practice.

Despite this, recommendations were made to increase the amount of clinical and practical exposure in both the general and specialized aspects of the clinical optometry modules. One participant (3) recommended that students should start examining patients early in the program whilst others (4, 6, 7 and 8) recommended that there should be a greater emphasis on practical and clinical aspects of the profession especially in prescribing and dispensing visual aids, spectacles and medication.

Suggestions for improvement specifically with respect to the dispensing module included possibly spreading the module over the period of study (4 and 8). For example participant 8 explained, "they should push like dispensing probably into like a third year (be)cause like from third year onwards it is like full optometry … so like basically you focused only on optom(etry). I think that people would probably give more attention to it that way".

Additionally a concern was raised over the suitability of a module in which students learn to speak isiZulu. Some participants (4 and 8) felt that the content was too generalized and the duration of the module was too short. Suggestions for improvement included making the module optometry specific and spreading the module over the period of study. A call for a more intensive module in psychology for better preparation with respect to social aspects of the visual and ocular examination was also suggested by three participants (4, 5 and 6).

Concerning exposure to the administrative aspects of the optometry profession, from those who reported being unprepared, all but two participants (3 and 5) strongly recommended that preparation for these tasks (invoicing, knowledge of suppliers and optometric labs, medical aid claims and benefits) should be included in the current program. The two participants that did not make this suggestion reasoned that it would be unfair and not feasible for the program to change every time a change regarding these administrative procedures occurred.

Some participants (4, 5 and 6) felt that the practice management module should be moved to first year as the final year workload was too intense with its research and clinical emphasis. Furthermore a heightened emphasis on the administrative aspects of the program was called for specifically to be incorporated into this practice management module. Additionally two participants (4 and 7) raised another point concerning the administrative aspects of the profession, this time related to salaries and payments. These two participants felt rather dejected and called for a stronger emphasis on these aspects during the course of their professional education and training.

These optometry graduates also reported reduced levels of confidence with respect to prescribing of medication. In this respect they seem similar to medical graduates in their first year of practice (Heaton, Webb & Maxwell, 2008; Tobaiqy, McLay & Ross, 2007). However, this is a significant finding and could have important implications especially with the decision to include therapeutics into the optometry educational program.

A concern was also raised over the intensity of the program in relation to its duration. Some participants (1, 2 and 4) reported feeling overwhelmed by the workload and not having much time for socialization whilst on campus, similar to another study (Olupeliyawa et al., 2007). Most participants (1, 2, 4, 5 and 8) reported that the program was very involved, for example participant 5 commented, "we had to go through so much of stress because of that (the bachelor of optometry qualification)". Future academic planning decisions will have to take cognizance of students' stress and

experiences of overwork. Indeed this would be important considering the intended introduction of therapeutics into the current optometry program at UKZN.

In summary, these results reflect how these graduates perceived their professional education and training experiences in preparing them for professional practice. I explored their perceptions in terms of learning as doing, belonging, experiencing and becoming. Even though these participants had made recommendations as to how the program can be strengthened, it seemed that in general they were satisfied with the professional education and training program they had experienced. The findings have important implications for future program planning decisions at the UKZN optometry discipline, an issue that will be addressed in the following chapter.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

The purpose of this chapter is to provide a summary of this research study, try to answer the key research questions and make recommendations for future research.

<u>Summary of study</u>

The aim of this study was to explore graduates' perceptions of the UKZN optometry program as preparation for professional practice. This was considered necessary in light of the limited literature available on optometry graduates after they complete their professional education and training and subsequently enter professional practice. Furthermore it was considered an appropriate time to conduct this study as the UKZN optometry program will be restructured to incorporate the instruction of therapeutics.

Eight graduates, currently in professional practice, from the 2009 graduating class were selected using purposive sampling. Even though interviews are sometimes criticized as a method of data production, in this study they served as a means to generate detailed personal accounts about how these participants perceived their education and training in preparing them for professional practice. Additionally concerning the study methodology, a conscious effort was made to provide a full description of the procedures, instrument and processes used in the execution and completion of this study.

At this point it is important to consider whether using the communities of practice framework was appropriate to the aim of this study. From the data produced and the results therefrom, it seemed that there was a close fit between the produced data and the elements of the conceptual framework. Participants described their learning experiences within the optometry profession as firstly newcomers (students) and then as optometrists in professional practice. In general, participants reported gaining knowledge, competency and proficiency in their skills through their experiences of examining and managing patients with guidance from their supervisors.

Participants seemed to prefer their external clinical experiences as a common report was that it was similar to their current experiences now in professional practice. Additionally participants valued these experiences for the development of other work related skills such as communication, time management, team work and problem solving. Participants reported specific learning experiences in which they developed professional identities and meanings. These identities and meanings were attributed to their participation and negotiation in the practices of the optometry profession during their professional education and training.

Key research questions

Considering the aim with which this research study was conceptualized, it is my belief that this study has provided some insight into how graduates perceive the UKZN optometry program prepares them for professional practice. The purpose of this section is to answer the key research questions posed.

1. In what ways do graduates perceive that the knowledge and clinical skills comprising the optometry program provide for the needs of professional practice?

This study demonstrated that participants perceived the knowledge and clinical skills in the optometry program as being adequate in their preparation for professional practice. To this end these participants reported specific instances of knowledge and skills being learned and then expanded and refined as they were put into practice in authentic work-like learning experiences. As a result of this, participants reported in general being prepared for professional practice in terms of the knowledge and clinical skills that they perceived were required. In fact, even though suggestions for improvement were made, none of the eight study participants reported difficulty in examining and managing patients whilst in professional practice.

In terms of clinical skills few deficiencies were reported as all participants expressed their satisfaction with the practical and clinical aspects of the optometry program. As a result, they reported being comfortable enough to examine and manage patients alone in professional practice. Participants also spoke about being able to establish links

between their theoretical knowledge and practical skills as a result of clinical aspects of the program. In terms of the structure of the program, these participants particularly appreciate being exposed to the theoretical, practical and clinical components of the clinical modules as it allowed them to expand their knowledge and develop professional identities.

2. How do graduates believe the program can be strengthened to meet the demands of professional practice?

Even though participants valued their clinical experiences, recommendations for increased exposure to clinical experiences, both in the generalized and speciality areas of clinical training, were made. Participants also recommended that clinical training should occur earlier in the professional education and training program. I assume these suggestions for earlier patient contact and more clinical experiences are related to the positive benefits of these experiences. Thus I propose that since graduates perceived these experiences to be beneficial to their preparations for professional practice, they possibly believed that increased exposure is no doubt going to be more advantageous towards their preparation.

Participants also highlighted the importance of the dispensing module within the professional education and training program. It seemed that they were unhappy with the way it was structured and felt it lacked relevance to professional practice. Thus a recommendation for a more intensive yet relevant module to be spread throughout the professional education and training program was made. In the same light, recommendations for other modules (isiZulu and psychology) in terms of relevance to the optometry profession were also made.

It was believed that better preparation for the commercial and economic aspects of the profession would benefit its graduates. Thus participants singled out the practice management module and suggested that a greater emphasis and possibly more exposure to the administrative procedures they were likely to encounter in professional practice, would strengthen the program.

Recommendations for program planners and suggestions for future research

In light of the proposed restructuring of the optometry program to incorporate the instruction of therapeutics, the findings of this study will indeed be helpful to program planners. From the literature, conceptual framework and findings of this study, some recommendations that may be worth additional consideration include but are not limited to:

a. The possibility of increasing the extent and quality of engagement in the practices of the optometry profession by:

- Increasing the extent of clinical training in the program.

- Permitting earlier student-patient interaction in the program.

- Allowing for final and third year students to interact with each other in seminars related to clinical experiences.

- Allowing new graduates to interact with final year students.

- Allowing for greater student-supervisor interaction with respect to feedback of clinical experiences.

b. The possibility of facilitating better understanding of the shared repertoire associated with the optometry profession by:

- Allowing students to prescribe and use certain medication and drugs during the course of their professional education and training.

- Allowing students opportunities for exposure to the administrative and financial aspects of the profession. Thus the possibility of students developing business plans for starting an optometry practice including interaction with optical suppliers, laboratories and medical aid companies is recommended.

- Allowing students greater interaction with ophthalmologists.

c. The possibility of developing reflection to a greater extent in the program by:

- Allowing for more forums, for example seminars, in which students present their patient experiences to their colleagues and supervisors.

- Adopting more case based learning approaches in the theoretical and practical aspects of the program.

I believe that these recommendations will enhance the development of professional identities and meanings within the program.

Considering the methodology used in the execution of this study, it is recommended that the study be expanded to include graduates of other optometry educational programs, using diverse research designs. Thus a quantitative approach using a survey methodology is suggested. As a result, the perceptions of graduates from different universities offering optometry education can be elicited and compared. Additionally the study can be extended to include different cohorts of optometry graduates from the UKZN. In this way the perceptions of different cohorts of graduates can be compared.

Nonetheless qualitative studies are attractive in terms of their abilities to facilitate interpretation and in-depth understanding. Thus it is strongly suggested that more research studies within the optometry profession be performed to promote understanding of the complexities associated with the practices of this profession. This could take the form of exploratory studies aimed at understanding students' clinical experiences, their first patient examinations, their group work experiences and their transition from university to professional practice.

In this study, participants have provided useful insight into how optometry students learn and develop into professional optometrists though various means throughout their professional education and training. These means included learning through engaging in practices of the profession, becoming associated with and essentially belonging to professional communities within the profession, negotiating the meanings of their experiences and lastly through the development of professional identities.

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It is hoped that this research study contributes to better understanding the ways in which graduates perceive the UKZN optometry program as preparation for professional practice. As a recommendation such studies should be conducted annually and the feedback integrated into the professional education and training program.

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INFORMATION DOCUMENT

Study title: Graduates' perceptions of an undergraduate optometry program at a tertiary institution: a qualitative study

Dear Graduate

Optometry is both an art and science. The profession is dynamic and currently undergoing various changes in order to help us meet the demands of our patients. Last year you successfully completed all the requirements for the optometry program at the University of KwaZulu-Natal (UKZN) and entered professional practice.
In my 8 years experience as both a student and thereafter a tutor, evaluations of specific optometry modules have been conducted at the end of each semester. However no attempt has ever been made to evaluate the entire program. Yet this is vital in informing the optometry discipline about the structure, content, execution and delivery of the program.
In addition, not many studies have reported on graduates perceptions of their optometry program. Hence, I have undertaken this study to explore your views and opinions of the optometry program.

Invitation to participate:
You are thus invited to participate in this study by providing feedback about the optometry program at UKZN.

What is involved in the study?
I will need to interview you one on one for a maximum of 60 minutes. With your permission this interview will be recorded and the tapes securely stored for 5 years.
There are no risks associated with this study as it is an evaluation of the program that you have successfully completed.
Your participation in this study does not directly benefit you, however it is hoped that your perceptions and views of the optometry program will have a significant influence on the way in which the program is restructured at UKZN for 2010 and future years.
Your participation in this study is voluntary and you have the right to withdraw at any time without any consequences. In addition if you do not wish to answer any question that is asked of you, you do not have to.

Confidentiality:
Information gathered will be collated and reported such that it does not lead to the identification of specific persons. Your personal details and identity will remain confidential throughout the study procedure.

Contact details of researcher:
Ms Nishanee Rampersad   tel: 031 260 7652   email: rampersadn@ukzn.ac.za

Contact details of research supervisor:
Ms Frances O' Brien   tel: 031 260 3257   email: obrien@ukzn.ac.za

Interview Schedule (semi-structured):

Introduction:
- Thank participant for agreeing to be part of study
- Confirm purpose of study
- Obtain permission to record the interview. Indicate that tapes will be securely kept for five years in accordance with the University rules
- Confirm anonymity and confidentiality
- Confirm participation is voluntary, thus free to withdraw at any stage and to refuse to answer any question

Demographic details of participant: (will be filled by interviewer based on demographic questions asked of interviewee)

Age	18-20years	21-23years	24-26years	over 27years
Race	Asian	Black	Coloured	White
Current employment	Public sector	Private sector	Academic Institution	Other
Gender	Female	Male		

Question 1:
Reflecting on your first few months in professional practice, in what ways do you feel that as an optometrist you were able to meet the demands of your work environment?

Probes:
- Can you tell me about any of your experiences (with patients, the laboratory, front line staff and optical assistants, other healthcare professionals)?
- Can you describe for me instances where you felt unable to provide for the demands of your work environment?
- Can you describe for me instances where you felt adequately able to provide for the demands of your environment?

Question 2:
Can you describe how you felt the first time you consulted with a patient after leaving campus?

Probes:
- In what ways did you feel that you were prepared with the knowledge and skills to effectively examine and manage this patient?
- Can you describe for me, giving examples, how you felt when you found yourself responsible for the examination and management of your patients knowing that you have no support/guidance from a clinical supervisor?

Question 3:
To what extent do you think the clinical training at UKZN prepare students to perform effectively in professional practice?

Probes:
- What did you learn from these clinical experiences? In what ways were the clinical sessions helpful to your learning?
- Apart from the knowledge and clinical skills were there any other ways in which you think you benefitted from the clinical sessions or the program? (communication, interpersonal and intrapersonal, time management, problem solving and lifelong learning skills)
- How do you feel these clinical sessions influenced your development as a professional optometrist?

Question 4:
Can you tell me how it feels to work with people of different cultural backgrounds (with reference to your patients and staff (optical assistants, labs), I assume they have a different cultural background as compared to

Question 5:
As a student, did you feel that there were adequate learning opportunities for your needs in the optometry program? Can you tell me why you think so?

Question 6:
What changes would you like to see in the program to better equip optometry graduates for professional practice?
Probes:
- Are there any aspects of the program that you feel fail to adequately prepared students for professional practice? How should this be addressed?
- What aspects of the program did you find were most useful when you started in professional practice?
- What aspects of the program did you find were least useful when you started in professional practice?

Conclusion:

- To conclude is there any aspect that you would like to add or comment on?

Thank participant again for participating in this study.

UNIVERSITY OF KWAZULU-NATAL

20 December 2010

Ms. N Rampersad
Faculty of Education
School of Adult and Higher Education
PIETERMARITZBURG

Dear Ms. Rampersad

PROTOCOL TITLE: Graduates' perceptions of an undergraduate optometry program at a tertiary institution: a qualitative study
ETHICAL APPROVAL NUMBER: HSS/0084/10M

In response to your application dated 20 December 2010, Student Number: **200205039** the Humanities & Social Sciences Ethics Committee has considered the abovementioned application and the protocol has been given **FULL APPROVAL.**

Any alteration s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study must be reviewed and approved through the amendment /modification prior to its implementation. Please quote the above reference number for all queries relating to this study.

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Professor Steve Collings (Chair)
HUMANITIES & SOCIAL SCIENCES ETHICS COMMITTEE

cc   Ms F O'Brien (Supervisor)
cc. Mr. N Memela