Professionalism for intern blood transfusion biomedical technologists - An exploration of perceptions and potential teaching strategies

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DECLARATION

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ABSTRACT

Technical skills as well as professional values are essential areas of development in all health professional students including intern biomedical technologists. The aim of this study was to understand the intern blood transfusion biomedical technologists' perceptions of professionalism and to explore potential strategies for effective teaching of professionalism for improved application and practice. The key objective was to use the data findings to guide the upscale and redesign of the blood transfusion biomedical technology internship curriculum. A mixed methods research design was applied in the study using a questionnaire in quantitative phase and focus group discussions in the qualitative phase of the study. Purposive sampling was applied and the data collected was analysed using thematic analysis. The results showed that professionalism was perceived differently by the various interns with no primary or consistent definition of professionalism. Structured, rather than informal teaching of professionalism in the internship program as well as biomedical technology university undergraduate programs surfaced as an inarguable need. A host of meaningful approaches for teaching and learning professionalism were suggested by the interns and their educators. The findings provide a strong argument with recommendations for the upscale and redesign of the formal biomedical technology curricula to meet present day health care needs.

ABSTRAK

Tegniese vaardighede sowel as professionele waardes is beide sleutelareas van ontwikkeling in alle gesondheidsberoepe studente met inbegrip van biomediese tegnoloë. Die doel van hierdie studie was om die bloedoortapping biomediesetegnologie internskapstudente se persepsies van professionaliteit te verstaan en om potensiële strategië te verken vir die effektiewe onderrig van professionaliteit en wat toepassing en praktyke sal verbeter. Die sleuteldoelstelling was om die bevindinge te gebruik as riglyn vir die opgradering en herontwerp van die bloedoortapping biomediese tegnologie internskapkurrikulum. ‘n Gemengdemetodes navorsingsontwep is toegepas in die studie waarin ‘n vraelys gebruik is in die kwantitatiewe fase en fokusgroepbesprekings in die kwalitatiewe fase van die studie. ‘n Doelgerigte streekproefneming is gebruik en die data wat ingesamel is, is geanaliseer deur tematiese analise. Die uitslag het gewys dat professionaliteit verskillend beskou is deur die verskillende internskapstudente met geen primêre of konstante definisie van professionaliteit nie. Gestruktureerde eerder dan informele onderrig van professionaliteit in die internskapprogram sowel as in biomediese tegnologie voorgraadse programme is geopper as ‘n onomwonde behoefte. ‘n Uitgebreide lys van sinvolle benaderings vir onderrig en leer van professionaliteit is aangedui deur die internskapstudente en hulle dosente. Die bevindinge het ‘n sterk argument en aanbevelings vir die verbetering en herontwerp van die formele biomediese tegnologie internskapkurrikulum verskaf ten einde in die hedendaagse gesondheidsbehoeftes te voorsien.

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KEY CONCEPTS

Professionalism: Consists of those behaviours by which health practitioners demonstrate that they are worthy of the trust bestowed upon them by patients and the public (Swick, 2000).

Biomedical Technology: Medical laboratory science profession which contributes to health care through laboratory testing.

Biomedical technologists: Also referred to as laboratory professionals in the literature, hence both terms are used interchangeably in this study. They qualify and practice in the field of Biomedical Technology.

Biomedical technology undergraduate programme: A three-year university undergraduate health science education programme.

Blood transfusion: One of the several disciplines of specialization in the Biomedical Technology field. Blood transfusion is also a procedure where blood from a donor is administered to a patient as therapy to replace blood loss.

Internship programmes: Also referred to as pre-professional practice which allows students to gain real-world experience by working in the field with experienced and knowledgeable professionals (Oetjen & Oetjen, 2009). The blood transfusion biomedical technology internship programme is one such programme and is referred to as the 'internship programme' in this study.

Interns: In this study, the term 'interns' refer to biomedical technology students enrolled onto the one year blood transfusion internship training programme offered by the South African National Blood Service (SANBS).

Interprofessionalism: A process where health professionals collaborate and communicate with each other, enabling a synergistic influence of grouped knowledge and skills (Bridges, Davidson, Odegard, Maki & Tomkowiak, 2011).

Curriculum: A curriculum is about what should happen in a teaching programme – about the intention of teachers and about the way they make this happen" (Harden, 2007:10).

Chapter 1: Introduction and background

1.1 Introduction and context

This chapter provides the background to the study and includes an overview of the biomedical technology internship training programme offered at the South African National Blood Service (SANBS). The internship training is guided by a national internship syllabus or curriculum. Analysis of the internship curriculum has been used as the underpinning platform to explain the rationale for this study and what the study aims to achieve.

1.1.1 Background

Biomedical technologists, also referred to as laboratory professionals, serve an important role in medical and health care. They perform routine and specialised laboratory tests, results of which doctors are dependent upon for diagnosis and management of their patients. The broad purpose of biomedical technology is to contribute to health care through application of technical knowledge, laboratory skills and research development; all directed at diagnosing, preventing and curing disease.

1.1.2 Biomedical technology programme

Biomedical technology is a three-year university undergraduate programme which requires an additional one-year internship training at an accredited medical / clinical laboratory. The internship training is a prerequisite for biomedical technology students to write the national biomedical technology board examinations. Success in the board examinations allows the students to register as qualified biomedical technologists with the Health Professions Council of South Africa (HPCSA) and practice in their discipline of internship specialization, e.g. microbiology, blood transfusion, etc.

The SANBS is an accredited medical training laboratory and provides internship training for biomedical technology students. The primary focus of the internship programme is to develop students with the technical knowledge and skills competence to process and test blood specimens, release test results and provide blood products for transfusion to patients. Technical expertise, high levels of attention to detail, quality laboratory work standards, collaboration, communication, commitment and accountability for tasks performed are some of the essential competencies and professional values required of the interns.

In the broad context of teaching and learning, knowledge and skills competence are usually developed through structured teaching, either in the classroom or on the job. Educational curricula are usually explicit in defining teaching related to knowledge and skills development. Professionalism has traditionally been part of the hidden or informal curriculum; it was known to be “caught rather than taught” and as an outcome, it was implicit rather than explicit (Stern cited in Baingana, Nakasujja, Galuknde, Omona, Mafigiri & Sewankambo, 2010:2).

The biomedical technology internship programme is one such health science learning programme where teaching professionalism is not explicitly detailed in the formal curriculum. Professionalism is hence taught in varying formats, often with an unstructured, inconsistent approach differing in priority from one educator to another. This deficiency in curriculum underpins the rationale for this study.

1.2 Rationale for the study

As a health science educator at the Blood Service, I have found that several of the ‘new generation’ students enrolled on the internship programme show a general lack of professional values, which often persist as they progress into their careers. Poor professional conduct, lack of commitment and unsatisfactory work standards are often demonstrated by interns in the laboratory. Error rates in the laboratory, poor compliance to laboratory work standards and counselling of the interns by their superiors bear testimony to the challenges related to poor attitudes, behaviour and work standards.

As the researcher and educator involved with the training of the interns at the Blood Service, I am aware that dominant focus in the internship learning programme is directed towards technical or scientific learning with little focus on developing professional values in the interns. This may potentially be a contributing factor to the interns having varying perceptions, understanding and interpretations of professionalism, which then inform their attitudes, behaviour and work standards.

Extensive research on professionalism in medicine and various other health science disciplines has been conducted and published. Literature findings of several studies point to the growing threat of professional values and work standards being compromised in the medical and health science fields (Cruess & Cruess, 2006; Baingana *et al*., 2010; Frenk, Chen, Bhutta, Cohen, Crisp, Evans *et al.*, 2010). Little or no documented research on professionalism in the health science field of Biomedical Technology is available.

This study was therefore deemed to be of value and was aimed as a means to engage with the interns to gain insight into their perceptions of professionalism and to determine whether they felt the need for professionalism to be taught. Additionally, this study served to identify strategies for effective teaching of professionalism for improved practice. As the starting point in this study I conducted an analysis of the blood transfusion biomedical technology internship formal curriculum, which assisted me in constructing the main research question and the sub-questions.

1.3 Blood transfusion biomedical technology internship programme curriculum analysis

According to Harden (2007:10), "curriculum is more than just a syllabus or a statement of content. A curriculum is about what should happen in a teaching programme – about the intention of teachers and about the way they make this happen". McKimm (2003) further adds that curriculum defines the learning that is expected to take place during a course or programme in terms of knowledge, skills and attitudes.

Curriculum analysis is essential in identifying strengths and deficiencies of learning programmes as well the opportunities for improvement. Analysis of the blood transfusion biomedical technology internship curriculum was guided by a curriculum analysis framework that was adapted using Harden's 10 questions for curriculum analysis (Harden, 1986).

Table 1 below shows the curriculum framework that I used for the curriculum analysis and Table 2 shows the strengths and weaknesses identified.

Table 1: Curriculum analysis framework used for the analysis of the blood transfusion biomedical technology internship curriculum which guides the internship training programme.

No.	Question
i.	What is the purpose of the internship programme and how is the purpose communicated?
ii.	Are the learning outcomes relevant and appropriate to the broad programme?
iii.	Is the content adequate, relevant and is there enough time to ensure learning?
iv.	Are the theoretical and practical learning areas of the learning programme well integrated and do they relate to each other meaningfully?
v.	What teaching strategies are applied to achieve outcomes and are they effective?
vi.	**Are there opportunities for structured teaching of professionalism, humanistic and ethical values?**
vii.	Are assessment methods fit for purpose in terms of measuring outcomes?
viii.	Do the educators have the knowledge, skills and resources to deliver the programme?
ix.	Are there systems in place for guidance and support of learners?
x.	Is the curriculum adequately evaluated?

Table 2: Strengths and weaknesses of the blood transfusion biomedical technology curriculum

Strengths	Weaknesses
▪ The internship programme has meaningful purpose which relates to the overall broad biomedical technology programme with strong technical and scientific focus. ▪ The learning outcomes are clear, specific and defined outcomes are achievable within the duration of the programme. ▪ Resources needed for the development of routine practical laboratory skills are appropriate, adequate and available. ▪ Practical learning follows theoretical learning and this provides good integration of theoretical and practical knowledge. ▪ Assessment methods for knowledge and practical assessments are fit for purpose and are appropriately matched to the learning outcomes of the course. ▪ Systems for learner support and feedback from the academic training department are in place. ▪ The educators (Learning and Development Practitioners) have the knowledge and skills to guide and support learning.	▪ Overloading of the course with theoretical content in preparation for the national Board examination rather than focus on the fieldwork experience. ▪ Although there are adequate opportunities for development of routine practical laboratory skills, there are inadequate opportunities for development of **specialized / more complex** practical laboratory skills. ▪ Inadequate opportunities for critical analysis of laboratory procedures and case study interpretations. ▪ Lack of self- and peer assessment. ▪ The same stakeholders routinely evaluate the curriculum. ▪ **Absence of outcomes related to student leadership development.** ▪ **Absence of outcomes related to development of professional and humanistic values.** ▪ **Absence of dedicated mentorship models in the field.**

The analysis of the existing internship curriculum / syllabus showed adequate focus and explicit detail for technical knowledge and routine practical skills development of the interns. In response to question VI (highlighted in bold in Table 1), the curriculum was noted to be deficient in guiding the development of professional and humanistic values in the interns. Guidelines for leadership development and mentorship models for student guidance and support were also noted to be lacking.

In the absence of intentional and structured teaching of professionalism, this study therefore explores the interns' perceptions of professionalism and what has influenced their perceptions.

This study also explores potential ideas and strategies for effective teaching of professionalism for improved practice.

1.4 Research question

What are intern blood transfusion biomedical technologists' perceptions of professionalism and is there a need for structured teaching of professionalism?

Sub-questions include:

- How do intern blood transfusion biomedical technologists define professionalism?
- What constitutes good and poor professional behaviours?
- What are possible factors contributing to good and poor professional conduct?
- How should professionalism be taught to ensure consistent understanding and improved practice?

1.5 Aims and objectives

The aim of this study was to determine the intern blood transfusion biomedical technologists' perceptions of professionalism and to engage them in identifying fit for purpose methods for teaching professionalism.

The specific objectives of this study included:

- Obtaining an overview of the interns' definitions of professionalism and what informs their definitions.
- Gaining an understanding of interns' and their educators' views on the need for formal teaching of professionalism.
- Inviting the interns' and educators' views on potential teaching methods and strategies that will assist in positively informing behaviours and practice.
- Using the data gathered as a basis for biomedical technology curricula reform to explicitly include teaching of professionalism.

1.6 Envisaged contribution of the study

Gaining insight into the interns' understanding and interpretations of professionalism is intended to arrive at some definition or provide key points of a definition of professionalism – a definition that is simple yet comprehensive and can be applied by all health professionals. Furthermore, exploration of the interns' perceptions of professionalism and what has influenced their

perceptions is intended to be used as a needs analysis to upscale and strengthen the internship curriculum. The interns and their educators' views on the need for professionalism to be taught and how it should be taught are intended to inform the curriculum upscale and reform process. The intent overall is to contribute to health care by providing holistic and meaningful education to the interns, education that moulds them into becoming well-rounded, technically competent practitioners with sound professional values, behaviours and attitudes.

1.7 Summary

Good professional conduct, committed attitudes and altruism are values required of the interns, yet this is somewhat lacking in practice. During the internship training, teaching professionalism forms part of the hidden curriculum and not the formal curriculum. In the absence of planned and structured teaching of professionalism, this study explores how the interns perceive professionalism and what meaning they associate with the term professionalism. It also presents the interns' and their educators' views on whether there is the need for professionalism to be taught and how it should be taught for improved practice.

1.8 Outline of the research study

This research study is organized as follows:

Chapter 1: This chapter provided the background into and the foundation for the study.
Chapter 2: In this chapter the literature study considers the meaning of professionalism and views surrounding professionalism education well as the need for upscale of health professional education.
Chapter 3: This chapter details the research methodology and the mixed-method approach applied in this study.
Chapter 4: Analysis of the quantitative and qualitative data is presented in this chapter.
Chapter 5: This chapter provides a detailed discussion of the findings, the recommendations and an overall summary of the study.

Chapter 2: Literature review

2.1 Introduction

The need for intentional teaching of professionalism through the formal curriculum rather than the hidden curriculum forms the fundamental argument in this study, and the literature that follows lays the foundation for the argument by first presenting a broad perspective of health education systems and then providing the definition and primary role of health practitioners in general. The value of inter-professional collaborative practice for improved health outcomes follows with focus on the perceived role and the professional demands of the changing role of biomedical technologists in the interprofessional health care approach.

The literature drives the outlined argument by directing explicit emphasis to the need for improving instruction on professionalism and reinforcement of professional and humanistic values in health professionals through the formal curriculum. The chapter concludes with the potential value of competency models in guiding the professional development of health practitioners.

2.2 Health education systems

The World Health Organization (WHO, 2010:13) *Framework for Action on Interprofessional Education and Collaborative Practice* states that "health and education systems consist of all the organizations, people and actions whose primary intent is to promote, restore or maintain health and facilitate learning, respectively. They include efforts to influence the determinants of health, direct health-improving activities and learning opportunities at any stage of a health worker's career."

The WHO framework (2010) defines **health** as a state of complete physical, mental and social wellbeing and **education** as any formal or informal process that promotes learning which is any improvement in behaviour, information, knowledge, understanding, attitude, values or skills. Health education programmes, both undergraduate and internship programmes, must therefore direct the teaching and learning of knowledge, skills, behaviours, attitudes and professional values in students that contribute to the wellbeing of the communities they will serve.

Internship programmes, also referred to as pre-professional practice, are an essential domain of health education systems and have been in place in medicine and health science for several years. Internships strengthen health education systems as they offer students the opportunity to apply theory learned in the classroom to a real-world setting while developing important work-

related competencies, professional competencies and student leadership competencies (Hernandez, Bejarano, Reyes, Chavez & Mata, 2014). Such health education programmes are broadly aimed at appropriately grooming students for their duties and obligations as health professionals.

According to Oetjen and Oetjen (2009) internships or pre-professional practice allows students to gain real-world experience by working in the field with experienced and knowledgeable professionals who act as mentors. This type of mentored experience is an important aspect of career development for the next generation of health professionals, and benefits not only the students but also the profession and the communities within which they work (Hernandez *et al.,* 2014). Internships therefore play an important role in the professional development of students (Guyler, Cottrell & Wagner, 2006), and are highly advocated health education programmes in addition to academic learning (Hernandez *et al*., 2014).

All health education programmes must therefore be well structured, appropriately designed and adequately robust in developing competent, well-rounded future health practitioners who understand the duties and obligations of the profession.

2.3 Professionalism and health practitioners

According to the HPCSA (2008:3) the term profession means “a dedication, promise or commitment publicly made.” To fulfil such a promise, professionalism signifies a set of values, behaviours and relationships that underpin the trust of the public (Frenk *et al*., 2010).

Baingana *et al.* (2010) explain that medicine and other health professions are vocations in which professionalism; knowledge, skills and judgement are put to the service of protecting and restoring human well-being. Patients entrust their health in the hands of healthcare workers who are expected to show a high degree of professionalism, which is central to sustaining the public’s trust in the medical profession. Attributes of professionalism include altruism, respect, honesty, integrity, dutifulness, honour, excellence and accountability (Cohen, 2006). Professional behaviour is therefore viewed as an integral part of clinical practice in allied health and medical fields (Tsoumas & Pelletier, 2007).

Kasar and Muscari (2000:42) state that “professionalism requires specific knowledge, attitudes and values – all manifested in professional behaviours” and that such behaviour is not innate, but rather its development requires practice, experience, role mentorship and evaluative

feedback. Professional behaviour is considered fundamental in the development of competent practitioners and enables them to practice in diverse service delivery contexts. “To be a health practitioner requires a life-long commitment to good professional and ethical practices and an overriding dedication to the good of one’s fellow humans and society” (HPCSA, 2008: 3). Health practitioners need to understand their role in health care and the attributes needed for their defined role.

According to the WHO (2010:13) framework, a health practitioner or health worker “is a wholly inclusive term which refers to all people engaged in actions whose primary intent is to enhance health. Included in this definition are those who promote and preserve health, those who diagnose and treat disease, health management and support workers, professionals with discrete/unique areas of competence.” Their role in health care is to protect and restore human wellbeing (Baingana *et al*., 2010) through effective delivery of health services.

Quality health care cannot be achieved by a ‘one man band’, it requires a multidisciplinary or inter-professional collaborative approach. At an early stage of their student phase health practitioners need to learn how to organize themselves and work both independently and collaboratively within healthcare teams. Professional readiness to work within interprofessional health teams is needed for quality healthcare provision, and health professional education programmes need to keep pace in providing such readiness.

2.4 Interprofessional collaborative practice

Many patients have complex health needs and typically require more than one discipline to address issues regarding their health status (Bridges, Davidson, Odegard, Maki & Tomkowiak, 2011). Health issues are characteristically broad and complex, and are most appropriately examined from an interdisciplinary perspective (Rowe, 2003 cited in Weiss, Tilin & Morgan, 2014). Kasperski, cited in Bridges *et al*. (2011:2), defines interprofessional collaborative practice as “a process which includes communication and decision-making, enabling a synergistic influence of grouped knowledge and skills.” Elements of collaborative practice include responsibility, accountability, coordination, communication, cooperation, assertiveness, autonomy, and mutual trust and respect. It is this partnership that creates an interprofessional team designed to work on common goals to improve patient outcomes (Bridges *et al.*, 2011). Interprofessionalism or collaborative practice is therefore advocated to meet present-day healthcare needs.

Currently many health practitioners work in 'silos', with limited consultation with other role players contributing to patient care. The Health Policy Snapshot (Robert Wood Johnson Foundation, 2011) reports that healthcare standards in several countries are at unsatisfactory levels, one contributing factor being health professionals not collaborating or working as teams. Doctors and other health professionals do not consult with each other, tests are repeated, test results are not shared, and care is not coordinated to protect patients during transitions between different settings of care (Robert Wood Johnson Foundation, 2011). This divide in practice calls for the transformative scale-up of health professional education to encourage the collaborative approach to health care (WHO, 2011).

Interprofessional **education** is a collaborative approach to develop healthcare students as future inter-professional members, the aim of which is to achieve improved healthcare outcomes for patients (Bridges *et al.*, 2011). The Institute of Medicine states that all health professionals should be educated to deliver patient-centred care as members of an interdisciplinary team (Menken, 2011). In doing so patients will benefit from inter-professionalism; which offers better coordinated and more effective health care with the potential to reduce healthcare costs and medical errors. Reform in educational curricula, teaching and learning practices and early interdisciplinary exposure is needed to prepare health professional students to become part of a collaborative health workforce.

Knowledge and skills of all health practitioners are paramount; however, it is their professional behaviours such as commitment, teamwork and accountability, to name but a few, that contribute to positive medical outcomes. Speet and Francke, cited in Speth-Lemmer (2007) explain that it is the development of professional behaviours that ultimately results in practitioners who are able to practice their profession in a reflective, convinced, accountable and collegial manner, both independently and within teams.

Biomedical technologists, also referred to as laboratory professionals in the literature, form an essential part of the interdisciplinary approach to health care. They perform the routine and complex laboratory tests, results of which are used by clinicians to diagnose diseases and treat patients. The difference between biomedical technologists and other health practitioners is that even though involved with patient care biomedical technologists have little or no interaction with patients, communities or the public. They process and test patients' specimens and report on test results, a role which requires technical knowledge, skills and expertise.

They practice within the confines of their medical testing laboratories rather than at the patient's bedside where most other health practitioners apply their skills and expertise.

2.5 The perceived and changing role of laboratory professionals in interprofessional healthcare

Biomedical technologists or laboratory professionals are often viewed as the distant or 'backstage' role players in health care. Some health practitioners regard them to be silent partners in clinical care, whilst certain clinicians view laboratories as being mere "service" departments (Panteghini, 2004). According to Plebani (1999:42) "some clinicians endlessly repeat that the laboratory does not make the diagnosis." It is agreed that reaching a diagnosis is a complex process involving the interplay of several different sources of knowledge and information; however, clinicians cannot correctly manage a patient's disease without a contribution from the laboratory (Plebani, 1999). Laboratory medicine is part of the total process of health care (Plebani,1999), yet most often laboratory professionals are seen as mere providers of test results and their role as health professionals is not valued enough. Their professional role is, however, currently evolving, making biomedical technologists more visible, advisory and consultative partners in health care.

The roles of the clinical laboratory and laboratory professionals are changing at an unprecedented rate (Plebani, 2002). Presently, there is significant focus on the need for laboratory professionals to ensure appropriateness in medical laboratories which is "the extent to which a particular procedure, treatment, test or service is effective, clearly indicated, not excessive, adequate in quantity and provided in the inpatient, outpatient, home, or other setting best suited to the patient's needs" (College of American Pathologists, cited in Plebani, 2003:132). Biomedical technologists are responsible for performing prescribed tests; however, there is often little focus on the purpose of the laboratory test, whether the test it is warranted or not, and the impact of the results issued.

According to Lundberg, cited in Plebani (2003:132):

> A laboratory test on a human being is an intervention that aims to provide the patient with an accurate diagnosis, prognosis and treatment. Any intervention is appropriate only if it is more likely to benefit than to harm the patient, and is achieved at a reasonable cost, with a reasonable risk.

Clinicians are responsible for requesting laboratory tests for their patients. It is, however, not uncommon for incorrect or unnecessary tests to be ordered by some clinicians. The biomedical technologist may be aware of the inappropriateness of the tests requested; however, they may not discuss the inappropriateness of the tests with the requesting clinician.

From the biomedical technologist's point of view, Panteghini (2004) explains, it is usually easier to perform the test than to discuss its suitability with referrers. This relates to poor professional practice based on failure of the biomedical technologist to appropriately consult with the clinician and take suitable corrective actions for prevention of repeat testing and added costs. Appropriateness and improvement in appropriateness is needed, as it contributes to improvement in the efficacy and effectiveness of laboratory services, thus underpinning the role of laboratory specialists as consultants linking laboratory testing with medical outcomes (Plebani, 2003).

Recent data demonstrate that inappropriate testing may cause unnecessary patient discomfort, and increase the risk of generating false-positive test results that may cause unnecessary worry to patients and their families, and lead to further investigations (Plebani, 2003). Panteghini (2004) further explains that poor communication and integration between wards and the laboratory and the uncommunicative attitudes of some clinicians contribute to poor medical outcomes. Clinicians certainly need to be advised and guided on appropriateness of laboratory tests requested. As Plebani states (2003:138):

> appropriateness is at the heart of high quality care, and appropriate laboratory utilization is a cornerstone in optimal medical practice. Inappropriate laboratory utilization unjustifiably increases health care costs, can harm patients and perpetuates the vision of laboratory testing as a commodity.

Provision of support to clinicians in the form of guidance and advice in terms of appropriateness in laboratory practices can address inappropriate laboratory utilization and subsequently reduce patient discomfort and prevent unnecessary laboratory investigations. As stated by Bruce Friedman in Plebani (2003:133):

> the unique core competencies of hospital-based laboratory personnel include, first and foremost, their ability to develop ongoing professional relationships with the clinicians ordering tests and to serve as consultants to this group for test ordering and interpretation.

Ensuring appropriateness and improving appropriateness in laboratory testing are therefore the fundamental duties and responsibilities of laboratory professionals (Plebani, 2003).

Laboratory professionals are needed to act as consultants for physicians, their role being to provide clinical advice for improving test requests and results interpretation (Plebani, 2003). This, however, requires engagement, communication, collaboration and respect between clinicians and laboratory professionals, with the need for willingness to work collaboratively. As laboratory professionals, biomedical technologists need to be confident, resilient and professional in providing information and advice as essential partners within the healthcare team. They need to have knowledge in a diverse group of medical specialties as well as organizational and leadership skills and professional attributes that will enable them to function successfully in inter-departmental multidisciplinary teams (Panteghini, 2004).

The role of laboratory professionals is thus evolving and moving away from the previous role of being a ‘warm body’ that primarily processes and tests specimens, to a more enlarged health practitioner role – one that is additionally advisory and consultative. Plebani (1999) argues that laboratory medicine is part of the total process of health care, and clinical laboratories should be expected to improve outcomes, and not only to provide tests. Health care is expecting more from the biomedical technologists, and this demands that they be adequately educated and developed with the appropriate knowledge, skills and professional attributes to be effective partners in health care. Educational content and delivery of professional curricula must therefore keep pace (Plebani, 2002) with the changing role and associated professional demands of the medical laboratory professionals.

2.6 Professional responsibilities of blood transfusion biomedical technologists

Blood transfusions in South Africa are currently regulated by the National Health Act of 2003. In the broad doctor-patient relationship, the doctor and the Blood Transfusion Service owe a duty of care to the patient, and both are in a unique position to prevent harm. The Blood Service is required to act as a public protector and take reasonable steps to ensure that the blood supply is as safe as possible, according to the *Clinical Guidelines for the use of Blood and Blood Products in South Africa* (Western Province Blood Transfusion Service (WPBTS) & South African National Blood Transfusion Service (SANBS), 2014).

Blood transfusions are an essential component of medical practice. Macpherson, Domen and Perlin (2001:4) refer to blood as “a gift, not a product”. Blood transfusions are often lifesaving and dramatically improve patient survival rates and morbidity (WPBTS & SANBS, 2014). Transfusion, although providing benefit to patients, comes with several risks such as disease transmission, transfusion reactions and immune-mediated rejection. A significant approach to minimizing transfusion risk is by ensuring that blood transfusion technologists are technically competent, efficient and professional in their approach to delivering quality work standards.

Providing benefit and minimizing risk to patients requires sound technical knowledge, laboratory skills and professional values such as commitment to get the blood to patients on time, accountability for the various tests performed, and communication with clinicians in cases of difficulties in getting compatible blood or availability of appropriate blood products for patients. Additionally, collaboration and teamwork between the biomedical technologists within the laboratory and the health team at the patient’s bedside is needed to ensure that safe blood is appropriately matched and transfused to the right patient at the right time.

Health practitioners have an altruistic obligation to patients. Macpherson *et al.* (2001:4) state that “the safety of blood and blood products is a promise made, overtly or tacitly, by all who collect, store and distribute these unique entities”. Included in this promise is “to do what it is right because it is right; to fulfil the professional obligation to help those in need. Such obligations are ancient, rooted in the Hippocratic tradition” (Macpherson *et al*., 2001:4). The listed attributes required of the biomedical technologist underpin their obligation to provide benefit and not harm to patients.

Poor professional practice such as uncommitted attitudes, non-compliance to procedures and unsatisfactory work standards can result in unreliable test results and incorrectly matched blood for transfusion to patients. Poor collaboration and communication with doctors can result in delays in transfusion or incorrect blood products being transfused to patients. Mismatched blood transfusions and / or delays in transfusion can result in death of patients and equates to negligence.

According to the *Clinical Guidelines for the Use of Blood and Blood Products in South Africa*, "negligence is deemed to be present if the reasonable person would have foreseen harm to the plaintiff and would have taken steps to avoid such harm, and if the defendant failed to take such steps" (WPBTS & SANBS, 2014:3). The conduct of the accused professional is measured against the conduct of the reasonable professional. The Guidelines also make reference to a case in South Africa where a blood transfusion technician was convicted of culpable homicide after incompatible blood was administered to a patient. Harm to the patient could have been prevented if the prescribed work standards and laboratory professional regulations had been applied.

Blood transfusion biomedical technologists are expected to improve health and save lives through safe transfusions, not compromise patient care. They need to consult efficiently with clinicians when abnormalities in laboratory tests are detected and collaboratively agree on medically feasible options to provide safe blood for transfusion to patients. They need to provide guidance on the process for further laboratory analysis and possible outcomes of additional testing. Furthermore, they need to understand the consequences of poor professional practice and the impact of negligence on patient care, at an early phase of entry into their profession. They need to understand the meaning of professionalism and be able to discern between good and poor professional practices. However, education on professionalism and professional development of biomedical technology interns is in adequate in the formal biomedical technology internship programme.

2.7 Improving instruction on professionalism

As an educator involved with the internship training I am aware that although teaching professionalism in not included in the formal biomedical technology internship curriculum, certain aspects of ethical and professional conduct are discussed during the internship training programme. These discussions are usually unplanned and informal with no definitive structure.

This teaching can therefore be referred to as the “hidden curriculum”, which is described as a powerful informal curriculum of unscripted, unplanned, highly interpersonal forms of teaching that take place between faculty and students (Cruess & Cruess, 2006). Even though the informal, hidden curriculum has been described as being powerful in transmitting the values of professionalism (Cohen, 2006), there is a significant need for teaching the cognitive base of professionalism.

Teaching the cognitive base of professionalism, according to Cohen (2006:611), translates as “formal instruction in both professional values and the cognitive rationale for upholding professionalism.” Such instruction must be included in health science education curricula and health science education institutions have an obligation to ensure that their educational programmes are designed explicitly to nurture development of the attributes of professionalism. Professionalism must be explicitly taught and clearly defined to ensure that students have consistent understanding and to enable them to discern between good and poor professional behaviours and practices.

According to Swick (2000) a significant amount of attention has been devoted in recent years to the question of professionalism in medical education and practice. Swick (2000:612) states that:

> while this attention has been salutary, there is no common understanding of what is meant by medical professionalism and consequently, many of the discussions have been somewhat amorphous, because the word professionalism carries with it so many connotations, complexities, and nuances

Based on this, Swick (2000) explains that professionalism has virtually lost its meaning because it is so widely used, and therefore advocates the need for a normative definition of professionalism.

Over and above the need for teaching professionalism, which remains undisputed, there is also the need for a simple, fit for purpose and uncomplicated definition of professionalism which all health practitioners should gain familiarity with. This definition should be embedded in the teaching and learning programmes and re-emphasized during student learning at various stages of their study and career.

Swick (2000:612) explains:

> one needs a normative definition that is precise and inclusive, and that can be utilized by a wide variety of groups, including practicing physicians, medical educators, graduate medical education programmes, professional organizations, licensing bodies, and regulatory agencies.

This is likely to support consistent understanding and application of professional values.

A relevant study on students' views of professionalism involving three healthcare professions was conducted by Burford, Morrow, Rothwell, Carter and Illing (2014). In this study, focus group discussions were conducted with trainee and educator paramedics, occupational therapists and podiatrists with the aim of getting an understanding of the views of professionalism and their implications for education expressed by the students and educators. Analysis found that views of professionalism were complex and varied within and between the professional groups.

Findings of the study conducted by Burford *et al*. (2014) showed that professionalism meant many things to participants; there was no universal definition. They further stated that "professionalism is not made but grown" (Burford *et al.,* 2014:361); and that professional values and conduct are largely shaped by education, personal, social and environmental factors and therefore likely to differ in meaning from individual to individual. Home environments, schooling, social exposure, cultural differences and even experiences are known to influence professional development. They further added that despite growing and influential literature, professionalism remained conceptually unclear. Based on the findings of this study, one may argue that in the absence of adequate teaching of professionalism, students may or may not be able to adequately discern between good and unacceptable professional practice.

Anecdotal evidence shows that public concerns about unprofessional conduct among healthcare workers are increasing (Baingana *et al.,* 2010). The degeneration and deterioration of professional commitment is becoming an increasing area of concern and scrutiny by regulatory bodies and the public. Calls are being made for improved teaching of professionalism; these calls arise from public dissatisfaction with the performance of the medical profession, as well as the public's perception that members of the profession are less altruistic than in previous times (Starr, 1984 and Stevens, 2001 cited in Cruess & Cruess, 2006).

The need for professionalism education to be included in health science written curricula is therefore advocated.

Several medical and health science education curricula, biomedical technology included, have strong emphasis on scientific and technical aspects of the discipline. Wear and Castellani (2000) explain that for many years medical education has placed great emphasis on the biological / technical aspects of medicine at the expense of humanistic qualities, and there is significant need for curriculum intervention to reinforce humanistic values associated with the profession. Baingana *et al.* (2010) argue that apart from instilling a high level of biomedical knowledge and clinical skills, professionalism is an essential quality that must be entrenched in health science students to ensure well-rounded, competent graduates.

Plebani (2002) supports the argument made by Baingana *et al.* (2010) and adds that the training of laboratory specialists has traditionally concentrated on the acquisition of knowledge base, focusing mainly on methodological aspects, together with analytical laboratory experience. It is assumed that the skills underpinning the clinical liaison role will be acquired later in training, usually in an indirect, informal way. Plebani (2002) further states that issues of fundamental importance such as developing skills that may sustain and reinforce the new role of laboratory specialists in modern healthcare are currently neglected.

The need for improving instruction on professionalism in medical education (Cohen, 2006) is widely supported. Furthermore, the need to identify and apply effective teaching approaches is necessary to help student practitioners eliminate incorrect perceptions and have a consistent understanding of professionalism, which then informs their behaviours and practices.

2.8 Development of professional attributes: CanMEDS competency framework

It is undisputed that development of professional attributes in addition to knowledge and skills is essential for all heathcare practitioners. Several regulatory bodies and healthcare institutions have developed competency models or frameworks to guide education and training of health practitioners. The competency models and frameworks are intended to provide structured learning opportunities to meet the outcomes of the prescribed competencies defined for the various healthcare roles.

The Canadian Medical Education Directives for Specialists (CanMEDS) (Frank, 2005) is one such competency framework that describes the principal generic abilities of physicians

orientated to optimal health and healthcare outcomes. CanMEDS is an initiative of the Royal College of Physicians and Surgeons of Canada (Frank, 2005), and describes “competencies” as important observable knowledge, skills and attitudes. Educators use CanMEDS as the basis of medical curricula and throughout the physicians’ learning continuum, beginning at the undergraduate level, and during residency and continuing professional development.

Currently seven roles for effective practice of physicians have been defined by the CanMEDS (Frank, 2005) competency framework. The seven roles are represented diagrammatically in Figure 1 and defined below.

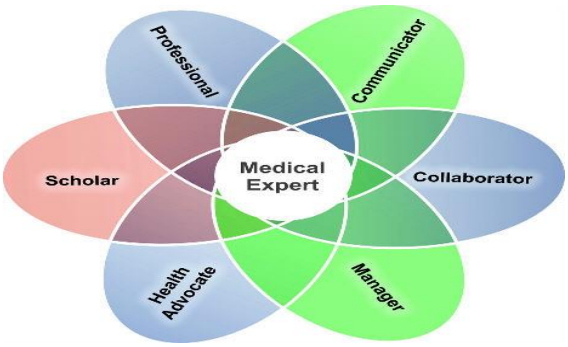


Figure 1: CanMEDS competency model showing seven roles of development for physicians.

The competency framework critically describes the enabling competencies for development of each role and describes the abilities needed for quality health care. It is aimed at developing health professionals that can meet the needs of patients and society. The CanMEDS (Frank, 2005) competency framework has received international recognition for its appropriateness and consistency in guiding the education of and competency development for physicians. It has been written with patients in mind and developed with input from authors across several health professions, and is therefore not only applicable to physicians (Frank, 2005).

The HPCSA has adapted the CanMEDS model to develop the ‘Core competencies for undergraduate students in clinical associate, dentistry and medical teaching and learning programmes in South Africa’ (HPCSA: 2014). This adapted model is being used as the guideline and framework for the development of graduate attributes in undergraduate medical and dental students in South Africa. There may be an opportunity for the health professional board for Biomedical Technology to further adapt this framework to guide the professional development of biomedical technologists in line with their role and scope of practice in health care.

2.9 Conclusion

The literature has outlined the role and purpose of biomedical technologists in the interprofessional healthcare approach and the importance of the development of both technical and professional competence to fulfil the demands of their role. The literature surrounding what health education systems should comprise, the primary purpose of health practitioners, the benefits of inter-professional education and collaboration, and the need for improved instruction on professionalism, all match and link in with what biomedical technologists need in order to be able to function ideally as health practitioners.

The literature in this chapter emphasizes and strongly advocates teaching professionalism through the formal curriculum and ensuring common understanding – a feature lacking in the blood transfusion biomedical technologist internship programme. It is therefore uncertain how the intern biomedical technologists interpret and understand professionalism.

The next chapter details the methodology applied in this research study to explore the interns' understanding of professionalism and whether they consider that there is a need for professionalism to be taught, and if so, how it should be taught.

Chapter 3: Research methodology

3.1 Introduction

The growing deterioration of professional values and work standards in health care, as supported by the literature and the noted general poor professional conduct and unsatisfactory work standards demonstrated by the interns in training, form the rationale for this study. Chapter 1 highlighted the lack of formal instruction on professionalism in the internship curriculum, and the literature in Chapter 2 advocates the need for improved instruction and consistent understanding of professionalism.

This chapter details the methodology applied in this study to explore the interns' understanding of professionalism, and gather their views on the need for teaching professionalism and how it should be taught. The mixed method-approach and the research instruments used, data collection methods, data analysis and rigour are described. Included in this chapter are the ethical considerations and the assumptions and limitations of the study.

3.1.1 Research question

What are intern blood transfusion biomedical technologists' perceptions of professionalism, and is there a need for structured teaching of professionalism during the internship programme?

Sub-questions

- What does professionalism mean to biomedical technologists?
- What constitutes good and poor professional conduct?
- What are possible factors contributing to good and poor professional conduct?
- How should teaching of professionalism be built into the curriculum to ensure consistent understanding and improved practice?

3.2 Research design

The research design refers to the overall strategy that one selects to integrate the different components of the study in a coherent and logical way, thereby ensuring that the research problem is addressed effectively (De Vaus, 2001). A mixed-method research design was applied in this study to explore the interns' understanding of professionalism, and to ascertain their views on the need for teaching professionalism and how they felt professionalism should be taught. Mixed-method research is defined as a procedure for collecting, analysing and mixing both quantitative and qualitative data at some stage of the research process within a single study to understand a research problem completely (Creswell, 2008).

The mixed-method approach was applied in this study with the aim to better understand the research problem by collecting and analysing data using more than one method. In using a quantitative approach one looks for relationships between variables, while by using the qualitative approach one seeks in-depth understanding of individuals' experiences (Maree, 2007). While quantitative research allows generalization of results to a whole population, qualitative research provides in-depth understanding of the issue (Maree, 2007).The quantitative component of this study provided an indication of the sample population's understanding of professionalism and whether they felt the need for formal or structured teaching of professionalism. The qualitative component provided deeper information in terms of what exactly professionalism meant to the intern biomedical technologists, what influenced their understanding of professionalism, and how they felt professionalism should be taught for improved practice.

3.2.1 Quantitative research design

The quantitative component of this study was conducted using a survey design in the form of a questionnaire (Addendum A). The use of the questionnaire was primarily aimed at identifying trends related to how and where the respondents' placed themselves in terms of understanding professionalism and whether they felt there was a need for professionalism education. The questionnaire was further aimed at getting a general sense of the respondents' perceptions in order to conduct the focus groups more efficiently. The advantage of using a questionnaire in this study was that a large sample (all the interns training at the Blood Service) could be reached without the need for face-to-face or telephonic contact. The limitation of using a survey design alone is losing depth and insider observation, which may lead to criticism of surface level analyses (Mouton, 2001). The quantitative component alone in this study would not have allowed for deeper understanding of the interns' views, perceptions and suggestions, hence the need for the qualitative phase of the study.

3.2.2 Qualitative research design

Qualitative research studies aim to probe for a deeper understanding of a phenomenon and not to search for casual relationships (Maree, 2007). Research on professionalism for biomedical technologists and the health science field of Biomedical Technology has not been reported. An exploratory research design was therefore undertaken for this study. An exploratory design is conducted for a research problem when there are few or no earlier studies to refer to or rely upon to predict an outcome. The advantage of exploratory research is that it is flexible and

can address research questions of all types: what, why and how (University of Southern California Libraries, 2016).

Focus group discussions were used as a means to gather data for the qualitative phase of the study. Many researchers agree that focus group interviews produce data rich in detail that is difficult to achieve with other research methods (Maree, 2007). The purpose of the focus group discussions in this study was to explain, refine and a get a deeper understanding of the interns' perceptions of professionalism, what influenced their perceptions, and how they felt professionalism should be taught. In addition, the focus group discussions were aimed at clarifying the findings of the quantitative data.

The focus group interview strategy is based on the assumption that group interaction will be productive in widening the range of responses, activating forgotten details of experience and releasing inhibitions that may otherwise discourage participants from disclosing information (Maree, 2007:90).The focus group discussions in this study formed an ideal platform for the sharing of participants' views and experiences related to the research problem in a non-threatening manner.

The quantitative and qualitative methods applied in this study complemented each other and were well suited for answering the research questions. Creswell (2008: 270) states that "a mixed methods design is useful to capture the best of both quantitative and qualitative approaches". The quantitative approach in this study provided general trends and relationships in response to the survey questions, and the qualitative phase provided clarity on the quantitative findings and further contributed to a deeper understanding of the interns' perceptions of professionalism and why they felt the way they did. The focus group discussions with the interns and their educators also provided valuable suggestions and recommendations for the teaching of professionalism. Data rich in meaning were gathered using the mixed-method approach.

3.3 Setting

The study was conducted at the South African National Blood Service (SANBS).The quantitative phase of the study involved the interns that were doing their internship training at the Blood Service at the time of the study. The qualitative phase comprised four focus group discussions that were conducted with the interns and one focus group discussion with the educators involved with the training of the interns at the Blood Service.

3.4 Study population and sampling

Sampling in this study was purposive meaning that the participants are selected because of some defining characteristic that makes them the holders of the data needed for sampling (Maree, 2007). Participants in this study included individuals of interest in line with the study and therefore included the interns and the educators.

A total of 54 interns were enrolled on the internship training programme at the Blood Service at the time of the study. Thirty two (32) interns were training at the SANBS training centre in Johannesburg and 22 interns were training at the Durban training centre. All 54 interns were invited to complete the questionnaire. Participation was voluntary.

Focus group discussions were scheduled in the Johannesburg and Durban regions of the Blood Service respectively. All the interns from both regions were invited to participate in the focus group discussions, as it was uncertain how many candidates would accept the invitation. Refer to Addendum B for the invitation letter that was forwarded to the potential participants.

Eighteen (18) interns from Johannesburg and 10 interns from Durban accepted the invitation to participate in the focus group discussions. Reasons for non-acceptance of the invitation were not investigated. A total of four focus group discussions were conducted with the interns, two in Johannesburg and two in Durban.

The eight educators involved with the internship training at the Blood Service were invited to participate in a separate focus group discussion. The aim of engaging with the educators was to understand their views and perspectives on the teaching of professionalism and to explore possible strategies for improved teaching and application of professionalism. Four out of the eight educators accepted the invitation to participate.
A summary of participant numbers per focus group is presented in Table 3 below.

Table 3: Breakdown of participant numbers per focus group discussion

Focus group number	Location	Interns / Educators	Number of participants
1	Johannesburg	Interns	**n = 9**
2	Johannesburg	Interns	**n = 9**
3	Durban	Interns	**n = 5**
4	Durban	Interns	**n = 5**
5	Durban	Educators	**n = 4**

The sample size for the qualitative phase was appropriate, based on the two guiding principles provided for qualitative sampling by Botma, Greef, Mulaudzi and Wright (2010), who state that:
(a) The sample participating in the study needs to be appropriate, meaning that they can provide useful data in response to the research problem; and
(b) the sample must be adequate, meaning the sample of participants can produce sufficient data for the researcher to be able to discuss findings and draw conclusions in response to the research problem. Brink, Van der Walt and Van Rensburg (2012) further explain that the sample size is adequate when the topic is fully explored and there is clarity on meanings.
Adequate information was obtained from the scheduled focus group discussions, meaning there was data saturation, which meant there was no need for additional focus group discussions.

3.5 Data collection strategies

3.5.1 Quantitative data collection

The quantitative data were collected from the questionnaires and captured onto an Excel spreadsheet. The questionnaire used in the survey comprised a total of 12 closed statements, two closed questions and one open question. The Likert scale approach was used for the questionnaire, with a numerical value allocated to each response. Refer to Tables 4 and 5 below for the numerical values allocated to closed questions. Space was additionally allocated on the questionnaire for the participants to motivate their responses, if they wished to do so.

Table 4: Numerical value allocated to questionnaire statements

Option choice for statement	Strongly Agree	Agree	Disagree	Strongly Disagree
Numerical value allocated	1	2	3	4

Table 5: Numerical value allocated to *yes* / *no* questions

Option choice for question	Yes	No
Numerical value allocated	1	2

The last or the 15th question was an open question which provided the interns the opportunity to document their suggestions on how they felt professionalism should be taught.
The questionnaire was pilot tested by a group of qualified biomedical technologists at the Blood Service prior to implementation. The purpose of the pilot test was to determine the ease of use and to identify errors, gaps, weaknesses and general shortcomings (Brink *et al*., 2012). The questionnaire was deemed fit for purpose by the pilot group.

Questionnaires and the research information pamphlet (Addendum C) were issued electronically via email to the interns. Completed questionnaires were returned via email and internal post. Returned questionnaires were checked to ensure that there was no duplication for data capture purposes. Questionnaire responses were captured electronically on an Excel spreadsheet which was provided by the statistician for initial statistical analysis of the data. The Excel spreadsheet was password protected and could only be accessed by the researcher and statistician.

3.5.2 Qualitative data collection

A total of five focus group discussions were conducted; four with the intern participants and one with the educators. The educator focus group discussion was conducted on completion the intern focus group discussions.

The researcher facilitated the focus group discussions. The researcher was not involved with teaching of the interns at the time of the study. The focus group discussions were facilitated in appropriately located pre-booked meeting rooms to avoid noise and disruptions from the external environment. At the start of the focus group discussions the researcher created a comfortable environment by welcoming the participants and thanking them for their participation. The researcher informed the participants of the aims and the objectives of the research study and explained the format for the focus group discussions. The participants were encouraged to ask questions and / or raise any concerns related to the focus group discussions and the study, prior to commencement. Voluntary participation was emphasized by the researcher.
The participants were informed that the discussions would be audio recorded for transcription purposes and anonymity of all responses would be maintained when reporting the findings. Participants completed and signed the informed consent and declaration of participation forms (Addendum D) prior to proceeding with the focus group discussions. A set of semi-structured questions was used to facilitate the focus group discussions. Questions were as follows:

- *What is your understanding of professionalism?*
- *What has influenced your understanding of professionalism?*
- *What do you believe are the correct attributes that makes one professional?*
- *Almost all of you indicated in the questionnaire that there is a need for formal teaching of professionalism. Why do you feel this need, and how do you feel professionalism should be taught?*

3.6 Data analysis

The process of inductive analysis of qualitative data was applied in this study where the main purpose is to allow research findings to emerge from the frequent, dominant or significant themes inherent in the raw data (Maree, 2007: 99). In this study, the quantitative data was collected and analysed, followed by collection and analysis of the qualitative data. Findings of the quantitative and qualitative data were triangulated and reported according to the main themes identified through the data analysis process. Triangulation is a process whereby the quantitative data and the qualitative data are sequentially collected and analysed and the results of both sets of data are then then compared and interpreted (Maree, 2007).

3.6.1 Quantitative data analysis

For the quantitative component, the questionnaire responses were captured onto an Excel spreadsheet and analysed using the services of a statistician. IBM SPSS 22 was used for analysis of the quantitative data. The quantitative data was further coded and categorized into themes for interpretation and triangulation with the qualitative data. Trends and general perceptions that emerged from the quantitative data provided the researcher with a general overview of the respondents' perceptions of professionalism.

3.6.2 Qualitative data analysis

According to Maree (2007:99), "qualitative data analysis is usually based on an interpretive philosophy which tries to establish how participants make meaning of a specific phenomenon by analysing their perceptions, attitudes, understanding, knowledge, values and experiences in an attempt to approximate their construction of the phenomenon". Maree (2007:99) further states that this is best achieved through a process of inductive analyses of qualitative data where the main purpose is allow the research findings to emerge from the frequent, dominant or significant themes inherent in the raw data. Participants' responses from the focus group discussions and

were analysed and interpreted. The analysis process followed a systematic approach beginning with the transcription of data.

The audio recordings of the focus group discussions were transcribed verbatim by an independent individual who was not involved with the study and who was not affiliated to the Blood Service. The researcher verified the transcriptions by listening to the audio recordings and checking the transcriptions for correctness. The data was then analysed by the researcher. When analysing qualitative data the aim is to summarize what you have seen or heard in terms of common words, phrases, themes or patterns that would aid in your understanding and interpretation of that which is emerging (Maree, 2007:100).

Thematic analysis was applied for analysis of the data by looking for specific words through which themes and categories were identified. The written transcripts were read several times by the researcher, following which, coding of the transcripts was done. Coding is the first step in thematic analysis, the aim of which is to reduce the data by dissecting the text into manageable and meaningful text segments (Attride-Sterling, 2001). Once all the transcripts had been coded, themes were extracted from the coded text segments.

Thematic analysis seeks to unearth the themes salient in a text at different levels (Attride-Sterling, 2001).The themes extracted from the text were then arranged into different levels and categorized as basic themes, sub themes and main themes. The analysed data from the quantitative and qualitative phases of the study were compared, integrated and interpreted. The qualitative data helped to refine and clarify the quantitative data which assisted with the interpretation of the findings.

3.6.3 Mixing of data and triangulation of findings

The term “mixing” in the mixed method research approach implies that the data or the findings are integrated or connected at one or several points within the study (Maree, 2007:270). In this study, mixing or integrating of data was done following the analysis of the quantitative and qualitative data. This was achieved by clustering the quantitative data and the qualitative data assigning themes (Maree, 2007:278). Findings of the quantitative and qualitative phases of the study were triangulated.

“Triangulation has been generally considered a process of using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation”, (Stake cited in Maree,

2007:304). In this study, triangulation of methods was applied which refers to the interpretation of findings by mixing quantitative and qualitative styles of research and research data (De Vos cited in Maree, 2007). The findings from the questionnaires (quantitative phase – survey design) and the focus group discussions (qualitative phase) were triangulated as a means to verify and validate the findings.

3.7 Rigour

Trustworthiness of both quantitative and qualitative data is essential in research. The researcher therefore needs to have methods and strategies in place that ensure the trustworthiness and credibility of research findings. Trustworthiness refers to the way in which the inquirer is able to persuade the audience that the findings in the study are worth paying attention to and the research is of high quality (Lincoln & Guba cited in Maree, 2007). Credibility is the assurance that researcher's conclusions stem from the data (Durrheim & Wassenaar cited in Maree, 2007). Measures applied to ensure trustworthiness and credibility of the findings of this research study are detailed below:

- The questionnaire was designed with input from the educators involved with the education and training of the interns to ensure that the questionnaire was fit for purpose.
- The questionnaire was pilot tested prior to implementation to identify any shortcomings.
- All the focus group discussions were conducted by the researcher who was not involved with the teaching of the interns at the time of the study.
- All focus group discussions were conducted using the same format and in a consistent manner.
- The same set of questions was asked in all focus group interviews with the interns.
- The focus group discussion transcripts were transcribed verbatim by an independent individual who was not in any way involved with the study.
- Typed transcriptions were verified for correctness by the researcher. This was achieved by the researcher listening to the audio voice recordings and checking for accuracy of the written transcripts.
- All data were read several times by the researcher and then manually coded, analysed and categorized into basic themes, sub themes and main themes.
- Triangulation is a strategy for improving validity and reliability of research findings (Maree, 2007). In this study triangulation of methods was applied where the findings from the

- quantitative component and the qualitative component were triangulated as a means for verification and validly of the findings.
- The use of more than one method for data collection in this study allowed for a deeper understanding of the research problem.

3.8 Ethical considerations

The researcher obtained ethical approval for the study from the Stellenbosch University Health Research Ethics committee (Reference number: S15/04/069 – Addendum E) and the SANBS Health Research Ethics committee (Reference number: 2014/21- Addendum F). The study commenced only after ethical approval was granted. Mouton (2001) explains that the researcher is obligated to explicitly communicate and discuss the aims and anticipated consequences of the research to individuals and groups that are likely to be affected by the study. Information detailing the overview, aim and objectives study was communicated to all participants by means of an information leaflet.

Voluntary participation was emphasized and written informed consent was obtained from participants. According to Burns, cited in Maree (2007), both the researcher and the participants must have a clear understanding regarding the confidentiality of the results and the findings of the study. Anonymity of participants and confidentiality of information was maintained during the quantitative and qualitative phases of the study. Names of participants were not a requirement for the survey design in the quantitative phase of the study. The focus group participants' names were not included in the transcription of focus group discussions and the reporting of the findings. Questionnaires completed by the respondents and hard copies of data were stored in a locked cupboard in an office with controlled access. Security of captured electronic data was maintained using password protection and was only accessible by the researcher and the statistician.

3.9 Assumptions and limitations

An assumption in this study was that professional values and attributes are acquired or caught and not taught; hence its absence in the formal blood transfusion biomedical technology internship curriculum. This assumption may have held value in the past; however, with the growing decline of values and morality in the world at large, this assumption required review.
In terms of limitations, this study on professionalism targets intern biomedical technologists training specifically in the discipline of blood transfusion. It does not include the perceptions and

interpretations of those interns specializing in the other biomedical technology disciplines such as microbiology, haematology, etc. Input from interns training within the various other specialist disciplines would provide a wider perspective to the research question and add strength to the study. This however, does not outweigh the value of the study and the opportunity to share findings and recommendations with other institutions offering similar health science education programmes.

3.10 Conclusion

The research design selected for this study is comprehensive with the aim of gathering substantial data to answer all aspects of the research questions. The mixed-method approach was deemed to be ideal to obtain the best of both the quantitative and the qualitative methods. This approach allowed for comparison of findings, clarity of findings and provided overall depth and clear meaning of the research findings. Overall, the design was appropriate for the study and care was taken to ensure that the data collected will lead to the answering of the research questions. The quantitative and qualitative data findings will be analysed and presented in Chapter 4.

Chapter 4: Results and findings

4.1 Introduction

The previous chapter detailed the quantitative and qualitative methodologies applied in this research which were deemed appropriate to answer the research questions. In this chapter the findings of the quantitative and the qualitative data are analysed, integrated and presented. The questionnaire, representing the quantitative phase of the study, was primarily aimed at observing trends and obtaining a general sense of the respondents' perceptions in order to conduct the focus groups more efficiently. The focus groups, representing the qualitative data, provided deeper information and clarity with regard to the research question and sub-questions.

The quantitative findings are presented together with the qualitative findings according to the themes that emerged from both sets of data, with the qualitative data providing refinement of the quantitative data. The first part of the analysis aimed to determine how the interns perceived professionalism and what meaning they attached to professionalism. The initial analysis then served to strengthen or weaken the argument that professionalism needed to be intentionally taught rather than being part of the hidden curriculum.

4.2 Demographic data

The questionnaires were forwarded to all 54 interns enrolled on the internship programme at the SANBS at the time of the study. Fifty (50) of the 54 interns completed the questionnaire, a response rate of 92.59%. The respondent group comprised 29.2% male respondents and 70.8% female respondents. The majority of the respondents were in the 23–27 year age group.

4.2.1 University attended

Figure 2 below shows that the respondents completed their undergraduate biomedical technology studies at different universities within South Africa. Research on the undergraduate biomedical technology curricula of the universities presented in Figure 2 showed that only one university had dedicated modules on communication in the curriculum. The curricula offered by the other universities did not provide an indication of having specific modules related to professionalism education. Teaching and learning professionalism did however appear to be part of the hidden curriculum within certain institutions. This finding emerged during the focus group discussions.

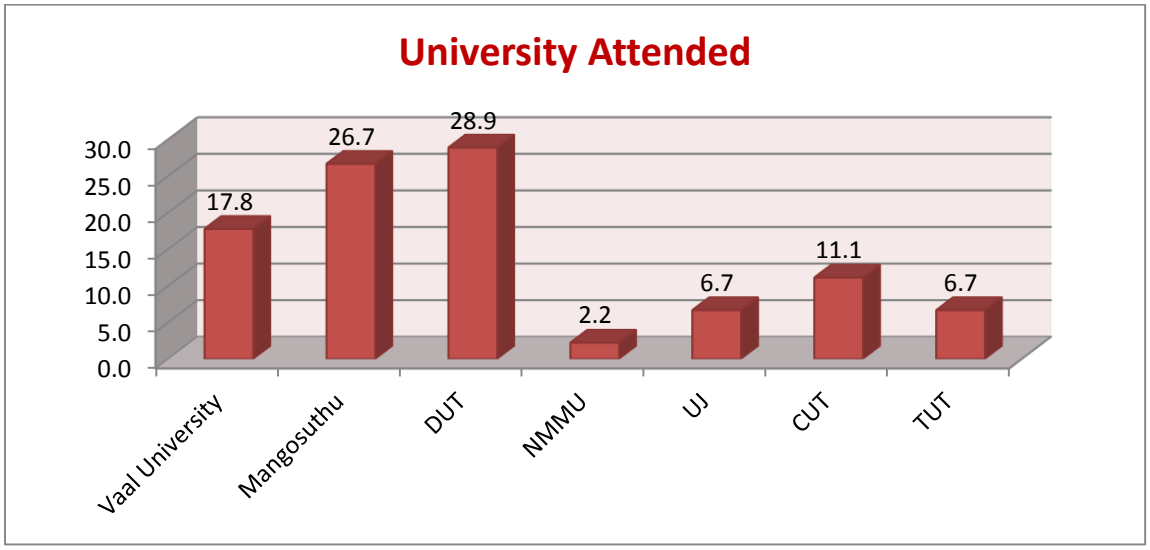


Figure 2: Universities at which the respondents completed their undergraduate biomedical technology studies (VUT-Vaal University of Technology, Mangosuthu University of Technology, DUT – Durban University of Technology, NMMU – Nelson Mandela Metropolitan University, UJ – University of Johannesburg, CUT – Central University of Technology, TUT-Tshwane University of Technology

4.3 Thematic analysis of professionalism

A host of basic themes emerged from analysis of the quantitative and qualitative data. The basic themes were categorized into subthemes and from the subthemes the data evolved into four main themes. The findings are consequently reported in four sections according to the four main themes that emerged from the data analysis. In each of the themes, graphs containing the quantitative data indicate the preferences of the respondents, while the qualitative data are discussed and illustrated with direct quotes from respondents in the focus group discussions. A breakdown of the identified basic themes, subthemes and main themes is depicted in Figure 3 below, followed by a summary of the four main themes identified.

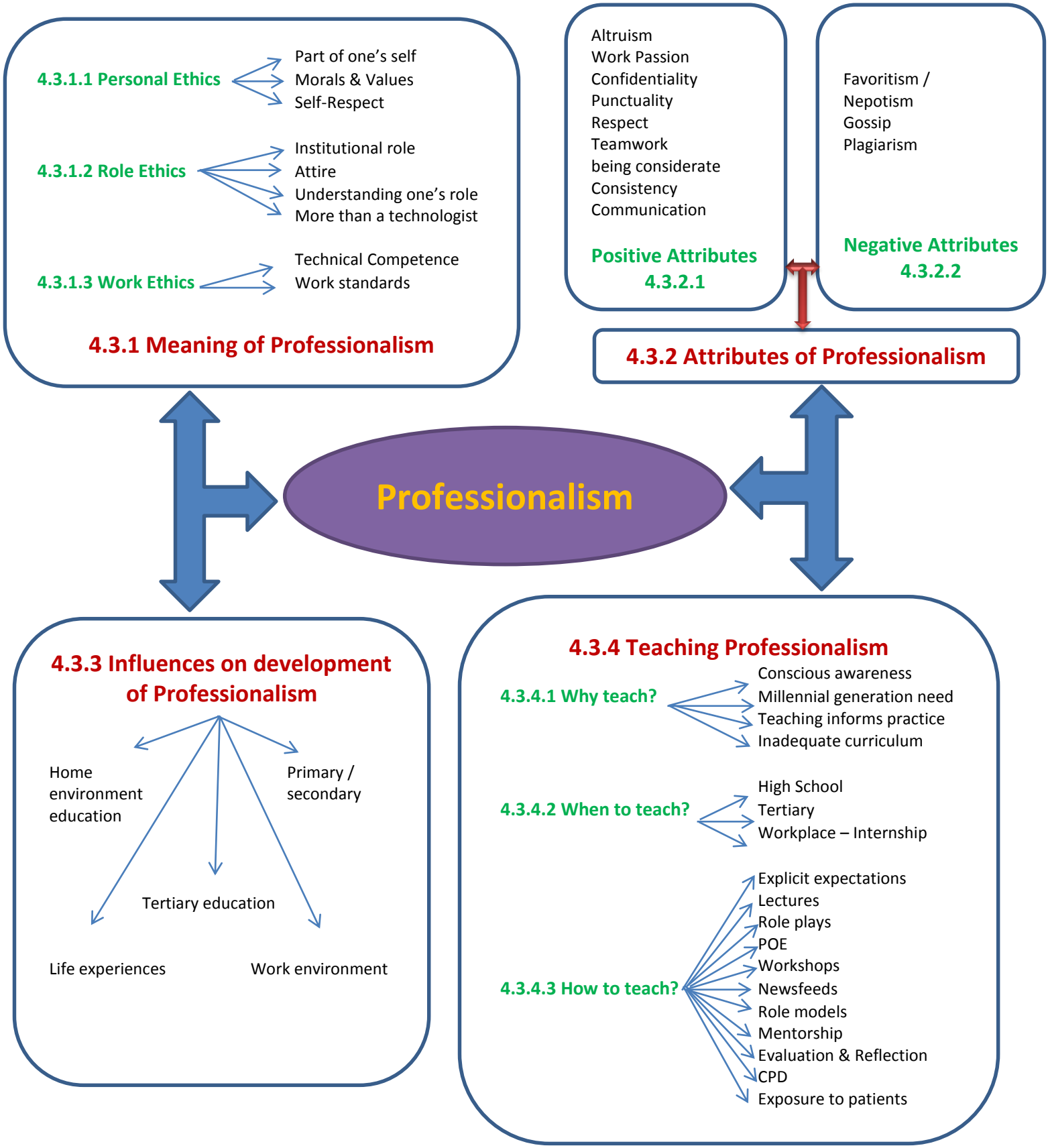


Figure 3: Basic themes, subthemes and main themes that emerged from the data analysis.

Theme 1: Meaning of professionalism

In this theme the respondents' understanding of professionalism and how they define professionalism are explored.

Theme 2: Attributes of professionalism

This theme provides a range of positive and negative attributes of professionalism that were deemed significant by the respondents.

Theme 3: Factors influencing professional development

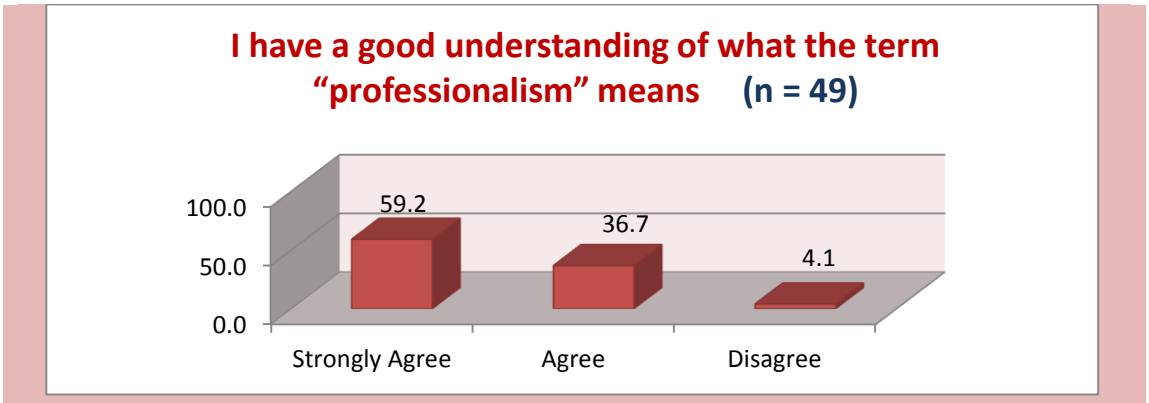
This theme highlights the various factors and exposures that influenced the respondents' understanding of professionalism and their professional development.

Theme 4: Teaching of professionalism

This theme explores the need for teaching professionalism with reasons supporting such a need, followed by possible approaches for effective teaching of professionalism.

4.3.1 Meaning of professionalism

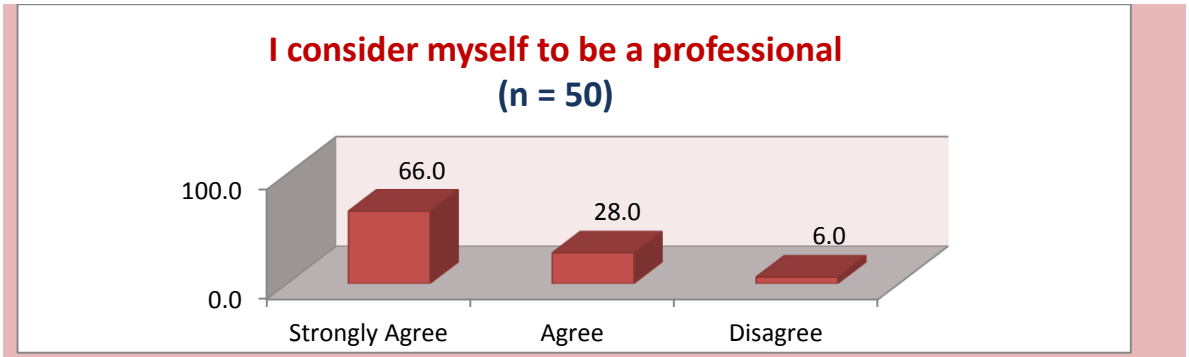
The meaning of professionalism was explored by asking the respondents whether they had an understanding of professionalism, whether they considered themselves to be professionals. Figure 4 below shows that 95.9% of the respondents indicated that they had a good understanding of professionalism. Only a small percentage (4.1%; 2/49) disagreed with the statement.



		Frequency	%	Valid %	Cumulative %
Valid	Strongly agree	29	58.0	59.2	59.2
	Agree	18	36.0	36.7	95.9
	Disagree	2	4.0	4.1	100.0
	Total	49	98.0	100.0	

Figure 4: Understanding what the term professionalism means.

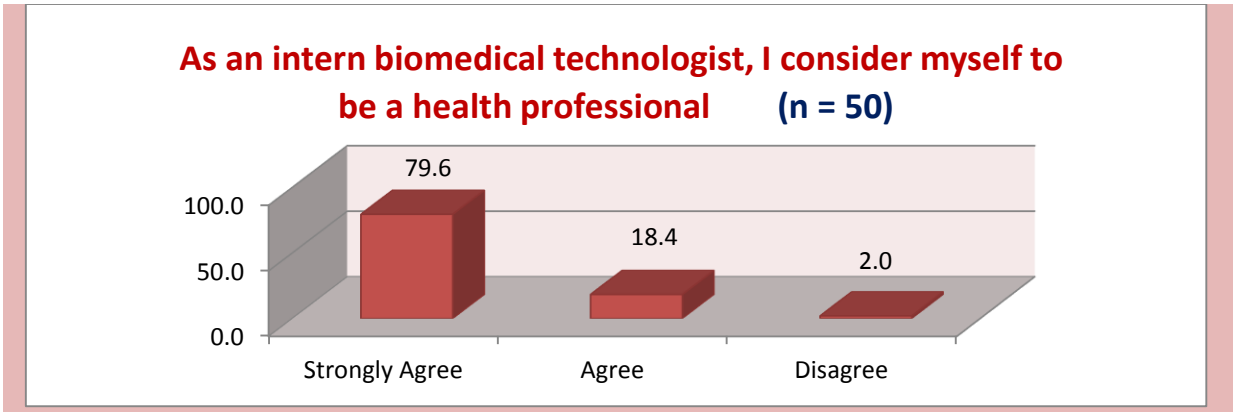
In addition to having a good understanding of professionalism, Figure 5 shows that 94% of the interns considered themselves to be professionals; just 6% of respondents (3/50) disagreed with the statement. It is possible that these three respondents did not consider themselves to be professionals due to lack of understanding of what it means to be a professional.



		Frequency	%	Valid %	Cumulative %
Valid	Strongly agree	33	66.0	66.0	66.0
	Agree	14	28.0	28.0	94.0
	Disagree	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

Figure 5: I consider myself to be a professional.

The internship programme is a **health professional** education programme and one of the strengths that emerged from the internship programme curriculum analysis was its clearly defined programme outcomes. Being enrolled on such a programme, it would be expected that the respondents would not only consider themselves to be professionals, they should additionally consider themselves to be health professionals. Figure 6 confirms the respondents' identity as health professionals.



		Frequency	%	Valid %	Cumulative %
Valid	Strongly agree	39	78.0	79.6	79.6
	Agree	9	18.0	18.4	98.0
	Disagree	1	2.0	2.0	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

Figure 6: As an intern biomedical technologist, I consider myself to be a health professional.

The meaning that the respondents attached to professionalism was then explored in the focus group discussions. Table 6 below gives an account of the subthemes and the basic themes that emerged from the focus group discussions and questionnaire responses. Column one in the table provides the subthemes under the main theme 'Meaning of professionalism'. Column two provides the basic themes which when grouped led to the formation of the subthemes. Column three provides definitions of the basic themes.

Table 6: Analysis of the meaning of professionalism

Main theme: Meaning of professionalism		
Subtheme	**Basic themes**	**Definition of basic theme**
Personal ethics (4.3.1.1)	Part of one's self	Inherent character of an individual
	Morals and values	Part of whom and what you are as an individual. Part of one's character
	Self-respect	The manner in which one views and treats oneself
Role ethics (4.3.1.2)	Institutional role	Duty or obligation of the institution
	Appropriate attire / appearance	Suitable dress code
	Understanding one's role	Belonging to a specific category or line of work and understanding one's purpose within that line of work
	Being more than a technologist	Doing more for patient care as a laboratory professional
Work ethics (4.3.1.3)	Technical competence	Application of knowledge and skills to achieve outcomes
	Work standards	Performing work tasks according to prescribed standards

Note: The abbreviation FG in the reporting below stands for 'focus group' and has been used to link the direct quotes from the respondents to the respective focus group discussions. The word 'Questionnaire' preceding a quote indicates quotes taken from the questionnaire responses.

4.3.1.1 Professionalism as personal ethics

The respondents perceived professionalism as being a personal construct, stemming from the inner self, and is something that is inherent in people. It is instinctive; it guides character and creates self-awareness.:

> **FG3:** *"I think professionalism is a personal thing, it is very much personal."*
>
> **FG1:** *"I also see professionalism as some sort of natural instinct, like we all have, you know when you are being unprofessional."*

Morals and values develop from one's individual upbringing and as such they are self-managed. These morals and values guide conduct, and assist in discerning between appropriate and inappropriate behaviours:

> **FG1:** *"…your morals, your own values, your common sense as to what is right and wrong."*

Being professional emanates from having self-respect. When one respects and understands oneself, one is able to interact appropriately with others and show respect for others:

> **FG3:** *"… one can only learn to respect the other person if you respect yourself, you have to respect yourself first in order to understand what to say to the next person."*

Professionalism viewed as self-ethics in this subtheme, shows that the respondents perceived professionalism to be part of one's inner self or inherent ethical make-up. Peoples' characters are shaped by their morals, values and upbringing, which then inform their behaviours. Individuals therefore need to take ownership of their conduct and behave in a way that resonates with a high sense of self-worth and by showing respect for themselves and others.

4.3.1.2 Professionalism as role ethics

Apart from professionalism being a personal construct, it was seen as being broader when viewed in an institutional context. According to the respondents, healthcare institutions where health professionals learn and work are expected to play a significant role in creating an environment that supports an ethos of professionalism:

FG2: *"Just as much as professionalism is an individual thing, we also need to be professional as a company because you have to communicate to your clients and build a relationship with the doctors."*

Attire or dress code symbolized professionalism. Dress code contributed to one's professional identity and was seen as the first indicator of whether one is professional or not. The interns are required to wear a uniform during their training. They viewed the uniform as a reminder of their role and purpose in health care and it further served to entrench public trust and faith in health professionals:

FG1: *"I think even your dress code, before you say something, it can say something about you, whether you are professional or not."*

FG2: *"Once you wear that uniform you must, you must show you are here to save a life, people must have faith in you and when people see us, they must have faith in us."*

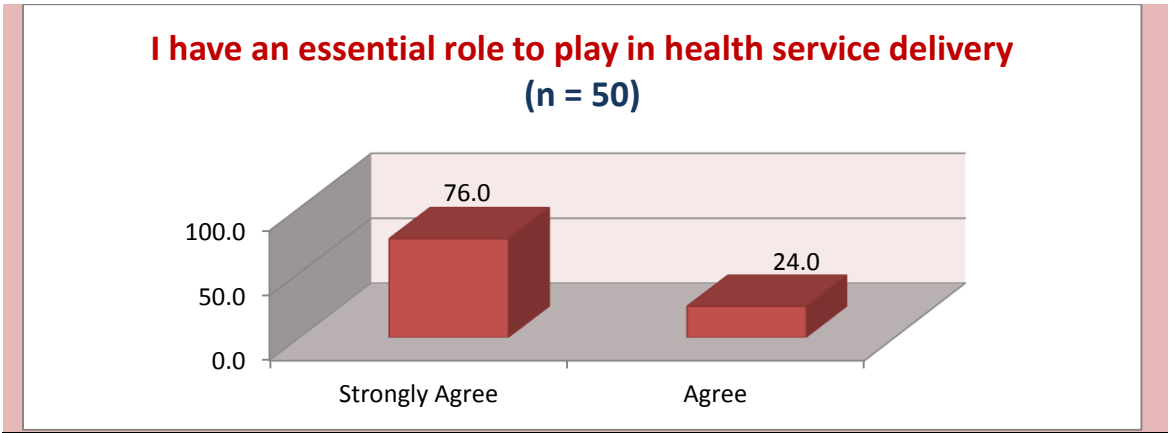
The respondents felt that ethical conduct manifested from understanding one's role and purpose within the profession. A sound understanding of that role encouraged good professional behaviours.

FG3: *"… we are entering a profession where we are working with people's lives. That is why we always need to remember why we are here."*

FG3: *"… you dealing with patients, it must be number one on your list because you are taking on this role to deal with a patient's life. I believe that immediately your mind should be on that higher level."*

The role of blood transfusion biomedical technologists is to contribute to saving lives by performing high-standard transfusion testing and providing safe, compatible blood for transfusion to patients. The role of saving lives requires professional behaviours. The literature review in Chapter 2 highlights the lifesaving role of blood transfusions and emphasizes the need for technical skills and professional values in the provision of safe blood transfusions. The respondents felt that understanding the importance of their role in patient care was critical in shaping professional values. Respondents were therefore asked whether they considered their role to be an essential one in health service delivery.

Figure 7 below shows that all (100%) of the respondents agreed that they had an essential role to play in health care. This response correlates well with the literature in Chapter 2, where Plebani, (1999) states that laboratory medicine is part of the total process of health care making the interns essential partners in caring for patients.



		Frequency	%	Valid %	Cumulative %
Valid	Strongly agree	38	76.0	76.0	76.0
	Agree	12	24.0	24.0	100.0
	Total	50	100.0	100.0	

Figure 7: I have an essential role to play in health service delivery.

Based on the acknowledgement that they have an essential health care role, it would be expected that the interns would carry out their work tasks with care and responsibility. It would be expected that they would have dedicated and committed work attitudes and comply with high work standards that contribute to saving lives. This is, however, not the case in practice. The respondents in the focus group discussions revealed that some of their peers lacked an understanding of both professionalism and the importance of their health care role. This lack of understanding had a negative impact on their work attitudes and work standards:

> **FG2:** *"See the line of work, the line of work that we do, I don't know, it's like at times some people don't understand what it really means."*

Even the educators felt that based on their observations and interactions with the interns, only some and not all the interns had an understanding of professionalism and the value of their role:

> **Educator 1:** *"From their behaviour, I think some have an understanding of professionalism, but not everybody. I don't think they know where they fit in health care."*

Most biomedical technologists work mainly in medical testing laboratories with little interaction with patients. Should patients require blood transfusion, the doctor or nurse submits the patients' blood samples for testing. The general expectation is that the doctor knows what is best for the patient and will request the appropriate tests and order the correct blood products for patient transfusion. This is, however, not always true. The respondents indicated that doctors sometimes order incorrect tests and products for their patients. Furthermore, some doctors order blood but end up not transfusing the patients, resulting in blood wastage – yet collaboration with the biomedical technologists could prevent wastage of time and blood, which is a scarce resource.

> **FG1:** *"It's just lack of knowledge from some doctors ... We have to give them the right information and they don't like it."*

The respondents indicated that as health professionals they need to take the lead, ask relevant questions, challenge the clinicians with regard to inappropriate laboratory requests, and advise them appropriately in the best interests of patient care.
Professionalism, therefore according to the respondents, meant more than being a biomedical technologist: it was about taking on a role broader than their primary laboratory testing role. The leadership and advisory role described by the respondents corresponds with the changing role of biomedical technologists described by Plebani (2002) in the literature.

Despite the clinical liaison role of biomedical technologists being a much needed role in ensuring appropriateness in the laboratory, the respondents indicated that engagement with the doctors was often not an easy task. Lack of cooperation and demands from doctors presented as a challenge, making collaboration unpleasant:

> **FG3:** *"If you don't argue with the doctors some of them feel like you don't know what you are doing. Then when you tell them the right thing they respect you."*

The ability to rise above the challenges and engage appropriately with clinical partners in both favourable and unfavourable situations was seen as an important aspect of their professional role:

> **FG3:** *"When it comes to us we have that pressure of the doctors and the nurses. You need to be professional on all aspects."*

The challenges associated with collaboration between the biomedical technologists and the doctors highlights the lack of interprofessional collaboration, which according to the literature is one of several factors contributing to poor health outcomes and therefore requires attention.

As a biomedical technologist who has worked at the 'coalface' of the laboratory environment for many years, I understand the professional demands that the interns face on a daily basis. Clinical partners can be uncooperative and unreasonable, making collaboration overwhelming for new graduates entering the laboratory work environment. I myself have faced the wrath of irate clinicians with unreasonable laboratory service demands, not willing to take advice from the biomedical technologists. From my experience of collaborating with doctors and now teaching doctors, I am aware that several doctors lack knowledge of what takes place in the transfusion testing laboratories. They therefore do not take cognizance of the testing procedures and protocols that need to be complied with in the laboratory to ensure the provision of safe blood for transfusion to patients.

Time and experience groomed me to collaborate and communicate confidently with clinical partners. When I look back and reflect, I believe that I would have coped much better as a student had I received appropriate on-the-job coaching and mentoring to deal with such challenges. As a health science educator I make every effort during classroom teaching to discuss my experiences and challenges with my students, as a means to help prepare them for the reality of the live healthcare settings. However, the classroom environment can never fully prepare students for the live clinical environment. What is clear is that curricula then and the curricula now are still deficient in catering for professional readiness of biomedical technologists.

4.3.1.3 Professionalism as work ethics

Professionalism in this subtheme was defined as meeting one's professional responsibilities by being competent, having the relevant knowledge and skills for the job, and complying with high work standards at all times:

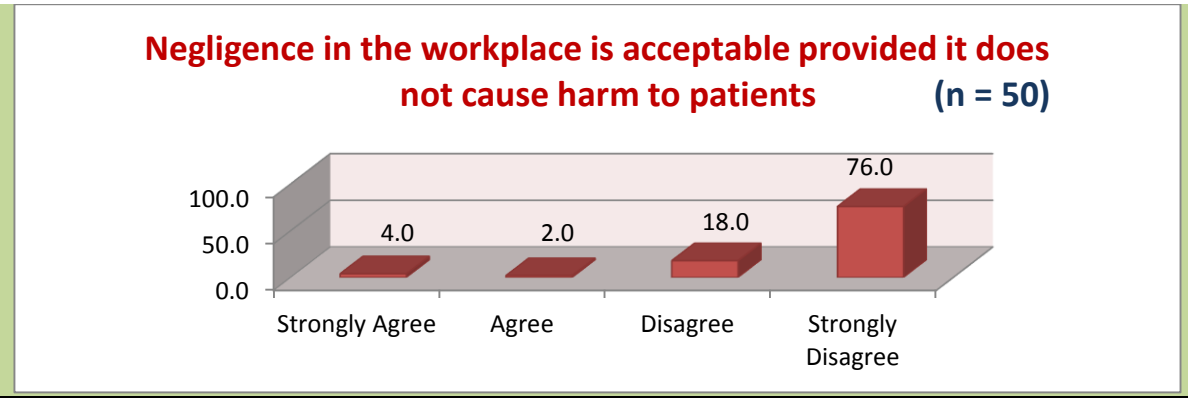
> **FG1:** *"Professionalism would be to acknowledge that I am competent in what I'm doing. I have the skills and knowledge behind it."*

Negligence was seen as a classical demonstration of poor work ethics, compromising work standards and causing harm to patients. The respondents indicated that there are practitioners in the laboratory with poor work attitudes and a laid-back approach to their work, who have no

fear of making errors. This could impact on the wellbeing of patients. The practice of not following standard operating procedures (SOPs) in the laboratory, regardless of circumstances, goes against work ethics:

> **FG4:** *"You know at times you pick something up when a person is in a hurry or maybe their shift is coming to an end. They don't follow the SOP. Anything can happen to the patient. … That's unprofessional."*

The Labour Guide South Africa (2012) emphasizes the importance of highly qualified and skilled employees within the healthcare sector and the need for a substantial standard of skill and degree of care, by virtue of the fact that human lives may be at stake in the event of failure to exercise the expected standards of care and skill by an employee. Negligence can compromise patient care and goes against good professional practice. The literature quotes an incident of negligence where a blood transfusion technician was convicted of culpable homicide following administration of incompatible blood to a patient (WPBTS & SANBS, 2014). The respondents were therefore asked whether they considered negligence in the workplace to be acceptable even if it does not cause harm to patients.



		Frequency	%	Valid %	Cumulative %
Valid	Strongly Agree	2	4.0	4.0	4.0
	Agree	1	2.0	2.0	6.0
	Disagree	9	18.0	18.0	24.0
	Strongly disagree	38	76.0	76.0	100.0
	Total	50	100.0	100.0	

Figure 8: Negligence in the workplace is acceptable provided it does not cause harm to patients.

Figure 8 shows that the majority of the interns strongly disagreed with negligence being acceptable in the workplace. A small 6% (3/50) of respondents indicated that negligence was acceptable, and possibly responded as such based on the mention of no harm being caused to

the patient. All health practitioners need to understand that any form of negligence is unacceptable. Such information needs to be embedded in students, entrenching the understanding that professionalism is about consistently doing what is right.

Overall, the analysis of this theme (meaning of professionalism) revealed that professionalism had different meanings for different respondents and was reflected in three distinct domains of understanding. For some it was simple common sense, and for others it was a complex array of several characteristics, creating uncertainty whether having one characteristic without the other still constituted professionalism:

> **FG4:** *"… some people they will do actually the work in the correct way but then their response to people, to their colleagues won't adhere to this professionalism, then are they professional?"*

In summary, the quantitative data indicated that the majority of the respondents had an understanding of professionalism, they considered themselves to be professionals, and they agreed that they had an essential role to play in health care. There was strong belief that understanding one's role in patient care was important in shaping professionalism.
Although there was no consistent understanding of professionalism amongst the respondents, there was certainly some indication of what professionalism meant to them.

4.3.2 Attributes of professionalism

A host of positive and negative attributes of professionalism were described by the respondents. Table 7 below gives an account of the subthemes and basic themes that evolved from the focus group discussions.

Table 7: Attributes of professionalism

Main theme: Attributes of professionalism		
Subtheme	**Basic themes**	**Definition of basic theme**
Positive attributes (4.3.2.1)	Altruism	Performing tasks for the benefit of others
	Work passion	Doing one's work out of love and commitment
	Confidentiality	Non-divulgence of protected information
	Punctuality	Arriving for duty on time or before time
	Respect	Treating people in an appropriate manner
	Teamwork	Working collaboratively to achieve work tasks
	Being considerate	Understanding the needs of others and their circumstances
	Consistency	Applying the same practice at all times
	Good communication	The manner in which information is transferred
Negative attributes (4.3.2.2)	Favouritism and Nepotism	Giving preference to certain individuals
	Gossip	Speaking poorly about people in their absence
	Plagiarism	Taking the work of others and calling it one's own

4.3.2.1 Positive attributes

Several positive attitudes emerged from the discussions: attitude towards one's work and ethical behaviour towards patients and work colleagues being the main attributes.

Altruism was described as doing work for the benefit of patients out of the goodness of one's heart, with no expectation of reward:

FG4: *"It's altruism. Just do it for the benefit of the patient."*

An attitude of being passionate about one's work and showing commitment and dedication was seen as essential. Having love for one's work, rather than working for the sake of doing work, encouraged people to do the right thing contributing to good work standards:

FG3: *"I would say commitment and dedication, it goes with your passion for work."*

Confidentiality, with specific reference to patient information, was noted as significant especially in the light of dealing with patient information:

FG1: *"When we were employed as interns we were told about importance of confidentiality. We dealing with patient information."*

The value of punctuality should not even be explained; is something that everyone should be cognizant of. Being unpunctual had a significant negative impact on others in the workplace, including patients:

FG2: *"Punctuality is basic; it shouldn't even have to be told to people."*

Respect was seen as a critical attribute which should prevail amongst all individuals at all levels, regardless of hierarchy.

FG1: *"Recognize each other as professionals irrespective of position because respect is earned upwards and downwards."*

Practitioners working together as a team, having a common purpose and sharing the same goals contributed to achieving what is best for patients. It meant putting aside differences and going the extra mile to achieve common goals as a team:

FG2: *"When it comes to work you have to put aside your differences."*

The need for the more experienced practitioners to be considerate in their approach to correcting errors and improving work standards, especially those of the interns, was deemed important for encouraging constructive learning:

FG4: *"At times we just need to be considerate to say you know what, not everyone out there does the job as perfectly as you do."*

Consistency leaned towards the need for leadership roles in the workplace to be consistent in how they managed their teams:

FG3: *"You need to make sure that all your staff are treated the same way."*

The need for good, clear communication with peers and other health professionals was emphasized, especially when communicating patients' test results:

FG4: *"You have to be very clear about what you say. You should speak so that the other person can understand, especially when you giving out patients' results to a doctor."*

4.3.2.2 Negative attributes

Favouritism and nepotism were directed towards the senior members or leadership roles in the laboratory. Favouritism was associated with inconsistency, a practice that was condemned:

FG2: *"…nepotism and favouritism. You cannot have people that are your favourites in a working environment because you end up actually having preferences."*

Gossip in the workplace was seen as unprofessional as it contributed to an unhealthy work environment:

FG4: *"You create a bad environment when you end up having people who gossip about each other."*

Plagiarism was viewed as a big "no no". The respondents indicated that it was common sense and professional to know that one cannot take the work of others and call it one's own:

FG1: *"The way you relate to other people's work. Not taking other people's work and calling it yours."*

Analysis of this theme (attributes of professionalism) showed that the respondents were readily able to list and describe the positive and negative attributes of professionalism. More focus was directed towards the positive attributes of professionalism, rather than the negative. My view is that when one looks at professionalism it is the positive attributes that immediately come to mind, which may be a reason for the greater focus on the positive attributes of professionalism.

As with the first theme (meaning of professionalism), a close look at this theme also leans towards the same three domains of understanding professionalism. In this theme altruism and work passion, being attributes coming from within the self, fall within the personal ethics domain of professionalism. The other positive attributes described overlap between the role ethics and work ethics domains, and are essential attributes that underpin good role conduct and good work practices. The negative attributes (favouritism, gossip and plagiarism) lean toward the role ethics domain; as such practices go against the role of health professionals.

Overall it was pleasing to note that the respondents showed good awareness and understanding of the attributes of professionalism. What is, however, more important is the need to take on the positive attributes and apply them in practice. Despite the respondents' awareness of the positive attributes of professionalism, poor professional attributes are regularly demonstrated in the laboratories. Analysis of the themes that follow is expected to provide insight into improving not only knowledge of professional attributes, but rather application of that knowledge and translating it into good behaviours and conduct.

4.3.3 Influences on development of professionalism

The quantitative and qualitative data revealed that several factors influenced the respondents' understanding of professionalism. Figure 9 below shows that the majority (33%) of the interns' understanding of professionalism was influenced by the work environment.

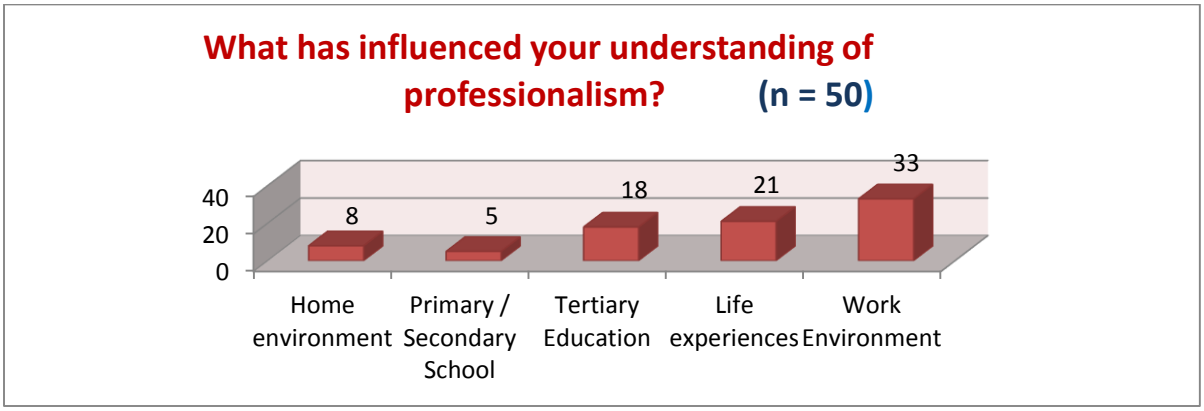
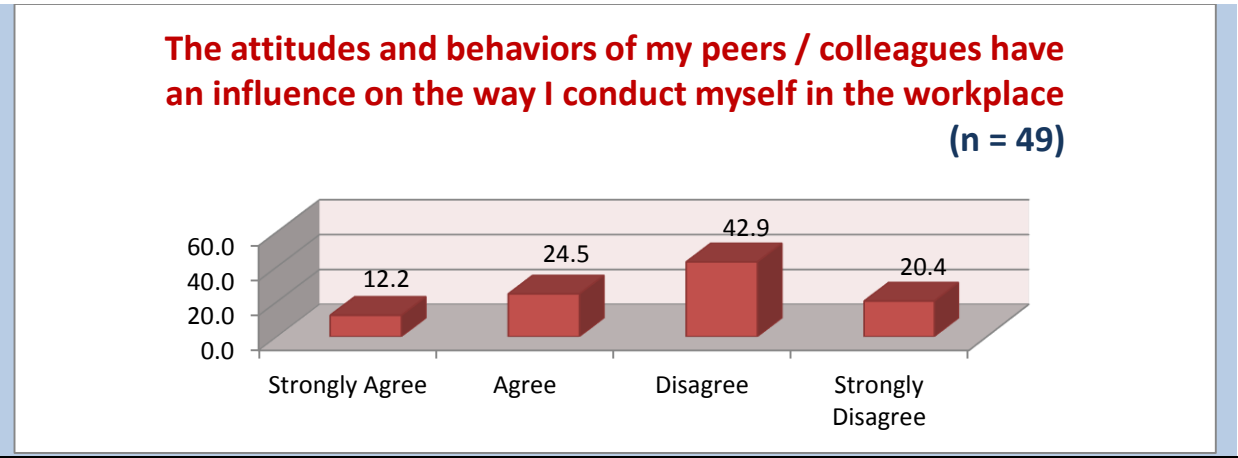


Figure 9: Influences on understanding of professionalism.

The educators reaffirmed the work environment as being a strong influence factor impacting on the interns' professional development.

> **Educator 2:** *"What I have observed as well is that they go out into the work environment and they pick up whatever they have seen and they tend to follow that."*

When asked whether the attitudes and behaviours of their peers had an influence on their conduct in the workplace (see Figure 10 below), more than half (63%) of the respondents indicated that they were not influenced by the behaviours of their workplace colleagues.



		Frequency	%	Valid %	Cumulative %
Valid	Strongly agree	6	12.0	12.2	12.2
	Agree	12	24.0	24.5	36.7
	Disagree	21	42.0	42.9	79.6
	Strongly disagree	10	20.0	20.4	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

Figure 10: Influence of the attitudes and behaviours of workplace colleagues.

Clarity in terms of how the workplace influenced the respondents was sought in the focus group discussions. The respondents indicated that they were exposed to both positive and negative behaviours in the workplace, which had varying degrees of influence on them as individuals. Negative attributes demonstrated by workplace impacted negatively on the conduct of those individuals who succumbed to these influences:

> **FG4:** *"It does because when I first came to work here I was a humble, good person but the people here made me what I am now."*

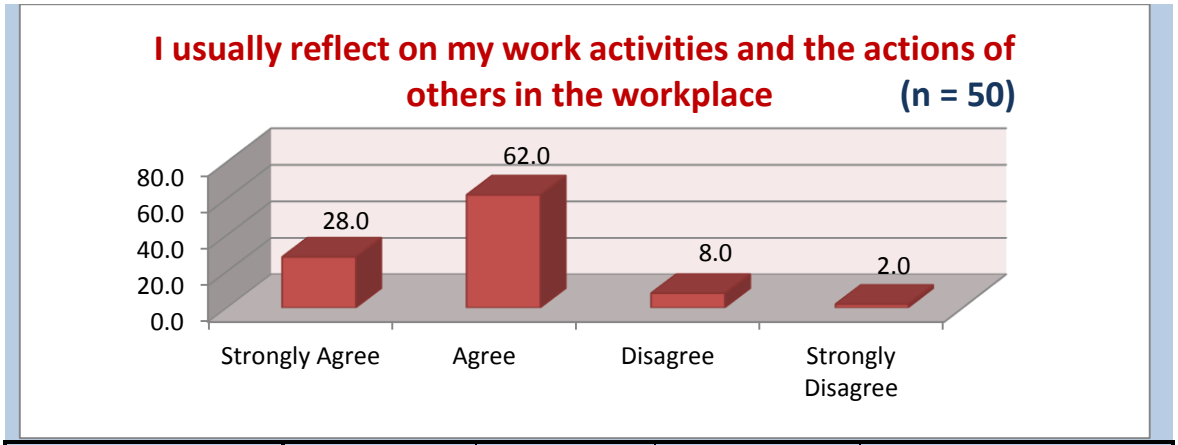
Influences in the workplace were not all bad. Good role modelling by some practitioners contributed positively to the professional development of some interns:

> **FG4:** *"The way the way they carried themselves, the commitment that they had for their work … This is what I'm here for. Now they showed professionalism."*

Some interns were able to distinguish between good and unacceptable practices which protected them from the negative influences. Their ability to discern between good and poor behaviours was informed by their upbringing, their morals and their values. This correlates with the self-ethics domain of understanding professionalism which emerged in theme one.

FG1: *"… your upbringing, your morals, your own values, your common sense as to what differs to what, your resistance to stay true to what you believe in."*

Adding to the ability to distinguish between good and poor professional practices, another significant factor noted to have influenced the interns' professional development was the practice of reflection. When asked whether they usually reflected on their workplace activities, Figure 11 shows that almost all (45 /50) of the respondents indicated that they usually reflected on their work activities and the actions of others in the workplace.



		Frequency	%	Valid %	Cumulative %
Valid	Strongly agree	14	28.0	28.0	28.0
	Agree	31	62.0	62.0	90.0
	Disagree	4	8.0	8.0	98.0
	Strongly disagree	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Figure 11: Reflection on activities and the actions in the workplace.

Reflection on experiences offers opportunities for self-improvement. Reflection encourages self-evaluation which, amongst other factors, can contribute to positive character development. The value of reflection during and after experiences (Schon cited in Ramani and Leinster, 2008) contributes to meaningful learning and impacts positively on self-improvement. Reflection allowed the respondents to be honest about themselves to themselves and that honesty contributed to their positive professional development:

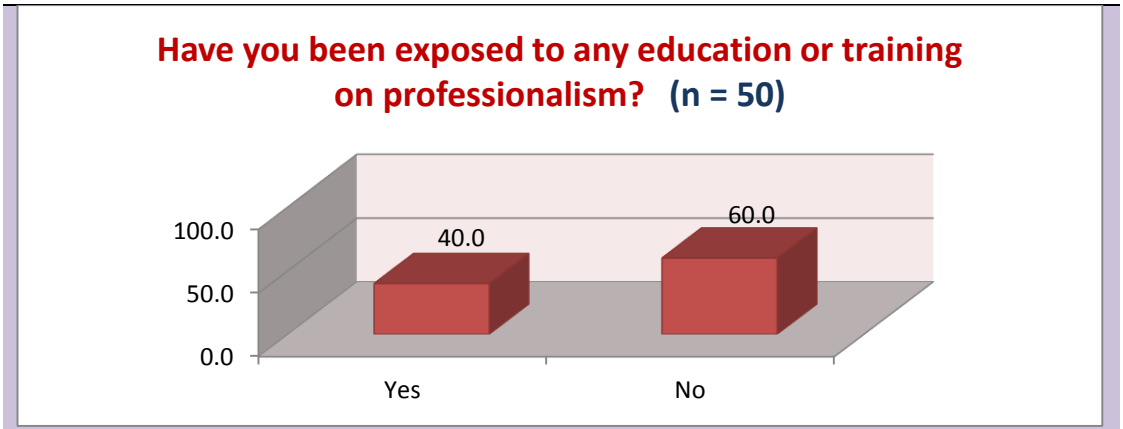
FG4: *"Ok because when you reflect you are honest to yourself."*

FG3: *"Also you can look at yourself. I definitely look at myself each day and learn."*

The overall findings in this sub-theme showed that the work environment was dominant in influencing and shaping professionalism in the interns. It was, however, not the attitudes and behaviours of workplace colleagues alone that influenced their professional development. Intrinsic factors such as their upbringing, morals, values, self-reflection and reflection on workplace activities and behaviours also contributed to the respondents' understanding of professionalism and to an extent enabled them to distinguish between good and poor professional behaviours.

4.3.4 Teaching professionalism

Figure 12 below shows that more than half (30/50) of the interns had not been exposed to any education on professionalism.

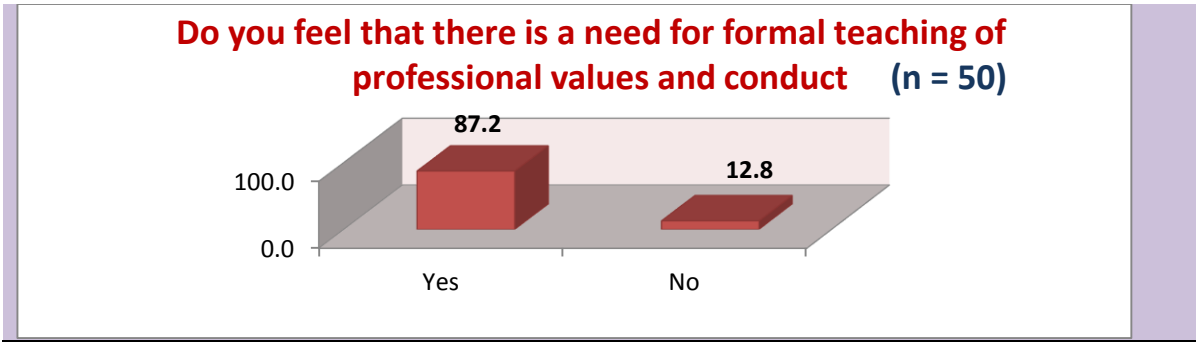


		Frequency	%	Valid %	Cumulative %
Valid	Yes	20	40.0	40.0	40.0
	No	30	60.0	60.0	100.0
	Total	50	100.0	100.0	

Figure 12: Exposure to education or training on professionalism.

Those who had been exposed to some education, that educational exposure came from their employer which was the Blood Service at the time of the study, previous employment, exposure to a module on communication at a particular university, tertiary institutions and team building activities in the workplace. Despite this education, the quantitative and qualitative data highlighted the need for professionalism to be formally taught.

Figure 13 shows that almost all (45/50) of the interns expressed the need for formal teaching of professionalism.



		Frequency	%	Valid %	Cumulative %
Valid	Yes	41	82.0	87.2	87.2
	No	6	12.0	12.8	100.0
	Total	47	94.0	100.0	
Missing	System	3	6.0		
Total		50	100.0		

Figure 13: The need for formal teaching of professionalism.

Table 8 provides an account of the subthemes and basic themes surrounding the interns' and the educators' views on why, when and how professionalism should be taught.

Table 8: Interns' and educators' views on how, when and why professionalism should be taught

Subtheme	Basic themes	Definition
Why professionalism should be taught (4.3.4.1)	Conscious awareness	Knowledge and understanding of subject or situations
	Teaching informs practice	To do as taught
	Millennial generation need	The need of individuals born around the period 1980 - 2000
	Curriculum imbalance	Too much teaching of certain learning areas and little teaching of other learning areas
When professionalism should be taught (4.3.4.2)	High school education	Secondary education – follows primary education in a school
	Tertiary education	Post-secondary education usually at a higher education institution
	Entry into work environment	Start of a formal job
How professionalism should be taught (4.3.4.3)	Teaching professional expectations	Professional obligations of student practitioners
	Lectures	Providing information verbally
	Role plays	Acting out scenarios
	Portfolio of evidence	Collecting and compiling information as part of learning
	Workshops	Discussion and information-sharing sessions
	Newsfeeds	Information briefs
	Role modelling	Setting an example for others
	Mentorships	Experienced practitioners providing guidance and support to novice or student practitioners
	Feedback / evaluation and reflection	Constructive analysis or critique of people and experiences and discussion of the analysis
	CPD	Continuing professional development
	Exposure to patients	Being able to see the healthcare needs of patients
	Application of learning	Practice of what has been learnt

4.3.4.1 Why professionalism should be taught

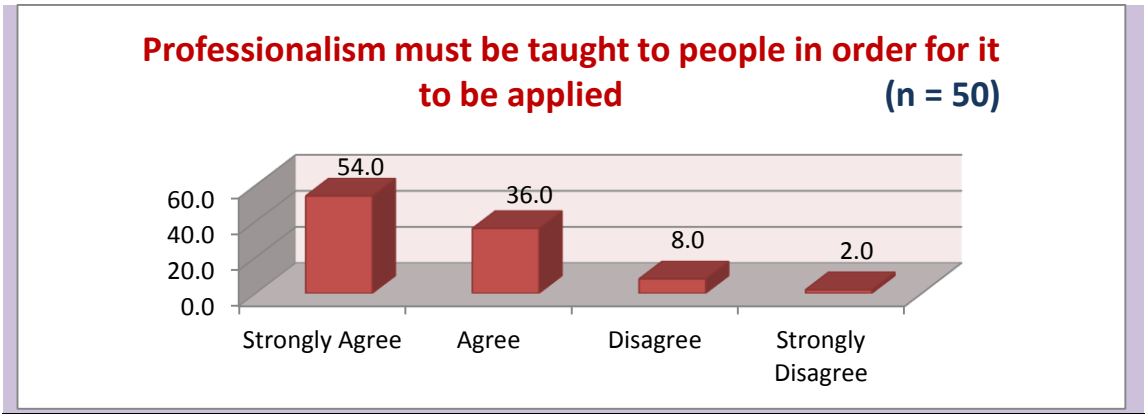
Structured teaching of professionalism was needed to create conscious awareness of appropriate behaviours and conduct:

> **FG2:** *"I was about to say that if nobody tells that to me, I may not even realize that what I am doing is not professional."*

Basic attributes such as communication skills and being courteous were not common to all.

> ***Questionnaire:*** *It must not be taken for granted that people know how to communicate.*

The respondents felt that teaching informed practice hence the need for education. Figure 14 shows that almost all (45/50) of the respondents felt that professionalism must be taught in order for it to be applied.



		Frequency	%	Valid %	Cumulative %
Valid	Strongly agree	27	54.0	54.0	54.0
	Agree	18	36.0	36.0	90.0
	Disagree	4	8.0	8.0	98.0
	Strongly disagree	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Figure 14: Professionalism must be taught to people in order for it to be applied.

According to the educators, teaching professionalism was especially needed for the 'new generation' of students. The 'new generation', also referred to as 'the millennials includes individuals usually born between the period 1980 and 2000. The educators felt that professional values were not naturally acquired in the millennials as compared to the older generation of practitioners; hence teaching professionalism was necessary in present times:

> **Educator 4:** *"… because the old school people they came with those values. They didn't have to be taught, it was part of them naturally."*

The educators' views present bias as no substantial evidence was provided, nor is there research available to support such views. Literature does indicate that professionalism is deteriorating globally; however, there is no scientific evidence to categorize the millennials as individuals that lack professionalism. Poor professional behaviours and practices are not unique to the millennials. I have interacted with several experienced practitioners who lack professionalism and present as poor role models for student practitioners. It is therefore unsubstantiated to claim that teaching professionalism is a millennial generation need.

What did offer value was the educators' feedback regarding the imbalances that exist in the internship training programme. They indicated that the internship programme has dominant emphasis on the development of technical knowledge and practical skills with inadequate focus on the development of humanistic values and people skills in the interns. This response correlates with the findings of internship curriculum analysis presented in Chapter 1 which highlighted the technical-heavy nature of the curriculum at the expense of professional values development.

> **Educator 4:** *"And also the focus of the training is knowledge and skills."*
> **Educator 2:** *"They have the knowledge and skills but they can't communicate properly."*

4.3.4.2 When professionalism should be taught

Professionalism education should begin at high school and should be part of the Life Orientation curriculum at schools:

> ***Questionnaire:*** *Having classes in high school would be a good idea. If it's added to Life Orientation, as professionalism is a life skill which is very important*

Furthermore, professionalism should be taught at the tertiary institutions to ensure readiness for the world of work:

> ***Questionnaire:*** *Professionalism should be taught or enforced during the tertiary years where they prepare you for the workplace environment.*

Teaching professionalism was in place at certain universities; however, the teaching was usually informal, with lecturers often relating their experiences in the laboratory as a means to create awareness of appropriate conduct:

> **FG2:** *"As part of the modules, not formally, the lecturer would share what she experienced in the laboratory and also as part of introduction to medical technology."*

The final-year biomedical technology undergraduate students usually attended talks on professionalism in their last semester of study. Such talks were noted to be brief and informal. In the final semester, the undergraduate students complete their experiential learning or work-integrated learning module where they observe and learn in the 'live' medical / clinical laboratories. The respondents felt that learning professionalism should not be delayed until the end of their study programme; rather it should be incorporated right from the start of the undergraduate programme:

> **FG2:** *"At university they just touch on it. You see like right before you leave, when it's your final semester."*

> **FG3:** *"Don't wait for that experiential training because that is not going to work. They need to know from the beginning."*

Teaching professionalism was also recommended when graduates such as the interns begin their internship training. All new incumbents should attend a structured professionalism course as part of the institution's induction programme. Additionally, professional development should be included as part of all practitioners' individual development plans, making it compulsory for laboratory managers to guide and support the professional development of junior practitioners:

> ***Questionnaire:*** *I feel that each and every employee that enters the company should go through a structured professionalism course that would be part of their induction also added to their individual growth plan.*

4.3.4.3 How professionalism should be taught

Teaching professionalism should begin with a detailed explanation of the interns' work expectations aimed at providing clarity on the interns' work responsibilities and understanding of their professional obligations:

FG2: *"I think a better way is by one knowing what is expected of them."*
Educator 4: *"But we need to get around to it, state what's okay and what's not okay. So if you lay it out, that's the only way you will be able to make it clear."*

Lectures on professionalism at the start of the internship training were suggested as a primary means to teach professionalism:

FG 1: *"Lectures is a good start."*

Role plays were well supported with the respondents expressing that such activities would make learning more practical and reality based, rather than academic. It would additionally create opportunity for observers to critique roles played and provide suggestions for correction of inappropriate behaviours:

Questionnaire: *Training where people can be given scenarios and asked to act out how they would conduct themselves professionally and that way they can be corrected as to what is the right way to act professional in different situations.*

Compiling portfolios were suggested as a means to document experiences and observations associated with good and poor professionalism. Recordings would the create opportunity for reflection and self-awareness. The portfolio concept was not well supported by some respondents who indicated that negative portfolio recordings could create tension and an unsettling work environment as other practitioners in the laboratory may feel that they are being monitored by the interns:

FG4: *"I've collected all my evidence. What happens to these bad experiences? It's a bad idea because everyone will be on edge in the lab now."*

The suggestion of educator-facilitated workshops presented with a twofold aim: first to serve as a forum to discuss professional obligations of all laboratory practitioners, and secondly, to be used as a platform for the interns to discuss their experiences in the laboratory and the learning they acquired from these experiences. Interaction with workshop participants could provide a clearer perspective of appropriate and inappropriate behaviours:

FG2: "… *we can have workshops just to tell people what is expected of them and we can talk about what affects us in the workplace … someone can actually change their attitude."*

Newsfeeds were suggested as a motivating factor to encourage good professional behaviours. Acknowledging or congratulating practitioners for their good professional deeds could inspire others to follow suit. Learning would take place intrinsically through the publicized good roles modelled by others:

> **FG3:** *"… things like newsfeeds and say 'Oh well done' for going the extra mile on this, this, and this and it will be circulated. Don't you also wanna feel like I want to contribute?"*

The educators felt that learning professionalism often happened subtly through observation of seniors. It is therefore important for the educators and senior practitioners to set good examples and in simple terms 'walk the talk', so that the junior practitioners could learn from the roles modelled:

> **Educator 3:** *"Yes they are observing us as teachers, watching us, what we do, what we don't."*
> **FG3:** *"Also in your house, if you as a parent are doing your own thing, how are your children going to be … you are the guide."*

Developing professionalism through dedicated mentors in the workplace was suggested as a means to support, educate and guide the overall development of the interns:

> **FG4:** *"… Have mentors, they have a lot of influence in shaping you to being your best."*

The concept of reflection, evaluation and feedback for encouraging awareness of positive and negative attributes was suggested. Seniors in the laboratory should complete questionnaires evaluating the interns' professional conduct on a periodic basis. The interns should reflect on their own attitudes and behaviours and complete a similar self-evaluation questionnaire. A discussion between the senior practitioner and the intern should follow creating awareness of inappropriate behaviours with the aim to correct poor attributes and commend positive attributes:

> **Educator 1:** *"… a questionnaire where the supervisor will reflect and report on the student attributes and the student will reflect and report, maybe that will bring some benefit."*

The use of the online continuous professional development (CPD) platform to teach professionalism was recommended. CPD is a mandatory requirement for health practitioners

registered with the HPCSA. Healthcare practitioners have a responsibility to continually update their professional knowledge and skills for the end benefit of the patient or client (HPCSA, 2014). CPD activities related to professionalism education should be appropriately developed, avoiding theory-heavy content and should be in the form of case studies allowing for analysis, interpretation and drawing of meaning from online postings:

> **Educator 1:** *"Yes CPD. It should not just be information on professionalism; case studies could be used for CPD activities. I think that will be more effective and meaningful."*

The need for the interns to step out of their laboratories and step into the forefront of patient care was highly supported as a means to develop humanistic and professional values. The respondents and the educators felt that exposure to patients as a learning initiative would be effective in showing the interns where and how they fit into the interprofessional health care approach. It would also allow for a deeper understanding of their impact on patient care and create a greater sense of empathy and care in the interns:

> **Educator 3:** *"… expose them to the patients … take them to the hospital to see what it is like for a patient to be in a bed waiting for a unit of blood. Do you know what, when I first started working in the lab … I saw AIDS patients, I saw TB patients… That's how I got my sense of care because I saw the patients."*

> **FG4:** *"Take them on a session where they can go to a hospital and see patients that are on chronic transfusion programmes and then they can see what's out there. It will create an emotion and emotion will become a lifelong commitment."*

Such exposure would encourage the interns to reflect on their work attitudes with the likelihood of creating a deeper sense of commitment and dedication in the interns:

> **FG3:** *"They need the blood urgently. Sometimes you don't think that somebody has an Hb of 2 and is going to die any minute. Will you still go take a 40-minute lunch break? You will think again."*

The educators indicated that was greater power in directly showing the interns how their work in the laboratory impacted on patients, rather than teaching it to them in an academic format. This

would entrench the importance of performing work tasks correctly and in line with the prescribed laboratory standards:

> **Educator 2:** *"… at the end of the day this blood unit is going out to a patient, but maybe somehow when I as the teacher say it, they think I'm exaggerating, but if they can be exposed to reality they would see the importance of doing their work correctly."*

The suggestions for teaching and learning professionalism offer varying degrees of value and require critical analysis to determine how fit for purpose each approach can be. One relevant point that stands out in this theme is the reality that regardless of how professionalism is taught or how much teaching takes place, there is little value if no application of teaching and learning takes place:

> **FG2:** *"You can teach and teach and teach, if it's not being applied in the workplace, it's no use."*

The quote above highlights a significant point of departure for this study. Revision of the curriculum to include explicit teaching of professionalism is certainly an identified need in this study, but how teaching and learning is translated and transferred into application and practice requires significant focus.

4.4 Conclusion

This chapter provided the analysis of the quantitative and qualitative data. Four main themes, namely, the meaning of professionalism, attributes of professionalism, influences on professional development, and teaching professionalism, emerged from the analysis of the data.

Professionalism was defined in the context of self-ethics, role ethics and work ethics, which in summary provided the explanation that the morals and values of the self, inform the behaviour and conduct of people enabling them to fulfil their roles and responsibilities in line with prescribed ethical work standards. Several positive attributes contributed to one being professional and professional development was largely influenced by environmental exposure, with work-related experiences being the dominant influence factor in this study. The need for the laboratory work environment to ensure appropriate positive influences that encourage professional development of the interns emerged as a significant finding.

The analysis showed that although there was no one coherent definition of professionalism, the respondents had some understanding of professionalism, which has good potential to contribute to a normative definition of professionalism. The analysis also provided the answer to the question of whether teaching professionalism is needed in the internship programme. Structured rather than informal unplanned teaching of professionalism emerged as necessary and a host of strategies for teaching professionalism were suggested. The findings of the study will be discussed in detail in the next chapter with recommendations for curriculum improvement.

Chapter 5: Discussion, recommendations and conclusion

5.1 Introduction

The previous chapter provided the analysis of the quantitative and qualitative data findings. This chapter presents the discussion of the key data findings in relation to the literature. This chapter further responds to the four objectives of the study, which were:

- to obtain an overview of the interns' definitions of professionalism and what informed their definitions;
- to gain an understanding of the interns' and their educators' views on the need for formal teaching of professionalism;
- to explore the interns' and educators' views on potential teaching methods that will positively inform behaviours and practice; and
- using the data gathered as a basis for curriculum reform to include teaching professionalism.

Included in this chapter are the recommendations for curriculum improvement as well recommendations for further research.

5.2 Discussion of the findings

In response to the first objective, the analysis brought to light the variations in the meanings given to professionalism, which essentially highlights that professionalism meant different things to different individuals, with no single or a consistent definition. In broad terms a two-dimensional understanding of professionalism was revealed, where at first glance professionalism is viewed as a simple, uncomplicated concept of basic common sense where natural instinct guides the distinction between good and poor professional behaviours.
A closer look reveals a second dimension, a more complex construct where professionalism is framed as an all-inclusive concept made up of several domains and attributes, where having one without the other impacts on its completeness.

Similar interpretations of professionalism were noted in the study by Burford *et al.* (2014). These authors also reported that professionalism had differing meanings for the various health practitioner participants, and that the definition varied within and between the various health professional groups thus making professionalism conceptually unclear. Similar to their study, this study also showed that views of professionalism were complex with no universal definition.

In terms of the varied meanings of professionalism that emerged in this study, the analysis illuminated three distinct domains of understanding professionalism. In the first domain, that of self-ethics, professionalism was perceived as behaviours and conduct that stem from morals, and values which manifest as a result of upbringing. These values set the tone for good professionalism as we progress through life. In the second domain, professionalism as role ethics, a relationship was drawn between the interns' having an understanding of their role in patient care, and the internalisation of which, manifests in them fulfilling their role and duties with integrity and care. The third domain, professionalism as work ethics, focused on competence in the form of technical knowledge and skills as well as compliance to good work standards, all aimed at avoiding negligence and preventing harm to patients.

The various domains of understanding professionalism echo the views of Swick (2000), who explains that professionalism carries with it may connotations, complexities and nuances; hence there is no common understanding of professionalism. Although no one common meaning of professionalism could be drawn from the findings, one **common** thread linking the three domains of understanding professionalism did surface in this study. **The need to do what is right for the patient** formed the foundation or the central core upon which professionalism was defined, where doing what is right for the patient requires an appropriate make-up of attributes that contribute to saving lives.

The essential positive attributes of professionalism described by the interns included altruism, work passion, commitment, dedication, confidentiality, punctuality, respect, teamwork, consistency, being considerate and having good communication skills. The listed attributes closely resemble those presented in the literature (Cohen, 2006; Burford *et al.*, 2014; Baingana *et al*., 2010). The inverse of the listed attributes constituted unprofessional behaviour. It was felt that breech or violation of the required attributes impacted negatively on patients, work colleagues and the profession at large. Again, the need to constantly remember the patient at the end of the line emerged as high priority, keeping pace with the literature which states that patients entrust their health to the hands of healthcare workers and professionalism demands placing the patient's needs above those of the health professional (Baingana *et al*., 2010). The need for the appropriate professional attributes to be entrenched in the interns and all health professional students is therefore deemed significant in meeting the expectations of patients and the public.

One evident theme that came to light inferred that when a person joins the healthcare profession they should have a clear concept of their professional identify, their role and responsibilities, and bring with them certain non-negotiable 'must-have' qualities such as altruism and work passion. The literature also claims that health practitioners have an altruistic obligation to patients (Macpherson et al., 2001), and healthcare roles therefore require the right type of person for the job. Persons with the essential 'right qualities' will understand their role and purpose and conduct themselves appropriately in line with prescribed professionalism standards.

Personality profiles are not considered as a recruitment and selection criterion for appointment of interns at the Blood Service. Character and personalities of students enrolled into the university undergraduate and internship programmes certainly differ, with character and behaviours noted to be attributed to upbringing, morals and values as well as other social and environmental factors. The key influence factors noted in this study that contributed to the interns' understanding of professionalism and how they conducted themselves as individuals came mainly from their life experiences and the work environment, the work environment reigning as the dominant influence factor.

Role models in the work environment presented with both positive and negative influences, therefore having a dual impact on the professional development of some interns. The apt analogy of the parent in the home setting the tone for entrenchment of values in family members was used to elucidate the benefits and harm of positive and negative role modelling on novice practitioners, emphasizing the power of role modelling and the vital need for good, effective role modelling. Cruess and Cruess (2006) state that for role models to be effective they must understand the roles that they are modelling. Poor role models can a have a detrimental impact on students' character development and their perceptions of their selected profession. Humfrey *et al.* and Reddy *et al.,* cited in Baingana *et al.* (2010), explain that students' participation in unprofessional conduct has been linked to witnessing unprofessional conduct, with an enhanced likelihood of students viewing these behaviours as acceptable and thus creating a cycle that entrenches unprofessional conduct. The problem that arises is that once embedded in practice, unprofessional conduct may become habitual and challenging to correct.

Cohen (2006) explains that it is not what students hear in the classroom that makes the most durable impression; it is what they see and hear in everyday practice of those in the profession

that etches their attitudes and hardens their perceptions about the real expectations of the profession. The work environment is therefore a powerful stage not only for technical expertise development but also for professional development, more especially for students starting out in their careers. The stage therefore needs to be appropriately set to encourage positive professional development of students; as repeated negative learning experiences may adversely impact the development of professionalism among health professions students (Baingana *et al*., 2010).

Poor representations of professionalism can misguide novice and student practitioners, impacting on poor health outcomes, poor reputation of the profession and the public losing faith and respect in health professionals. As highlighted in the literature, deteriorating professional values and the public losing respect and faith in health professionals (Cruess & Cruess, 2006) is a global area of concern – hence the call for all disciplines of health professions to focus on improving professionalism through improved education systems.

In response to the second objective of the study, directed at identifying the need for teaching professionalism, the findings undoubtedly support the need for planned teaching of professionalism through the formal curriculum. The interns and the educators called for education as a means to create conscious awareness of professionalism and its associated attributes. It was made clear, that what is common sense for some is not so for all. Even the literature claims that professionalism must be explicitly taught (Cruess & Cruess, 2006) as not all health practitioners cognitively understand professionalism. Cohen (2006) therefore advocates the need to teach the cognitive base of professionalism for proper understanding.

In the same manner that explicit focus is attached to scientific and technical learning in medical and health science education, similar focus should be attached to developing professionalism and humanistic values in health professional students. Such were the sentiments of the educators, confirming the existing deficiencies surrounding the lack of structured professionalism education in the internship curriculum. The educators' views echo the literature that states for many years medical education has placed great emphasis on the biological / technical aspects of medicine at the expense of developing humanistic qualities (Wear & Castellani, 2000).

Technical knowledge and skills to perform laboratory test procedures are crucial competence areas contributing to the technical expert role of biomedical technologists. The technical expert role is, however, not the only function of biomedical technologists. The study findings make evident the broader functions of biomedical technologists and highlight their additional advisory, communicator, collaborator and health professional roles in the inter-professional healthcare approach. Professional development in support of the several role demands of biomedical technologists must be provided during the various student learning phases.

Biomedical technologists are expected to liaise with clinical partners, mainly doctors and nurses, providing guidance and advice in line with appropriate laboratory utilization for best patient outcomes. Zinder (1998) explains that the mission of laboratory medicine in the provision of health care is to be patient-oriented, and imparting of technical knowledge to clinical colleagues is of the highest importance, to which much effort must be directed as the world moves into the 21st century. Imparting knowledge, collaboration and communication with clinical partners emerged as a challenge for the interns. Poor cooperation and reluctance of doctors to take advice, contributed to unwarranted laboratory testing and blood wastage. Wastage of blood not only denies other patients blood transfusions during times of blood shortage, it also adds to patients' medical bills and overall healthcare costs.

Literature points to healthcare standards being at unsatisfactory levels, partially due to health professionals not collaborating or working as teams (Robert Wood Johnson Foundation, 2011). Doctors not appreciating the expertise of biomedical technologists and undermining of their role in patient care support the view of Rohde (2014), who states that the medical laboratory science profession is the hidden profession that saves lives, yet it is one of the under-recognized health professions. Based on my experiences of working in the laboratory, Rohde's view provides a likely explanation for the poor collaboration between doctors and biomedical technologists.

Inter-professional education and collaboration which allows for a process of communication and decision making that enables a synergistic influence of grouped knowledge and skills (Kasperski, cited in Bridges *et al.,* 2011) offers the potential solution to the existing collaboration challenges in 21st century health care. Medical and health science education programmes, including biomedical technology, therefore need to keep pace with modern-day healthcare demands and attach greater focus to interprofessional education and overall professionalism

development in students. The university undergraduate programmes and internship programme are lacking with regard to interprofessional education and the overall professional development of biomedical technology students. To ensure well-rounded, competent graduates, Baingana *et al.* (2010) emphasize the need to not only instil a high level of biomedical knowledge and clinical skills; professionalism and inter-professionalism are essential learning areas required for preparing students for the duties, obligations and challenges that lie ahead for them as future health practitioners.

Teaching professionalism and development of professional values should commence during young adult development and certainly during the tertiary learning phase, the phase expected to provide pre-professional readiness for health professional students. Several interns expressed dissatisfaction with the tertiary level undergraduate biomedical technology programmes for not providing adequate professional readiness for the world of work. Being exposed to education on professionalism “every now and then” during the undergraduate programme and professionalism talks offered at the tail end of the programme in preparation for work-integrated learning was not well supported.

The need for professionalism education to be embedded at the very beginning and then throughout the biomedical technology programme was recommended by the interns to allow for better preparedness for their internship learning phase and their careers going forward. Baingana et *al*. (2010:5) explain that “development of professionalism is a continuum and a realization that proper standards of professional behaviour have to sustain for a life time”. Hence once-off teaching of professionalism offers little value.

The third objective of the study, directed at exploring the interns’ and their educators’ views on potential teaching methods to positively inform good professional behaviours and practice, illuminated a host of teaching and learning approaches. Lectures laying the foundation for understanding professionalism were recommended as a starting point. “Teaching professionalism should start with the recognition that there is a cognitive base” (Cruess & Cruess, 2006:207). Lectures alone are, however, not the ideal teaching approach and are therefore not advocated as the mainstream approach for teaching professionalism.

Cruess and Cruess (2006) explain that when teaching professionalism is limited to one or more didactic sessions outlining the cognitive base, the impact will be minimal. They state that

professionalism must be taught explicitly and then be reinforced and internalized by the student through experiential learning. Exclusively passive methods have little or no role to play in improving professional performance (Plebani, 2002); hence the need for active, experiential and reflexive learning opportunities. Interactive techniques such as case discussion, role play and hands-on practice sessions tend to be more effective, and the learn–work–learn opportunities offered by sequenced sessions in which education may be transferred into practice and reinforced may lead to more successful outcomes (Barzansky, Jonas & Etzel, cited in Plebani, 2002). Teaching and learning approaches suggested by the interns and educators in this study largely leaned towards practical, active and interactive methods resembling those advocated in the literature.

The teaching approaches suggested include explicit teaching of professional expectations, role plays, portfolio development, interactive workshops, newsfeeds publicizing and commending good deeds of practitioners, role modelling, mentorship models, evaluation and reflection opportunities, CPD and exposure to patients as a means to unleash and develop humanistic values. The impact of role modelling has been explicitly outlined earlier in the discussion as a powerful influencing factor, and surfaces again as a means of teaching professionalism. Professionalism has been known to be traditionally transmitted using respected role models, and although this continues to be used as a powerful tool, it is no longer sufficient (Cruess & Cruess, 2006). The traditional views of professionalism being “caught rather than taught” (Stern cited in Baingana *et al*., 2010:2) have evolved. Role modelling as a single tool for encouraging professionalism development is therefore not adequate, and more explicit means of teaching professionalism are advocated.

Creating explicit awareness and providing a detailed outline of the professional expectations required of interns at the very beginning of their internship training offers value in terms of spelling out their scope of work, their professional responsibilities and the expected code of conduct. Drawing from personal experience, it is not unusual in certain healthcare settings that students and novice practitioners just stepping into the new environment are expected to simply get on with what is required, with little professional guidance and support. Frenk *et al. (*2010) state that graduation signifies the passage from student status to being a member of one of the health professions, and by joining the novice professional should understand the duties and obligations of the membership and undertake commitment to the professionalism code of

conduct. Duties, obligations and code of conduct must therefore be made explicit at the onset of practice.

Mentorship models, noted as a deficiency in the internship curriculum, surfaced as an approach to providing professional guidance and developmental feedback. Kasar and Muscari (2000:42) state that “professionalism requires specific knowledge, attitudes and values – all manifested in professional behaviours”, and add that such behaviour is not innate; rather, its development requires practice, experience, role mentorship and evaluative feedback. Mentorship models therefore serve as effective platforms for professional development through mentored guidance. Furthermore, feedback contributes to self-evaluation and reflection, both suggested in this study as modes for teaching professionalism.

With regard to reflection, the questionnaire responses and the focus group discussions revealed that some interns did apply reflective practice, which assisted them in discerning between acceptable and unacceptable behaviours and practices. Analysis and reflection on their own behaviours and that of their workplace peers allowed them to evaluate situations and experiences, which positively informed their behaviours and conduct. Hester and Kovach cited in Baingana *et al.* (2010) explain that reflection transforms experience into understanding and enhances development of professionalism by offsetting the impact of negative role modelling.

The value of learning from experiences and reflection on experiences formed the underpinning rationale for the suggested need for the interns to have exposure to patients as part of their education and professional development as health practitioners. Extending learning beyond the classroom and the laboratory to the forefront of patient care could serve as an effective means to show the interns where and how they fit into the interprofessional healthcare approach. For example, directly observing patients having blood transfusions would allow for deeper meaning and understanding of how patients benefit from the work done in the laboratories, and this could create a sense of pride in the work that they do. Such a platform of direct educational exposure is likely to entrench essential values such as commitment, dedication and altruism, and a greater sense of empathy and care in the interns. Furthermore, it can dispel the isolation felt by some interns by bringing down the perceived virtual barrier that exists between the laboratory and the patient.

In response to the fourth and final outcome of the study, we go back to the internship curriculum analysis, which highlighted the inadequate focus on teaching professionalism. The findings in this study illuminate the inconsistencies in the interns' understanding of professionalism, and points to the glaring need for structured teaching of professionalism through the formal curriculum. Healthcare needs are changing globally, becoming more complex and therefore placing increased demands on health professionals. Frenk *et al*. (2010:1923) state that "professional education has not kept pace with these challenges largely because of fragmented, outdated and static curricula that produce ill equipped graduates". They therefore claim that a redesign of professional health education is necessary.

The final objective of this study provides the recommendations for reform and redesign of not only the internship curriculum, but also the biomedical technology university undergraduate curricula.

5.3 Recommendations

Provision of quality health services requires quality education and training of health practitioners who can competently meet the growing present-day healthcare demands. Biomedical technologists have an essential role in the interprofessional healthcare approach; however, their role requires strengthening and improved professional development which can be achieved through improved education.

As a starting point, a normative definition of professionalism should be developed; one that is simple yet comprehensive and allows for consistent understanding of professionalism. Swick (2000) advocates the need for a normative definition of professionalism for health practitioners to encourage clear and a common understanding of professionalism; that when taught and applied in practice meets the health needs of society. (Cruess & Cruess, 2006:206) state that "the definition and description of professionalism are of paramount importance as they dictate what will be taught, evaluated and expected of students and trainees."

The definitions of professionalism presented in this study provide a substantial platform for constructing a fit for purpose definition of professionalism, one that can be taught and re-emphasized at all stages of student learning. A possible definition that I see emerging from the meanings provided is:

Professionalism is a combination of values and attitudes that inform behaviours and interactions which serve as the foundation for good ethical practices as a duty to patients and to society. There is certainly opportunity for refinement of such a definition which can serve as a consistent and robust thread linking teaching and learning at all phases of the biomedical technology programmes.

It is recommended that interventions that assist in defining the role of biomedical technologists and how they fit in the collaborative team based health care approach be explored. Interprofessional education is an ideal means to provide a clear definition of all health professional roles, hence educational partnerships should be developed with medical and health science faculties to allow biomedical technology students to collaborate and learn with other disciplines of health professionals. Interprofessional education offers valuable potential to improve synergy and collaboration in future interprofessional healthcare teams.

In the same vein, opportunities for biomedical technology students to have some monitored exposure to patients in hospitals need to be explored. Opportunities where students visualize the value of their role, where they can interact with doctors and nurses, ask questions and engage in meaningful discussions during their education and training has the potential to offer significant benefit. Such educational reform initiatives will be appropriate in assisting biomedical technology students to better conceptualize their healthcare role and develop their professional identity with an understanding of how their attitudes, behaviours and work practices impact on patients.

Redesign of the curricula to include explicit teaching of professionalism is recommended as high priority. Wear and Castellani (2000) explain the need for intellectual widening of medical and health science curricula so that students acquire not only scientific knowledge but also professional development. They further add that professionalism and professionalism development are priorities in education at all levels. Cruess and Cruess (2006: 207) state that “the public must be assured of the competence and character of graduates of both undergraduate and post graduate programs”, hence the need for both undergraduate and postgraduate curricula redesign.

The various stakeholders involved in education of biomedical technologists at both undergraduate and postgraduate levels need to engage collaboratively to develop and define

relevant learning outcomes, with the aim to guide professional development of students during their various phases of study. The learning outcomes need to be made explicit in the respective curricula, with clear guidelines for educators and for students in terms of how the outcomes will be achieved. The university-led advisory boards and the national education committee for Biomedical Technology, which comprises representatives from academic institutions and the medical / clinical laboratories should be involved as partners in the curricula reform process.

As part of the curriculum improvement process, the various teaching and learning approaches suggested in this study require critical analysis in terms of their fitness for purpose. It is necessary to assess how best the various modes of teaching professionalism can be tailored, refined and integrated into the curricula as a continuum of ongoing learning.

In order to support and enhance the curriculum improvement process, it is recommended that capacity building workshops be facilitated for educators to create awareness and provide educator readiness for embracing the curriculum-aligned learning activities and objectives associated with developing professionalism. Professionalism awareness and capacity building workshops are not only recommended for the educators but also for leadership roles, mentors and all who serve as role models, as a means to help ensure that the right roles are modelled – roles that encourage positive attitudes and behaviours in students.

Cognitive teaching of professionalism and experiential learning alone are not enough to develop professionalism. Opportunities for the reflection, internalization and evaluation of teaching and learning experiences are recommended for holistic and deep learning (Haggis, 2003), which can then be translated and applied in practice. The curricula must therefore ensure that adequate and meaningful opportunities for reflection of learning experiences are provided in the curriculum design process.

Learning happens only when there is reflective thought and internal processing of experiences in a way that actively makes sense of the experiences (Kolb cited in Yardley, Teunissen & Dornan, 2012). Schon, cited in Romani and Leinster (2008), explains that meaningful learning happens through analysis of actual events, i.e. what happened, how it happened, our role and the role of others, the outcome, what went well and what can be improved. Reflection is therefore highly advocated for all aspects of learning and for development of professional values. Opportunities for reflection and sharing of reflections must form an integral part of curriculum design.

As an extension of the curriculum redesign process it is recommended that a national competency framework model be developed to guide the competency development of biomedical technologists in South Africa. The HPCSA has already adapted the CanMEDS model to develop the 'Core competencies for undergraduate students in clinical associate, dentistry and medical teaching and learning programmes in South Africa'. This adapted model is being used as the guideline and a framework for the development of graduate attributes in undergraduate medical and dental students in South Africa.

The findings in this study make evident the roles defined in the CanMEDS competency model which also apply to biomedical technologists. There is certainly opportunity for the health professional board for Biomedical Technology to further adapt this framework model to guide the professional development of biomedical technologists in line with their role and scope of practice in health care. Such a framework can then serve as the central core and blueprint guiding the development of knowledge, skills, attitudes, behaviours and leadership in biomedical technologists.

5.4 Recommendations for further research

The findings show that professionalism education is not only lacking in the biomedical technology internship programme – similar deficiencies also exist in the biomedical technology undergraduate programmes offered at the various higher education institutions. This is an unintended outcome and it is therefore not certain with what degree of readiness the findings and recommendations of this study will be considered by the various higher education institutions that offer the undergraduate biomedical technology programme.

For best outcomes the university undergraduate programmes and the internship programme need to have linked synergy and commitment towards professional development of biomedical students. This outcome requires the attention of the universities offering the undergraduate biomedical technology programmes and offers opportunity for further research on their part. A significant area of research would be to determine best practice methods and guidelines for the assessment of professionalism, which has not been considered in this study.

5.5 Summary and conclusion

This study was aimed at determining the intern blood transfusion biomedical technologists' perceptions of professionalism and exploring strategies for teaching professionalism for improved practice. The research design applied in this study adequately answered the research questions and achieved the aims and objectives of this study.

The findings concluded that professionalism had varied meanings, and although no one consistent definition emerged, the definitions provided a satisfactory starting point for developing a simple and all-inclusive normative definition of professionalism. The study confirmed the lack of professionalism education in the biomedical technology internship programme and further highlighted similar deficiencies in the university undergraduate programmes. The need for professionalism to be taught intentionally through the formal curriculum rather than the hidden curriculum was well supported by the interns and the educators. A host of meaningful approaches for teaching professionalism were suggested which offer signifant potential to instil improved professionalism awareness in students and positively inform their behaviours and practices.

The recommendations for curricula redesign provide valuable guidelines for upscale of the biomedical technology undergraduate and internship education programs. My view is that there is no perfect strategy for teaching professionalism, nor will all students embrace the values taught with the same level of enthusiasm and resilience. The recommendations for curriculum upscale provide insightful direction towards improvement of health professional education standards. A once-off review of the curriculum is not the solution. As stated by Harden (2007:15): "don't expect to get the curriculum right the first time. The curriculum will continue to evolve and will need to change in response to changes"; hence ongoing review of the curriculum is needed to keep pace with the changing healthcare demands.

As health professional educators it is our duty and obligation to provide meaningful education that leads to well-rounded future health practitioners. I conclude with the sentiments of Frenk *et al.* (2010), who state that informative learning which is directed at acquiring knowledge and skills to produce experts does not produce adequate healthcare professionals. Health professional education and curricula must be directed towards achieving transformative learning – learning that adds value and meaning, because the aspiration to good health resonates with young professionals who seek value and meaning in their work (Frenk *et al.,* 2010).

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ADDENDA

ADDENDUM A - QUESTIONNAIRE

Questionnaire: Professionalism for Intern Blood Transfusion Biomedical Technologists - An exploration of perceptions and potential teaching strategies.

Please fill in the following details

Work Area (Region):_____ Date: _____

Gender (M/F):_____ Age: _____ University Attended: _____

_____

Please answer the following questions by marking your choice of answer with an X. Please feel free to briefly motivate your choice of answer in the space provided.

		Strongly Agree	Agree	Disagree	Strongly Disagree	Motivate Briefly (OPTIONAL)
1.	As an Intern Biomedical Technologist, I consider myself to be a health professional?					
2.	I have an essential role to play in health service delivery.					
3.	I feel satisfied and valued for the work that I do.					
4.	Being a Biomedical Technologist was my first career choice. If NO, please state first choice.					
5.	I have a good understanding of what the term “professionalism” means?					
6.	I consider myself to be a professional.					
7.	I am motivated and committed to the work that I do?					

8.	**Negligence in the workplace is acceptable provided it does not cause harm to patients.**					
9.	**I usually reflect on my work activities and the actions of others in the workplace.**					
		Strongly Agree	**Agree**	**Disagree**	**Strongly Disagree**	**Motivate Briefly (OPTIONAL)**
10	**The attitudes and behaviors of my peers / colleagues have an influence on the way I conduct myself in the workplace.**					
11	**Professionalism must be taught to people in order for it to be applied.**					

12. Please state what has influenced your understanding of professionalism.	Home environment	Primary / Secondary School	Tertiary Education	Life experiences	Work Environment	Other (Please state what)

	YES	**NO**
13. Have you been exposed to any education or training on professionalism. **If YES please indicate where?**		
14. Do you feel that there is a need for formal teaching of professional values and conduct?		

15. Please suggest how you feel professionalism should be taught to ensure good understanding and practice.

ADDENDUM B - INVITATION TO ATTEND FOCUS GROUP DISCUSSION

Date:

Dear Student

This letter services to invite you to participate in a focus group discussion related to the research project titled:

Professionalism for Intern / Trainee Blood Transfusion Biomedical Technologists - An exploration of perceptions and potential teaching strategies for improved practice.

Dear Student

You are being invited to share your views on professionalism and how it should be taught for better understanding. You are therefore invited to take part in a focus group discussion on _____at _____.

All Intern Blood Transfusion Biomedical Technologists are being invited to take part in this discussion. Participation is voluntary. You are under no obligation to take part; your contribution will however be of value to this study.

An information sheet on the research project is enclosed. Please read it carefully and feel free to contact me with any questions.

If you would like to take part in the focus group discussion, please confirm your attendance.

My contact details are as follows:

Office: 031 719 6834 Mobile: 082 874 8261 Email: Vanitha.rambiritch@sanbs.org.za

Thank You

Vanitha Rambiritch

Principal Investigator

Invitation format taken from Health & Care Professions Council Research report - Professionalism in health care professionals (Burford, et al., 2014)

ADDENDUM C – PARTICIPANT INFORMATION LEAFLET

PARTICIPANT INFORMATION LEAFLET

TITLE OF THE RESEARCH PROJECT: **Professionalism for Intern Blood Transfusion Biomedical Technologists - An exploration of perceptions and potential teaching strategies**

REFERENCE NUMBER:

PRINCIPAL INVESTIGATOR: **Vanitha Rambiritch**

ADDRESS: **SA National Blood Service, 10 Eden Road, Pinetown, 3610**

CONTACT NUMBER: **Home: 031 7196834 Mobile: 082 874 8261**

Dear Colleague

My name is **Vanitha Rambiritch** and I am the Head of Learning and Development at the South African National Blood Service. I would like to invite you to participate in a research project that aims to investigate Intern Biomedical Technologists' perceptions and understanding of professionalism and engage with the interns to identify potential teaching strategies that can be applied to improve understanding and practice of professionalism.

Please take some time to read the information presented here, which will explain the details of this project and contact me if you require further explanation or clarification of any aspect of the study. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the **Health Research Ethics Committee (HREC) at Stellenbosch University** and will be conducted according to accepted and applicable National and International ethical guidelines and principles, including those of the international Declaration of Helsinki October 2008.

The aim of this study is to determine Intern Blood Transfusion Biomedical Technologists' perceptions of professionalism and engage them in identifying fit for purpose methods for teaching professionalism.

The specific objectives of this study include:

I. Obtaining an overview of the interns' definitions of professionalism and what informs their definitions.
II. Gaining an understanding of interns and their educators' views on the need for formal teaching of professionalism.
III. Inviting interns and educators views on potential teaching methods and strategies of that will assist in positively informing behaviors and practice.
IV. Using the data gathered as a basis for Biomedical Technology curricular analysis.

Your responsibility will be to complete a given questionnaire related to the study and return the questionnaire to the investigator within the prescribed timeframe. You may then be required to participate in a focus group discussion based on the questions that you have answered. Constructive and meaningful debate is encouraged, provided this is done respectfully and is specific to the discussion topic.

It is not expected that this study will present with any risks to the participants. Participation will be entirely voluntary and anonymity with regard to reporting of findings will be maintained. Candidates will not be coerced into participating and will be free to withdraw from the study at any stage. Full consent will be obtained from the participants (Addendum B). Focus group discussions will be cautiously facilitated to ensure that no derogatory statements related to institutions, practitioners or participants are made at any stage; and that respect is that maintained during all discussions. Ethical approval will be obtained from the South African National Blood Service ethics committee prior to proceeding with this study.

If you are willing to participate in this study please sign the attached Declaration of Consent and *(hand it to the investigator, place it in the box available, etc. as is appropriate to your project)*

Yours sincerely

Mrs Vanitha Rambiritch
Principal Investigator

ADDENDUM D – INFORMED CONSENT

Informed consent and declaration by participant

By signing below, I ……..……. agree to take part in a research study entitled Professionalism for Intern Blood Transfusion Biomedical Technologists - An exploration of perceptions and potential teaching strategies.

.

I declare that:

- I have read the attached information leaflet and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) .....…….. On (*date*) ……...…….. 2009.

.....

Signature of participant

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Approved with Stipulations

New Application

15-May-2015
Rambiritch, Vanitha V

Ethics Reference #: S15/04/069

Title: **Professionalism for Intern Blood Transfusion Biomedical Technologists – An exploration of perceptions and potential teaching strategies.**

Dear Mrs Vanitha Rambiritch,

The **New Application** received on **09-Apr-2015**, was reviewed by members of **Health Research Ethics Committee 1** via Expedited review procedures on **15-May-2015**.

Please note the following information about your approved research protocol:

Protocol Approval Period: **15-May-2015 -15-May-2016**

The Stipulations of your ethics approval are as follows:
Kindly note that you will need permission from the sites where this research will be conducted.

Please remember to use your **protocol number** (**S15/04/069**) on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review:
Please note a template of the progress report is obtainable on www.sun.ac.za/rds and should be submitted to the Committee before the year has expired. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.
Translation of the consent document to the language applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health (healthres@pgwc.gov.za Tel: +27 21 483 9907) and Dr Helene Visser at City Health (Helene.Visser@capetown.gov.za Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.
For standard HREC forms and documents please visit: www.sun.ac.za/rds

If you have any questions or need further assistance, please contact the HREC office at 0219399657.

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Ethics Letter

01-Jul-2016

Ethics Reference #: S15/04/069
Title: Professionalism for Intern Blood Transfusion Biomedical Technologists – An exploration of perceptions and potential teaching strategies.

Dear Mrs Vanitha Rambiritch,

The Health Research Ethics Committee (HREC) approved the following progress report by expedited review process:

Progress Report dated: 2 May 2016

The approval of this project is extended for a further year

Approval date: 1 July 2016

Expiry date: 30 June 2017

If you have any queries or need further help, please contact the REC Office 219389819.

Sincerely,

REC Coordinator
Ashleen Fortuin
Health Research Ethics Committee 1

SOUTH AFRICAN NATIONAL BLOOD SERVICE NPC

Human Research Ethics Committee

SANBS
South African National Blood Service

OHRP Number : IORG0006278
FWA Registration Number : IRB00007553
SA NHREC Registration Number : REC-270606-013

Secretariat: Tel: 011 761 9135 | Fax: 011 761 9137 | Cell: 0828528523 | thandiwe.matsoso@sanbs.org.za

To: Vanitha Rambiritch
E-mail:Vanitha.Rambiritch@sanbs.org.za

Dear Vanitha Rambiritch

DATE OF COMMITTEE MEETING:	**07 April 2015**
PROJECT TITLE:	**Professionalism for Intern / Trainee Blood Transfusion Biomedical Technologists - An exploration of perceptions and potential teaching strategies.**
DECISION OF THE COMMITTEE:	**Approved**
CLEARANCE CERTIFICATE NO:	**2014/21**

- Execution of the study must be compliant with applicable guidelines and policies.
- Any amendment, extension or other modifications to the protocol must be submitted to this Ethics Committee for approval prior to implementation.
- The Committee must be informed of any serious adverse event, planned and unplanned termination of the study.
- A progress report should be submitted yearly for long-term studies and a final report at completion of both short term and long term studies.
- Kindly refer to the SANBS HREC clearance certificate number on all future correspondence on this study to the HREC secretariat.
- This approval is valid for 5 years from the date stated above.

COMMITTEE GUIDANCE DOCUMENTS:

- International Conference on Harmonization (ICH) Good Clinical Practices (GCP) Guideline (ICH, 1996), Ethics in Health Research: Principles, Structures and Procedures (SA Department of Health, 2004); Guidelines for Good Practice in the Conduct of Clinical Trials in Human Participants in South Africa (SA Department of Health, 2006); Ethical Principles for Medical Research Involving Human: Declaration of Helsinki (World Medical Association, 2013); Reviewing Clinical trials: A Guide For Ethics Committees (Karlberg and Speers, 2010)

CHAIRPERSON: Prof J.N. Mahlangu **DATE**