A CONTINUING PROFESSIONAL DEVELOPMENT FRAMEWORK FOR MEDICAL LABORATORY TECHNOLOGISTS / TECHNICIANS IN SOUTH AFRICA

by

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DECLARATION OF INDEPENDENT WORK

I, CATHARINA ELIZABETH BRAND, do hereby declare that this research project submitted for the degree DOCTOR TECHNOLOGIAE: BIOMEDICAL TECHNOLOGY in the SCHOOL OF HEALTH TECHNOLOGY at the CENTRAL UNIVERSITY OF TECHNOLOGY, FREE STATE, is my own independent work that has not been submitted before, to any institution by me or anyone else as part of any qualification.

_____ _____

Signature of student Date

VERKLARING TEN OPSIGTE VAN SELFSTANDIGE WERK

Ek, CATHARINA ELIZABETH BRAND, verklaar hiermee dat die navorsingsprojek wat vir die verwerwing van die DOCTOR TECHNOLOGIAE: BIOMEDIESE TEGNOLOGIE in die SKOOL VIR GESONDHEIDSTEGNOLOGIE, aan die SENTRALE UNIVERSITEIT VIR TEGNOLOGIE, VRYSTAAT, deur my voorgelê word, my selfstandige werk is en nie voorheen deur myself of enige ander persoon, by enige ander instelling, ter verwerwing van enige kwalifikasie voorgelê is nie.

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Handtekening van student Datum

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SUMMARY

Since 2002 all medical technologists and technicians have been obliged to participate in the compulsory continuing professional development (CPD) programme implemented by the Health Professions Council of South Africa (HPCSA). It was foreseen that CPD would not be equally accessible to medical technologists and technicians in urban and rural areas. The reason for this survey was to identify obstacles that might prevent medical technologists and technicians, especially those in rural areas from participating in CPD activities and to identify ways to overcome these obstacles.

The survey was conducted in three phases. During the first phase quantitative information, concerning the profession of medical technology in South Africa, and CPD in general was obtained from registered medical technologists and technicians by means of a questionnaire. Information obtained from the questionnaire as well as that obtained from the literature led to the second phase in which an interview questionnaire was compiled. Structured interviews were conducted with medical technologists and technicians employed throughout South Africa, gathering mainly qualitative information regarding medical technology and CPD.

Lack of time and financial constraints and to a lesser extent travelling were identified as the major obstacles to participating in CPD activities. The obstacles were an even bigger problem to those employed in rural areas. It was also confirmed that everybody involved in medical technology should be positively motivated to create and participate in CPD activities. A method suggested was to practise CPD activities during working hours which is cost effective but restricted, because of the workload. In addition medical

technologists and technicians should participate in activities offered by the Society of Medical Laboratory Technologists of South Africa (SMLTSA) and attempt formal further qualifications. Being involved in research projects and identifying case studies could result in publishing in accredited journals.

During the third phase of the survey a concept CPD framework was compiled. According to the framework all role players involved in the profession of medical technology must collaborate and contribute to making CPD activities accessible to all registered medical technologists and technicians and create a positive attitude to CPD. The role players include the HPCSA, employers and top management, the SMLTSA, medical companies, other health professionals, higher education institutions and the individual. It must be emphasised that the task of collecting CPD credits remains the responsibility of the medical technologist or medical technician. The framework offered suggestions for CPD activities whereby medical technologists and technicians could accumulate CPD credits. One major concern indicated in the framework, was that CPD should not only be measured by CPD credits but the outcomes of CPD should be reflected in the profession and the workplace and a system must be implemented to measure CPD outcomes.

The CPD framework was evaluated by a panel of experts familiar with the profession of medical technology and the CPD programme, using the Delphi technique. This final CPD framework will be referred to the HPCSA for implementation in all South African pathology laboratories and the blood transfusion services. The aim of the framework is to assist the CPD guidelines currently under revision in establishing a usable CPD programme.

OPSOMMING

Sedert 2002 moet mediese tegnoloë en tegnici deelneem aan die verpligte voortgesette professionele ontwikkelingsprogram (VPO) soos deur die Raad vir Gesondheidberoepe in Suid-Afrika (RGBSA), geïmplementeer. VPO gaan waarskynlik nie ewe toeganklik vir mediese tegnoloë en tegnici in stedelike en plattelandse gebiede wees nie. Die doel van hierdie studie was om probleme wat mediese tegnoloë en tegnici verhinder om aan die VPO aktiwiteite deel te neem, te identifiseer en maniere te vind om hierdie probleme te oorkom.

Die studie is in drie fases uitgevoer. Gedurende die eerste fase het mediese tegnoloë en tegnici ‘n vraelys beantwoord en kwantitatiewe inligting met betrekking tot die beroep, mediese tegnologie in Suid-Afrika, en die voorgestelde VPO-program is verky. Hierdie inligting saam met inligting verkry uit die literatuur het dit moontlik gemaak om ‘n onderhoudsvraelys op te stel, wat dan die tweede fase van die projek ingelei het. Gestruktueerde onderhoude is met mediese tegnoloë en tegnici wat verspreid oor Suid-Afrika werk, gevoer om hoofsaaklik kwalitatiewe inligting met betrekking tot mediese tegnologie en VPO te bekom.

Gebrek aan tyd, finansiële implikasies en tot ‘n mindere mate vervoer is geïdentifiseer as die grootste struikelblokke wat oorkom moet word om aan VPO-aktiwiteite deel te neem. Hierdie struikelblokke was selfs ‘n groter probleem vir diegene wat in die platteland werksaam is. Daar is ook bevestig dat almal wat in mediese tegnologie betrokke is positief gemotiveer moet word om VPO-aktiwiteite te skep en daaraan deel te neem. ‘n Oplossing is om VPO aktiwiteite gedurende werksure te beoefen en so van die probleme te oorkom. Dit is koste-effektief, maar kan slegs binne perke beoefen word, omrede van die werkslading. Verder kan mediese tegnoloë en tegnici aan aktiwiteite wat deur die Vereniging

vir Geneeskundige Laboratorium Tegnoloë van Suid-Afrika (VGLTSA) aangebied word, deelneem asook verdere formele studies oorweeg. Indien hulle betrokke kan raak by navorsingsprojekte of gevalle-studies identifiseer, kan dit in geakkrediteerde joernale gepubliseer word.

Gedurende die derde fase van die studie is ‘n konsep VPO-raamwerk opgestel. Volgens die raamwerk moet alle rolspelers betrokke in die professie mediese tegnologie saamwerk en bydraes maak om VPO-aktiwiteite toeganklik te maak vir alle geregistreerde mediese tegnoloë en tegnici en daardeur ‘n positiewe gesindheid vir VPO te skep. Die rolspelers sluit die RGBSA, werkgewers met hul top bestuur, die VGLTSA, geneeskundige maatskappye, ander gesondheidsberoepe, hoër opvoedkundige instansies en individue in. Die versameling van VPO-krediete bly die verantwoordelikheid van die mediese tegnoloog of die tegnikus. Verdere stellings soos aangedui in die raamwerk, is dat VPO nie alleenlik deur middel van krediete gemeet word nie, maar die uitkomste wat met VPO verwerf word, moet in die professie en die werksomgewing reflekteer en dit moet gemeet kan word.

Die VPO-raamwerk is deur ‘n paneel kenners, wat bekend is met die professie mediese tegnologie asook die VPO-program, volgens die Delphi-tegniek ge-evalueer. Die finale VPO-raamwerk gaan na die RGBSA verwys word vir implementering in alle Suid-Afrikaanse patologie laboratoriums asook in die bloedoortappingsdienste. Die doel van hierdie raamwerk is om die VPO-riglyne wat tans hersien word, te assisteer en daardeur ‘n bruikbare VPO-program te vestig.

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ABBREVIATIONS

AAP	American Academy of Pediatricians
AAMC	Association of American Medical Colleges
AMT	American Medical Technologist
CACB	Canadian Academy of Clinical Biochemistry
CARJ	Canadian Association of Radiologists Journal
CE	Continuing education
CEUs	Continuing education units
CME	Continuing medical education
CMO	Chief Medical Officer
CPD	Continuing professional development
CPE	Continuing professional education
CSCC	Canadian Society of Clinical Chemists
EXCO	Executive committee
GP	General practitioner
HIV	Human immunodeficiency virus
HPCSA	Health Professions Council of South Africa
JDI	Job description index
KZN	Kwazulu-Natal
Lab	Laboratory
LMS	Laboratory Marketing Spectrum
MAAGs	Medical audit advisory groups
MBTI	Myers-Briggs Type Indicator
MTN	Medical Technology News
MTSA	Medical Technology South Africa
NHD	National Higher Diploma

ABBREVIATIONS

NHLS	National Health Laboratory Service
NHS	National Health Service
PBMT	Professional Board for Medical Technology
PC	Portfolio course
PCG	Primary care group
PDP	Personal development plans
PGEA	Postgraduate education allowance
PPDP	Practice professional development plan
PREP	Post-registration education and practice
RGBSA	Raad vir Gesondheidsberoepe van Suid-Afrika
SAIMN	Suid-Afrikaanse Instituut vir Mediese Navorsing
SAIMR	South African Institute of Medical Research
SANBS	South African National Blood Service
S-J	Sensing-judging
SMLTSA	Society of Medical Laboratory Technologists of South Africa
UK	United Kingdom
UKCC	United Kingdom Central Council
USA	United States of America
VGLTSA	Vereniging vir Geneeskundige Laboratorium Tegnoloë van Suid-Afrika
VPO	Voortgesette professionele ontwikkeling

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Medical laboratory technologists and technicians work in a pathology laboratory where human blood, tissues and body fluids are analysed to identify pathological abnormalities (South Africa. Government Gazette, 1985). They also work in a blood bank where donated blood is analysed and prepared for whole blood or component transfusion. The type of analyses depends on the specialised category of the laboratory. These analyses could be done manually or by making use of a variety of precision instruments. Primarily the technologist and technician are involved in routine investigations, but they may also conduct relevant research and develop appropriate new methods where and when necessary.

Newly qualified medical technologists start working under supervision of a senior / chief technologist with a pathologist in charge, either in the private or government sector. Experience in the laboratory enables the technologist to advance to a senior position, training position or laboratory manager similar to the United States of America (USA) (Harmening, Castleberry and Lunz, 1995; Ward-Cook, Tatum and Jones, 2000). Since 1991 a medical technologist in South Africa can also register and manage his / her own private laboratory (SMLTSA, 2004).

The medical laboratory technician works under supervision of a suitably qualified medical technologist or pathologist. In some laboratories the technician can be promoted to a senior technician, as a training officer or be more involved in administrative duties (Harmening *et al.,* 1995).

Medical technologists have the opportunity to qualify in a vast variety of specialised disciplines (Beck and Laudicina, 1999; Hallworth, Hyde, Cumming and Peake, 2002; Tetzlaff, 2003). In the USA medical technologists qualify in the multi-disciplinary clinical settings which include microbiology, haematology, chemical pathology and immunology (Tetzlaff, 2003). The most popular category for routine laboratory work in South Africa is clinical pathology, which involves three specialised fields, namely microbiology, haematology and chemical pathology. These three categories can also be obtained as separate qualifications. Other categories include blood transfusion technology, immunology, cellular pathology and pharmacology to name but a few. Once qualified in a category both the medical technologist and the medical technician must register with the Health Professions Council of South Africa (HPCSA). In South Africa registration with the HPCSA is a requirement to work as a medical technologist or medical technician (HPCSA, 2005[a]).

The current prerequisite to register with the HPCSA as a qualified medical technologist in a specific category entails the following: a National Diploma in Biomedical Technology followed by 12 months practical experience in a laboratory registered with the HPCSA as a training laboratory and successful completion of an examination set by the Professional Board for Medical Technology (PBMT), in the specific category. The technologist may continue to study for a degree and post graduate qualification in biomedical technology.

To register as a qualified medical technician a candidate must work in a registered laboratory for a minimum period of two years. Thereafter the candidate must successfully complete an examination for technicians in a specific category, set by the PBMT.

Registration with the HPCSA must be renewed annually by paying the annual fee. Acceptable professional conduct is a prerequisite for renewal and furthermore, as from 1

April 2002, it is compulsory for medical technologists and technicians to participate in continuing professional development (CPD) programmes for registration (HPCSA, 2002). The HPCSA prescribe the regulations and procedures relating to CPD for medical technology (Appendix 1.1; HPCSA, 2002; HPCSA, 2004[a]).

The main aims of CPD are to update knowledge and skills in existing and new areas of practice, to prepare individuals for a changing role in the organisation, to facilitate new responsibilities and to promote and increase competence in a wider context with benefits to both professional and personal roles (Watkins, 1999). In health sciences, CPD is an essential lifelong learning process, by which all health professionals should upgrade their knowledge and skills to meet the needs of patients, the health service, and their own professional development (Du Boulay, 1999; Peck, McCall, McLaren and Rotem, 2000). As early as 1979 medical technologists demanded more continuing education opportunities to increase their knowledge and upgrade their skills (Fritsma, Matthews, Schoeff and Young, 1979). Continuing medical education (CME) is a branch of CPD that applies specifically to medicine (Fox, 2000).

CPD is meant to encourage a process of lifelong learning which needs to be tailored to suit the individual's needs through regular appraisals (Kerr and Vinjamuri, 2001). Lifelong learning has been defined by Longworth and Davies (1996) as a continuously supportive process which stimulates and empowers individuals to acquire all the knowledge, values, skills and understanding they will require throughout their lifetimes. The individual must be in a position to apply these characteristics with confidence, creativity and enjoyment in all roles, circumstances, and the environment (Longworth and Davies, 1996).

The history of CPD in South Africa

In 2002 CPD became compulsory for medical technologists and medical technicians in South Africa. They had to accumulate 50 points per annum (HPCSA, 2002) which was

valid for one year and subdivided into four categories, namely organisational activities, small group activities, individual activities and other activities. These activities are summarised in Appendix 1.1. This survey was based on these guidelines (HPCSA, 2002).

In 2004 medical technologists and technicians were informed that as from 2005, all HPCSA registered members will, be required to accumulate 30 credits per annum and every credit earned will be valid for two years after which it expires (HPCSA, 2004[a]; HPCSA, 2005[b]). It was, however, proposed at the Society of Medical Laboratory Technologists of South Africa (SMLTSA) national congress held in Cape Town in May 2005, that the new CPD programme will be based on a personal portfolio system. This is confirmed by the final draft document on the proposal for CPD whereby all health professionals registered with the HPCSA will file their individual CPD record and the credits will be recorded as continuing education units (CEUs) (HPCSA, 2005[b]). This final draft document will be piloted by the Professional Boards for Optometry and Dispensing Opticians and Medical Technology over six months that started in July 2005.

The history of the Central University of Technology, Free State

During the course of this study Technikon Free State became a university of technology, known as the Central University of Technology, Free State.

1.2 MOTIVATION FOR THE STUDY

The implementation of the compulsory CPD programme for medical technologists and medical technicians in 2002 raised the question of how feasible it was to require from HPCSA registered professionals, to abide by the CPD programme for renewal of their registration. The main concern was that medical technologists and technicians employed in small or one-person laboratories in isolated areas, scattered throughout South Africa,

would not be able to accumulate the prescribed CPD points, since CPD activities in rural areas are not easily accessible. If these technologists and technicians in remote areas were unable to renew their registration with the HPCSA it could lead to a serious shortage of diagnostic services in the rural areas of South Africa. To address this concern, a study was designed to investigate the current situation pertaining to CPD for medical technologists and medical technicians. In addition the study involved the compiling of an appropriate framework for CPD. This framework can be applied by medical technologists and medical technicians in both urban and rural areas in actively participating in the CPD programme.

1.3 THE AIM OF THE STUDY

The aim of the present study is to help facilitate the effective implementation of CPD for medical technologists and medical technicians in South Africa by developing a cost-effective framework that complies with the prescribed requirements as stated by the HPCSA to enable technologists and technicians to maintain their registration. The framework could serve as a guideline whereby participation in CPD programmes would be promptly and cost effectively accessible to medical technologists and technicians.

1.4 RESEARCH OBJECTIVES

The study pertains to:

a) the identification of obstacles that could prevent participants from collecting the required number of CPD credits to maintain registration, by means of a mailed questionnaire

b) the confirmation of obstacles and collection of additional concepts for the implementation of CPD activities by means of structured interviews

c) the identification of methods whereby CPD activities could be implemented using information gathered by mailed questionnaires and structured interviews

d) the designation of a framework whereby CPD programmes should be accessible to all medical technologists and medical technicians using all the above information

e) the evaluation of the framework by means of the Delphi technique

f) the compilation of a final framework for the implementation of CPD for medical technologists and medical technicians.

1.5 STRUCTURE OF THE THESIS

Each chapter will be presented as an independent section and the layout of the thesis is as follows:

- Chapter 2 is a literature survey that covers current concepts of medical technology, lifelong learning and CPD.
- Chapter 3 explains the methodologies used for both the mailed questionnaire and the interviewed questionnaire. It presents the results obtained from the mailed questionnaire and interviewed questionnaire and includes a discussion on quantitative results obtained.
- In Chapter 4 qualitative results from the questionnaires on methods to accumulate CPD credits and possible solutions to identified obstacles to obtain CPD credits are discussed and compared with current literature. Finally a concept framework for CPD for medical technologists and medical technicians is presented.
- Chapter 5 describes the procedure for the Delphi technique used to evaluate the concept framework as well as the feedback and final outcomes obtained from the Delphi technique.
- Chapter 6 portrays the final framework.

- Chapter 7 gives an overall conclusion of the outcomes of the study, a reflection of the work done and an indication of the way forward.

1.6 SUMMARY

Medical technologists and medical technicians, as part of the health professional team, are responsible for the analyses of human tissues including body fluids in identifying and confirming abnormal health conditions. Since 2002 medical technologists and medical technicians have been obliged to comply with the HPCSA compulsory CPD programme to maintain registration with the HPCSA in order to be able to practise medical technology.

CPD, a structured form of lifelong learning, is practised among health professionals throughout the world. The purpose of CPD in medical technology is to upgrade individuals' skills and knowledge, to improve the standard of work in the laboratory, to comply with the needs of patients and to uplift the profession of medical technology.

The study foresaw the identification and addressing of problems medical technologists and technicians would experience in collecting the required CPD credits annually. This was addressed by means of a mailed questionnaire, followed by an interviewed questionnaire that led to the compilation of a CPD framework.

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Appendix 1.1: Guidelines for medical technologists and medical technicians for participating in CPD activities (summary)

Health Professions Council of South Africa (Professional Board for Medical Technology) point system, August 2002

Point system for medical technology (HPCSA, 2002)
Annual credits required = 50
Category 1: Organisational activities Attendance of accredited (formal) learning opportunities These activities include but are not restricted to conferences or national congresses ▪ 1 point per hour ▪ 5 points for presenters of lectures shorter that 30 minutes ▪ 10 points for presenters of lectures longer than 30 minutes
Category 2: Small group activities Participation in accredited (non-formal) learning opportunities These activities include, but are not restricted to journal clubs and small group discussion Workshops, lectures, seminars, refresher courses or departmental meetings ▪ 1 point per hour (participants must be actively involved) ▪ 1 additional point per hour for presenting
Category 3: Individual activities a. Self-study These activities include, but are not restricted to studying of journals, electronic or computerised material ▪ Points accredited according to activity b. Individual learning

Point system for medical technology (HPCSA, 2002)

These activities include, but are not restricted to skills training, e.g. venepuncture, short-term study at a technikon (now university of technologies), university, etc.

- 1 point per hour

c. Research and publications in peer reviewed / CPD journals

- 1st author: 15 points
- Co-author: 5 points
- Editors of journals: 3 point / issue
- Review of articles / books: 2 points
- Setting of questionnaires: 1 point / set of questions

d. Teaching or training

- 1 point per hour

e. Speaker at departmental meeting(s)

f. Paper / poster presentation / lecture to peers

- Short papers < 30 minutes: 5 points
- Long papers > 30 minutes: 10 points

g. Relevant additional qualification obtained

- 6 months diploma: 10 points
- 1 year diploma / degree: 20 points
- year diploma / degree: 40 points
- Completed masters of doctoral degrees: 50 points

h. Examination / evaluation / assessments

These activities include, but are not restricted to undergraduate and postgraduate examinations; evaluations undertaken on behalf of registering authority and assessment of theses or scripts

Point system for medical technology (HPCSA, 2002)
▪ 1 point per hour i. Supervision of degrees (master's / doctoral students) Promotor / mentor / supervisor of master's of doctoral qualifications ▪ 15 points per graduate / diploma per year
Category 4: Other activities ▪ Subscription to Medical Technology SA: 5 points ▪ Full time employment as medical technologist / technician: 10 points ▪ Part time employment as medical technologist / technician: 6 points
At least two points per year should be obtained in professional ethics.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION TO CONTINUING PROFESSIONAL DEVELOPMENT

The traditional 'job for life' ethos no longer exists. Careers are becoming more and more insecure with the possibility that a person might change employer up to eight times and this change is not always voluntary (Watkins, 1999). The many opportunities for promotion in a career have vanished. The training of a professional to perform the job efficiently and effectively is no longer the responsibility of the employer, but has become the individual's responsibility. Therefore, the shift from employer as the provider of continuing professional education (CPE) to the individual as seeker of professional education and development opportunities is now a reality. Continuing professional development (CPD) covers broader skills such as managerial skills to survive in an increasingly commercial environment and cross functional skills to enable professionals to negotiate and communicate with other professionals (Watkins, 1999). In this environment CPD has become an important and lifelong activity to build up a personal portfolio of skills required for current career security (Watkins, 1999).

CPD is the process of lifelong learning for all individuals and teams meeting the needs of clients, the workplace and professionals, which in the medical environment includes patients, medical specialised fields and health professionals in their individual specialities (Du Boulay, 1999). Not only does CPD increase job satisfaction, but it allows professionals to keep knowledgeable on the latest developments in their profession (Hinchliff, 1999). It is a record of professionals' capabilities, valuable when looking for career advancement and career security (Hinchliff, 1999).

2.2 THE MEDICAL TECHNOLOGY PROFESSION

2.2.1 Medical laboratory technologist and medical laboratory technician

2.2.1.1 Common names

A medical technician in South Africa may be compared with the clinical laboratory technician or medical laboratory technician in the United States of America (USA) (Ward-Cook, Tatum and Jones, 2000; Wilson, 2000; Doig, Beck and Kolenc, 2001).

A medical laboratory technologist commonly known as a medical technologist in South Africa is known as such in Canada (Yassi and Miller, 1990), Kuwait (Shah, Chowdhury, Al-Enezi and Shah, 2001) and Sweden (Andréasson and Hamrin, 1993). In the USA they are called clinical laboratory scientists or medical technologists (Harmening, Castleberry and Lunz, 1995; Ward-Cook *et al.,* 2000). In the United Kingdom (UK) medical technologists are called biomedical scientists (Pitt and Sands, 2002).

2.2.1.2 Qualifications

In South Africa the medical technician writes an examination set by the Professional Board for Medical Technology (PBMT) after two years practical experience and training in the laboratory. The pathology disciplines include clinical haematology, chemical pathology and microbiology, to name a few (Wilson, 2000; SMLTSA, 2005). Laboratory technicians in the USA complete a two-year programme that can lead to an associate degree or a certificate, or, depending on the educational institution, spend three semesters at college followed by one year internship in a hospital laboratory (Wilson, 2000).

Prospective learners interested in becoming medical technologists, must complete the highest grade at school with courses in biology, physical sciences and mathematics. Similar prerequisites are required in the USA (Wilson, 2000). In South Africa the course in biomedical technology is offered at universities of technology (previously technikons). After obtaining the National Diploma in Biomedical Technology, a qualified learner does an internship under supervision of qualified medical technologists at a registered pathology laboratory and writes a PBMT examination in a pathology discipline. These laboratories are registered with the Health Professions Council of South Africa (HPCSA) as training laboratories in specific disciplines once they comply with the criteria as set by the HPCSA. As in the USA a candidate can qualify in chemical pathology, haematology or any other discipline (Wilson, 2000; Tetzlaff, 2003; SMLTSA, 2005). Only then can the person register with the HPCSA as a medical technologist. A medical technologist in South Africa can continue with a degree or post-graduate qualification in biomedical technology. The requirement in the USA for entry into medical technology is a baccalaureate degree and clinical education in a programme accredited by the National Accrediting Agency for Clinical Laboratory Sciences (Blau, Tatum and Ward-Cook, 2003[b]).

2.2.1.3 Registration with the Health Professions Council of South Africa

Criteria to be registered with the HPCSA include a qualification in a specialised field either as a medical technologists or a technician. HPCSA members must pay the annual registration fee and obtain the required number of continuing professional development (CPD) points as prescribed by the HPCSA (McKay, 2000; HPCSA, 2002).

2.2.1.4 Job description

Medical technologists and technicians work in pathology laboratories found in hospitals, universities, government and private sectors (Wilson, 2000). They, as part of a medical team, perform laboratory analyses on blood, body fluids and tissues to determine the presence, extent, or absence of a disease (Wilson, 2000; Anonymous, 2001; Anonymous, 2003). These procedures are performed using manual or automatic techniques, from microscopes to very advanced automated laboratory equipment (Wilson, 2000).

In the USA, specific laboratory analyses were allocated to differentiate between the responsibilities of medical technologists and technicians (Harmening *et al.,* 1995; Ward-Cook *et al.,* 2000). These tasks were revised in 1993 (Ward-Cook *et al.,* 2000). The medical laboratory technician who previously did mainly bench-work was given additional responsibilities in performing more complex analyses (Harmening *et al.,* 1995). In laboratories in rural areas technicians are often given supervisory jobs to perform (Harmening *et al.,* 1995). The medical technologist starts off on the bench but will move to management, consultation and troubleshooting and may later get involved in teaching and research (Harmening *et al.,* 1995; Tetzlaff, 2003). Doig *et al.* (2001) concluded that in management and educational tasks, responsibilities between medical technicians and technologists varied the most.

2.2.1.5 Perception

Medical technologists in Sweden participated in a questionnaire survey of their perception of medical technology as a profession (Andréasson and Hamrin, 1993). A similar survey was conducted in the USA by Francis, Hofherr, Peddecord, Karni and Krolak (2001) on the perception of whether medical technology was a profession or a technical field. Andréasson and Hamrin (1993) addressed the following topics: autonomy, occupational

hazards, job satisfaction and work content of medical technologists. The response indicated that medical technology was a well-established profession (Andréasson and Hamrin, 1993). However, reasons given why they doubted whether medical technology was a profession, were low salaries, low status, lack of promotion and lack of continuing education opportunities (Andréasson and Hamrin, 1993). This pointed to a discrepancy between what medical technologists perceived they were and the reality (Andréasson and Hamrin, 1993). This contradictory picture suggests that medical technology is an occupation in a stage of professionalisation (Andréasson and Hamrin, 1993). According to the results obtained by Francis *et al.,* (2001) who divided the respondents into technical and professional perception groups, with 72% who perceived the field to be professional and the rest to be a technical field. The respondents who perceived themselves as professionals were more likely to progress in their career and remain in the field of medical technology compared with those who might leave the profession for a different field (Francis *et al.,* 2001).

2.2.1.6 Character and personality requirements

Medical technologists must be able to work well under pressure (Anonymous, 2001). They must master both fundamental and complex skills throughout their working career (Blau, Tatum, Ward-Cook and Guiles, 2003[a]).

The fundamental skills include core requirements such as troubleshooting, problem-solving, designing protocols, precision and analytical reasoning (Blau *et al.*, 2003[a]). Additional requirements added by Frings (1999), Wilson (2000) and Anonymous (2001) are the ability to pay attention to detail, be task orientated, experience the job as a challenge, be responsible and reliable and report accurate results. In addition they must possess excellent written and communication skills (Anonymous, 2001).

The complex skills such as problem-solving, decision-making, teaching and supervising would contribute most to the medical technologist's career progress (Blau *et al.*, 2003[a]). Medical technologists who use a higher level of fundamental skills are more committed to the profession and have a lower intention to leave medical technology (Blau *et al.*, 2003[a]).

The Myers-Briggs Type Indicator (MBTI) was used to identify personality characteristics and the Job Description Index (JDI) to measure job satisfaction among the predominantly female medical technologists in the profession (French and Rezler, 1976). JDI is an instrument that measures five areas of job satisfaction namely work, supervision, co-workers, pay and promotion (Love, 1977). The results indicated that the majority of the sample were the sensing-judging (S-J) types who prefer attention to detail, careful exactness, system and order. Regarding the outcomes on job satisfaction they needed intrinsic needs such as challenging work. The group had a strong positive trend towards continuing education (French and Rezler, 1976).

A type A behaviour person tries to do more in less time which often results in work stress (Matteson and Ivancevich, 1982[a]). Matteson and Ivancevich (1982[a]) divided medical technologists into the high stress group, mainly type A people and the low stress group, mainly type B people. The type A medical technologists progressed more successfully on the career ladder (Matteson and Ivancevich, 1982[a]).

2.2.1.7 Employment prospects

Young people in the USA are looking for careers that provide perceived rewards, such as ideal working hours and salaries, which do not apply to medical technology (Monahan, 2001). The on-the-job risk factors such as working with human immunodeficiency virus

(HIV) contaminated blood is another reason for not pursuing medical technology as a career and for leaving the career within the first five years (Monahan, 2001).

In Canada the prospects of finding a vacant position in medical technology, the fourth largest group of health care professionals in the country, is very good since the current medical technology staff will just about all be retired by 2015 (Anonymous, 2003). A similar situation obtains in the USA where the current shortage of medical technologists forces laboratory managers to hire unqualified people (Monahan, 2001). Schmidt-Hoffmann and Radius (1995) reported that with the shortage of medical technologists in the USA the "Medical Technology Today" had nine pages of job opportunities for medical technologists throughout the country. With fewer people qualifying as medical technologists in the USA there is a decline in accredited medical technology training programs offered, and it is believed that the downward trend may continue (Francis *et al.,* 2001).

2.2.1.8 Alternative careers

Frings (1999) reported that their laboratory in the USA started to downsize the number of medical technologists and in certain cases replaced them with registered nurses. Medical technologists who want to make a change to another occupation should take the following into consideration: investments made in the profession, emotional costs and the limits to entering another occupation (Frings, 1999). Blau (2001) stated that those with a strong affective occupational commitment remain in the profession because they want to and those who think of leaving the profession should consider counselling, because so much was put into their training.

2.2.1.9 Job satisfaction

Job satisfaction may be measured by occupation turnover, absenteeism from work, tardiness, waste, grievances and accidents at work (Matteson, Ivancevich and McMahon, 1977). It may also be related to other factors such as the response of a person to change, loyalty and commitment to the organisation, and the degree of participation and contribution (Matteson *et al*., 1977). Global job satisfaction depends on individual needs for esteem, self-actualisation, security, social interaction and salary (Matteson *et al*., 1977). French and Rezler (1976) added poor communication among USA laboratory staff as very frustrating.

In a comparative study of medical technologists employed in urban and suburban hospitals in the USA (Schmidt-Hoffmann and Radius, 1995), four elements of job satisfaction were included. These were salaries, professional status, medical technologist – physician relationship and job task requirements. Medical technologists from the urban hospital were more satisfied with all four elements in comparison with those from rural areas (Schmidt-Hoffmann and Radius, 1995). Both groups assessed professional status favourably, but job satisfaction in both groups needed improvement (Schmidt-Hoffmann and Radius, 1995). Matteson *et al.* (1977) did a survey on need satisfaction among laboratory professionals, primarily medical technologists working in USA laboratories, and found that in general they experienced job satisfaction, but the promotion opportunities in smaller laboratories were limited.

Biomedical scientists in the UK with a positive attitude towards their job and towards the department experience a supportive climate, pleasant atmosphere and good teamwork within the laboratory (Pitt and Sands, 2002). Demographic variables such as gender, old age and working in a small multidisciplinary laboratory could be the reason for a negative climate at work (Pitt and Sands, 2002).

Lunz, Morris and Castleberry (1996) determined the impact of career commitment on job satisfaction using 30 job benefits e.g. payment and promotion. They found that medical technologists from the USA with higher career commitment were more satisfied with the job benefits, although even the most committed respondents were on average not very satisfied in medical technology (Lunz *et al.*, 1996)

Already in 1978, medical technology and other health professional occupations were seeking for professional recognition (Oliver, 1978). The general public is not aware of what a medical technologist is or does and therefore medical technologists are often referred to as "the nurse in the laboratory" (Byrd, 1998). A study of biomedical scientists in the UK, found that they experienced job satisfaction, but that these scientists did not feel valued because of poor pay, lack of recognition and an inadequate career structure (Pitt and Sands, 2002). Even though poor pay is given as a reason for job dissatisfaction, Tetzlaff (2003) in the USA believes that medical technologists earn a competitive salary.

2.2.1.10 Stress levels

Frazer and Sechrist (1994) defined stress as uncertainty over a long period that produces anxiety. Stress in the laboratory is very real. Matteson and Ivancevich (1982[a]) divided medical technologists into a high stress and a low stress group with 40% of the respondents who did not fit either of the two groups (Matteson and Ivancevich 1982[b]). The high-stress group were younger and mainly female (Matteson and Ivancevich, 1982[a]). They were also more career-oriented (Matteson and Ivancevich 1982[b]). The low stress group coped better with stress (Matteson and Ivancevich 1982[b]).

Walton (1992) differentiated between job stress and laboratory stress. Job stress includes the same elements as mentioned under job satisfaction, but laboratory stress includes

those daily frustrations such as the breakdown of a machine, high workload and pressure of emergency requirements (Walton, 1992). Frazer and Sechrist (1994) listed 35 stresses to which medical technologists are exposed, with equipment breakdown scoring the highest.

Yassi and Miller (1990) did a survey to determine the stress impact of technological changes in a Canadian laboratory. Medical technologists older than 50 years felt that new technology made additional demands on them. Thirty–eight percent of the respondents experienced psychological symptoms because of occupational stress (Yassi and Miller, 1990).

2.2.1.11 Non-financial rewards

Sinclair (1984) surveyed a small number of technologists on their rating of non-financial rewards. The three that rated highest were the variety of specialised disciplines, job responsibilities and job independence. These rewards were taken into consideration when planning the rotation list and designing the promotional ladder. They started off with more sophisticated job rewards of which career counselling was the most successful (Sinclair, 1984).

2.2.1.12 Comparison of medical technologists with other allied workers

A study was conducted in Kuwait to determine job satisfaction experienced by physicians, pharmacists, nurses and medical technologists (Shah *et al.,* 2001). The respondents, mainly non-Kuwaiti, were found to be satisfied with all the job satisfaction factors except their salaries. Medical technologists, in addition, were not satisfied with professional advancement (Shah *et al.*, 2001).

Roberts and Scott (1988) found that medical technologists and paramedics, in comparison to physiotherapists, pharmacists and clinical phychologists, were divided about wanting to stay on in their respective professions for longer than five years. This was because of the high rate of technological advances, lack of professional advancement and high stress levels experienced in medical technology and paramedics (Roberts and Scott, 1988).

A previous study by Broski, Manuselis and Noga (1982) compared job satisfaction among medical dieticians, medical technologists, occupational therapists and physiotherapists. The comparison measured the respondents' satisfaction with work on the job, supervision, co-workers, present pay and opportunities for promotion. Overall, medical technologists were less satisfied with four of the five measured job aspects. They were the least dissatisfied with supervision (Broski *et al.,* 1982). Most of the respondents in all the groups would have chosen a different career if they had had the opportunity. Medical technologists complained about their salaries and they indicated that they would like to participate in educational activities. They wanted the name medical technologist to be changed to clinical laboratory scientists, which realised shortly afterwards. They also requested that professional and public groups should be educated on the role and responsibilities of a medical technologist (Broski *et al.,* 1982).

2.2.1.13 The Health Professions Council of South Africa (Professional Board for Medical Technology)

The mission and mandate of the HPCSA is to protect the public and to guide the profession (HPCSA, 2005). The vision is to assure relevant and excellent medical technology practice to meet the needs of the patients of South Africa (HPCSA, 2005). Once medical technologists or medical technicians have successfully completed the examination set by the PBMT they register with the HPCSA and can practice as qualified medical technologists or medical technicians (HPCSA, 2005). Higher educational

institutions such as the universities of technology must register with the PBMT prior to offering education in biomedical technology (HPCSA, 2005). The PBMT also inspects laboratories regularly to ensure high standards of laboratory practice (SMLTSA, 2004).

2.2.1.14 The Society of Medical Laboratory Technologists of South Africa

The amalgamation of the Natal, Southern Transvaal and Cape Societies led to the foundation of the Society of Medical Laboratory Technologists of South Africa (SMLTSA) in 1951. Both medical technologists and technicians may become members of the Society and even after retirement they may stay on as retired or non-practising members (SMLTSA, 2004).

The Society is responsible for the promotion and regulation of the profession of medical technology in South Africa. In the USA the core mission of the American Medical Technologist (AMT) is to provide professional certification and continuing education to medical technologists (Sherer and McCarty, 2003). As a professional body the SMLTSA sees to the needs of medical technologists, unites them into one body and acts in an advisory capacity involved in the education and training of medical technologists (SMLTSA, 2004).

The Society issues the journal Medical Technology South Africa (MTSA) twice a year. At the national congress held every second year, members are rewarded for special achievements in education or research (SMLTSA, 2004). Branches of the Society, of which there are 14, organise CPD accredited scientific events. The SMLTSA administers the CPD programme on behalf of the HPCSA (HPCSA, 2004).

2.2.1.15 Communicating continuing professional development

The Medical Technology News (MTN) is a paper distributed four times a year to all registered medical technologists. It keeps members of the profession updated on educational, professional and technological developments. Companies supplying products to medical laboratories that advertise in the MTN cover costs of the paper. It also contains a letter / "briewe" column where members can express personal grievances or request information concerning the profession. All members who receive the MTN should be informed on the latest developments taking place in the CPD programme for medical technology (Van Rijswijk, 2004).

2.3 LIFELONG LEARNING

Information has increased massively in recent years and the speed at which it now becomes available is something that few people could have imagined a couple of years ago (Hull, 2000). Access to ideas and information is essential to keep up to date with new developments in knowledge, understanding, technical skills and procedures (Hull, 2000). The education and training paradigm is changing rapidly in favour of more courses, better teaching and a wider range of key interests to enable people's effectiveness to function in an ever more complex world (Longworth and Davies, 1996).

Lifelong learning extends well beyond the traditional formal education systems into the thousands of interest groups which influence the thoughts and actions of people in modern society (Longworth and Davies, 1996). Personal and professional development is sometimes expressed as separate activities, though they are the same thing (Hull, 2000). Lifelong learning is what you contribute to the workplace, as well as recognising your personal skills (Hull, 2000). Lifelong learning is often informal with experience as the best teacher (Hull, 2000).

Lifelong learning recognises the workplace as a powerful learning environment in which health-care professionals, managers and others learn together, engaging in new forms of relationships (Hull, 2000). Emphasis on learning is the key strategy for managing change and future developments, both for the individual and the organisation (Hull, 2000).

The mission of the South African Qualifications Authority is to ensure the development and implementation of a National Qualifications Framework which contributes to the full development of each learner and to the social and economic development of the nation at large (SAQA, 2006). Those that benefits from the National Qualifications Framework are learners, workers, employers, the society and the building of a new nation (SAQA, 2006). The manner in which workers benefit from clear learning paths in the qualification structure is in facilitating and supporting lifelong learning and career advancement (SAQA, 2006).

People may see professional development as an unnecessary complexity, but academic knowledge often includes high-level, practice–based learning (Hull, 2000). Emphasis is put on teamwork, learning to use individual skills, developing shared understanding and supporting collective responsibility that improve communication (Hull, 2000). The way people communicate can improve the care that people provide (Hull, 2000).

2.3.1 Practising CPD

CPD, the structured and regulated form of lifelong learning in professional education, is practised among a variety of professionals such as surveyors in Germany (Gebauer, 2004); art therapists in Scotland (Cody, 2002); town planners in the UK (Taylor, 1996) and statisticians in the UK (Curnow, 2000) but is particularly described among health professionals throughout the world (Peck, McCall, McLaren and Rotem, 2000). Although

CME has a long history in supporting physicians as lifelong learners, it has become increasingly important and focused during the past ten to 15 years as a result of the impact of changing educational, social and political forces on medical practice (Bennett, Davis, Easterling, Friedmann, Green, Koeppen, Mazmanian and Waxman, 2000).

2.3.2 CPD of general careers

It is important that everybody working in a profession should remain alert to new ideas, techniques and developments in the specific profession and thereby update knowledge and skills through reading and attending courses (Taylor, 1996). In the late 1970's professional bodies started to develop a more structured approach to CPD (Watkins, 1999). The Royal Town Planning Institute, in the UK, implemented a CPD programme for town planning professionals (Taylor, 1996). However, Taylor (1996) was concerned about the monitoring of the CPD programme. At the end of every two years members had to complete a CPD record sheet, containing all the activities members participated in during the previous two years (Taylor, 1996). Members could easily claim to have participated in activities, without having done so (Taylor, 1996).

The Royal Statistical Society in the UK formed a working party responsible for the CPD programme of statisticians (Curnow, 2000). The Society was responsible for encouraging and assisting statisticians and their employers to improve the quantity and quality of CPD programmes (Curnow, 2000). Employers had to become more aware of the importance of CPD to professional statisticians. The working party activated a website whereby members were informed of CPD courses, workshops and seminars (Curnow, 2000).

2.3.3 CPD of health professionals

The professional development of physicians is a lifelong commitment that builds on formal and informal opportunities to learn about emerging science, apply innovations in clinical settings, and expand understanding of caring for patients (Bennett *et al.,* 2000). CPD is the process by which health professionals stay abreast with the latest developments to meet the needs of patients, the health service, and their own professional development (Peck *et al.,* 2000). It includes the continuous acquisition of new knowledge, skills, and attitudes to enable competent practice (Peck *et al.,* 2000).

2.3.3.1 CPD of primary health care professionals

Practising CPD among primary health care professionals in the UK is essential to achieve high-quality care for all patients (Field, 1998). The postgraduate education allowance (PGEA) system introduced in 1990 caused controversy and was the subject of much debate and criticism (Field, 1998). The PGEA was limited to general practice principals, mainly uni-professional in their approach and hardly involved in the participation of other members of the primary health care team (Field, 1998). The PGEA system allowed general practitioners to earn part of their income mainly by attending PGEA accredited meetings (Field, 1998). The directors of PGEA developed a CPD programme that included adult learning principles such as personal learning plans, mentoring schemes and portfolio-based learning (Field, 1998).

The Chief Medical Officer's (CMO's) review was a product of a multidisciplinary group of health professionals, health service users and educationists that aimed to develop a strategy to support patient care by improving the CPD of primary health care professionals in the UK (Field, 1998). The report recognised the need to ensure a coherent approach to professional development by encouraging those involved in clinical audit, clinical

effectiveness, research and development and those involved in education to work more closely together (Field, 1998). It addressed the weaknesses in the PGEA by developing a more patient-centred, multi-professional and educationally effective approach through a practice professional development plan (PPDP) (Field, 1998).

PPDP confirms the professional developmental needs of doctors, and other professionals in the primary health care team, with local and national health care objectives (Field, 1998; Elwyn, Hockling, Burtonwood, Harry and Turner, 2002). According to Field (1998) every primary care group (PCG) should have a general practitioner (GP) tutor whose responsibility would be to include implementing the PCG development plan and the personal development plan of the general practitioners. He furthermore stated that the medical audit advisory groups (MAAGs) had an important part to play in these developments (Field, 1998). The proposed changes were ambitious but could be achieved (Field, 1998).

In 2002 over 90% of Scottish primary care dentists were already actively participating in the mandatory CPD programme (Leggate and Russell, 2002). These dentists preferred to attend 'hands on' CPD activities but some were in favour of attending lectures, small group tutorials, discussing books and journals as well as watching videos. There was a preference difference between those dentists over 50 years old who preferred CPD gatherings and the younger dentists who were more interested in computer aided learning (Leggate and Russell, 2002). The survey also pointed out that there was a lack of enthusiasm for sitting for further qualifications with those dentists over 30 years old. Barriers experienced by these dentists were the heavy workload that prevented them from gaining further qualifications, lack of funding, lack of career structure and lack of flexible training were more of a barrier among the older dentists (Leggate and Russell, 2002).

Carter, O'Hara, Wright, Benato, Mott and Clarke (2003) described the implementation of personal development plans (PDP) across general practice in the Department of General Practice and Primary Care at Queen Mary's School of Medicine and Dentistry, London. Health professionals in general practice are always under heavy time constraint and for that reason a folder was compiled with very simple and concise guidelines for practising PDP which were evaluated by general practitioners, managers and nurses (Carter *et al.,* 2003). Workshops were held, attended by a multidisciplinary make-up of workers from the practising, managing, clinical and administrative teams (Carter *at al.,* 2003). They found the workshops particularly helpful in giving guidance and training as well as uplifting morale. A concern was that PDP without continued support will be in danger of becoming just one more passing initiative among many (Carter *et al.,* 2003).

2.3.3.2 CPD of nursing staff

The post-registration education and practice (PREP) requirements for nursing staff in the UK for re-registration with the United Kingdom Central Council (UKCC) of Nursing, Midwifery and Health Visiting is a minimum of five days (35 hours) study in the individual's practice area (Govier, 1999).

Hinchliff (1999) stated that CPD increases job satisfaction in the nursing profession in the UK. She stated furthermore that by planning CPD over a longer period and by recording CPD activities, growth as a professional will be secured (Hinchliff, 1999). According to Hinchliff some of the CPD activities will take place in the workplace such as being part of a project team, and some learning will take place outside the workplace, such as voluntary participation in age concern (Hinchliff, 1999). CPD activities for nurses should be planned by considering their personal shortcomings and as a means of reaching idealistic goals in the profession (Hinchliff, 1999).

Govier (1999) determined nurses' perception, their understanding and co-operation of PREP requirements in the UK and how CPE requirements of nursing staff could be supported from within the hospital. Eighty-five percent of registered nurses were engaged in structured study activities (Govier, 1999). However, according to Govier (1999) employers should and mostly do support CPD requirements. Nursing staff experienced funding, study leave, staff shortages and inability to access courses as their major obstacles (Govier, 1999). Due to the PREP requirements, 40% started compiling and maintaining a profile (Govier, 1999). Possessing and maintaining a profile was more popular with younger nursing staff who qualified after 1995 (Govier, 1999). In 1995 the local college of nursing introduced a nursing education programme based on practising reflective writing and profiling which could account for and explain the high percentage of profile compliance among younger nurses (Govier, 1999). Newly appointed nursing staff not processing profiles were given a free file with guidance notes for compiling and maintaining their personal records (Govier, 1999). Fifty-eight percent of the respondents fulfilled CPD requirements (Govier, 1999).

Smith and Topping (2001) measured the values of CPE activities in relation to improvement of knowledge, improvement of care delivery and professional development among nursing staff in the UK. Fourteen registered nurses completed a course on neuroscience and the outcomes were determined by means of a questionnaire, self-report evaluation and performance in assignments (Smith and Topping, 2001). The results indicated that nurses wanted to improve their knowledge of general issues within the field of neurosciences and also to become more confident in sharing knowledge and the desire to improve relationships within the multidisciplinary team (Smith and Topping, 2001). They further concluded that CPE enhances patient care because they were in a position to apply new knowledge in practice, but unfortunately there is lack of concrete evidence to support this. If the needs of practitioners cannot be met through CPE, the value of CPE must be questioned (Smith and Topping, 2001).

2.3.3.3 CPD of allied health professionals

In 2001 a CPE portfolio was developed for dietetics in the USA. This portfolio was tested over three rounds by dietetic practitioners during a two year period (Keim, Johnson and Gates, 2001[a]). The majority of the respondents focused their CPE activities in community nutrition, education, management, foodservice and business (Keim *et al.,* 2001 a]). Most of the respondents wanted to achieve a level of proficiency after participation in CPE activities (Keim *et al.,* 2001 [a]). Participants in the portfolio group were compared to a control group and no significant differences were found between the control group and the portfolio group in their ability to find CPE activities (Keim, Gates and Johnson, 2001 [b]). The portfolio guide aided the portfolio group in understanding the process and knowing what to do when the portfolio process was implemented. The majority of the portfolio respondents were prepared to recertify using the portfolio process (Keim *et al.,* 2001 [b]).

A CPD needs assessment survey was conducted on occupational medicine practitioners in the UK (Turner, Hobson, D'Auria and Beach, 2004). By means of the survey useful topics or themes for CPD and those areas with a low CPD priority, in total 28, were identified (Turner *et al.,* 2004). The first five topics rated as high priority and high frequency were knowledge of disease and relevant clinical examination, confidentiality, diagnosis and management of work-related disease, fitness-for-work evaluations and communications and the last five that rated low CPD priority were research, assessing needs for health promotion, organisation, provision and evaluation of health promotion programme, management of first-aid facilities and liaising with social services. The results of the survey will in future guide providers of educational programmes in presenting CPD activities (Turner *et al.,* 2004).

Radiographers participated in CPD in delivering a high quality service and excellent clinical care (Kerr and Vinjamuri, 2001). They identified CPD as a means to encourage a lifelong learning process that needs to be tailored to the individual's needs. According to Kerr and Vinjamuri (2001) it is advisable to appoint a CPD co-ordinator within a workplace or area. They furthermore stated that CPD must address shortcomings in work-related skills and that radiographers should strive to offer cost-effective activities, preferably in-house training (Kerr and Vinjamuri, 2001).

2.3.3.4 CPD of physicians

Peck *et al.* (2000) compared CPD among health professionals in the UK, USA, Canada, Australia and New Zealand. Half of these countries surveyed, used the point allocation based on an hour related credit system in which one hour of activity equals one credit (Peck *et al.,* 2000). Credits required from health professionals could vary from 50 to 100 per year. In Europe an accreditation committee allows mutual recognition of credits among European countries (Peck *et al.,* 2000). Canada started a new programme by which physicians could keep a portfolio of learning activities electronically, though the electronic diary was not very popular (Peck *et al.,* 2000). Peck *et al.* (2000) was of the opinion that CME will be a requirement for recertification in the USA in the near future. In Australia and New Zealand, CPD programmes were managed by medical colleges and faculties. The programmes of the physicians surveyed by Peck *et al.* (2000) were based on self reporting by physicians every three to five years, depending on the discipline, with the exception of pathologists who submitted every six months.

A study was conducted on family physicians and paediatricians working in Israel, to associate opportunities for CME and job stress, career burnout and job dissatisfaction they experienced (Kushnir, Cohen and Kitai, 2000). A fair number of the respondents in the study expressed the need to be more engaged in CME activities. To some

respondents CME opportunities were limited which could lead to physicians becoming depressed (Kushnir *et al.,* 2000). They concluded that participating in CME activities negatively influenced the job stress and positively influenced job satisfaction among family physicians (Kushnir *et al.,* 2000).

Medical practitioners in the UK will be revalidated regularly to prove that they are competent to practise their profession (Vallance-Owen, 1999). The responsibility for funding CPD for medical practitioners in the UK is complicated especially when working in the private sector where the individual has personal and professional responsibilities to remain competent and to keep up to date (Vallance-Owen, 1999). Doctors in the private sector also experience a time constraint with little opportunity for departmental discussions and peer review (Vallance-Owen, 1999).

A survey was conducted on how CPD was experienced by National Health Services (NHS) physicians from the Northern and Yorkshire region in the UK (Acquilla, O'Brien and Kernohan, 1998). Reasons for not attending CPD activities were lack of relevance, lack of opportunity, lack of money and unsuitable location (Acquilla *et al.,* 1998). Respondents to the survey expressed the wish that continuing education activities should be multi-disciplinary. According to Acquilla *et al,* (1998) those physicians with training responsibilities will have to maintain their knowledge and skills through CPD plus being accredited as trainers.

A postal questionnaire was sent to anaesthetists in Scotland to determine the activities, motivation and barriers to CME (Chambers, Ferguson and Prescott, 2000). The main barriers identified were difficulty in getting time off, the distance they needed to cover to attend meetings and lack of funding (Chambers *et al.,* 2000). Most of the anaesthetists were actively involved in CME. Younger consultants undertook CME realising that clinical duties might change where the older generation less frequently attended activities

(Chambers *et al.,* 2000). Local activities were more cost-effective as they meant saving on travelling expenses (Chambers *et al.,* 2000). Lectures and tutors were scheduled at a fixed time, but computer–assisted learning or reading an article and completing a questionnaire could be done at a time that suited the individual (Chambers *et al.,* 2000). Outcomes of this survey resulted in the drafting of an educational framework which the majority of the general practitioners found acceptable (Chambers *et al.,* 2000).

The role of the CPD planner in self-directed learning among Canadian radiologists was to create an environment that encourages questioning, discourages judgement and encourages feedback (Shannon, 2000). In order to earn CPD credits, radiologists in Canada were able to answer the questions on an article in their self-assessment programme (Coblentz, 2001) and in the next Canadian Association of Radiologists Journal (CARJ) audit forms were included, which on completion, were worth two CPD credits.

2.3.3.5 CPD of pathology professions

Medical technologists had a strong positive trend towards continuing education (French and Rezler, 1976). Russell (1966) was concerned about ways that pathologists and medical technologists could contribute to augmenting their knowledge through continuing education (CE). Fritsma, Matthews, Schoeff and Young (1979) described a tool used by the medical technology continuing education committee to identify needs in pathology education. The most popular activities were case studies and hands-on workshops (Fritsma *et al.,* 1979). They reported that medical technologists were willing to attend programmes in their own time and even at their own cost (Fritsma *et al.,* 1979).

It was important that pathologists and technologists were informed on the latest developments in medical technology by attending educational programmes, meetings and

workshops (Russell, 1966). In the USA societies involved in CE were the American Society of Clinical Pathologists and the American Society of Medical Technologists (Russell, 1966; Falcone, 1999). In the UK the Royal College of Pathologists embraced the concept of CPD and was responsible for setting educational standards and monitoring, facilitating and evaluating CPD activities (Du Boulay, 1999).

The concept of CPD is broad, with three main components; the knowledge, skills and attributes the individual needs for professional practice (Du Boulay, 1999). Collier, Crowe, Stinson, Chu and Houlden (2001) anticipated that the CPD programme implemented would promote an overall improvement in the quality of laboratory medicine throughout Canada. Medical technologists should not only participate in CE activities because it was expected of them, the individual should gain in participating in CPD activities, personally and professionally (Falcone, 1999). In a study by Balachandran and Branch (2001) to determine the reasons why cytotechnologists in the USA participated in CPE activities it was concluded that they wanted to keep abreast of new developments in their field. Dhatt (2002), in a South African pathology department, warned that the commercial marketing element of CPD needs to be eliminated because it does nothing to stimulate the culture of lifelong learning or to improve the competence of attendees.

CPD programmes should be high quality educational activities and best managed locally to comply with the service needs of the local individuals and the organisation (Du Boulay, 1999). Additional ways of participating in CE activities are activities offered on the internet, journal discussions, home study and audio / teleconferences (Falcone, 1999). Accredited laboratories must continuously review all procedures and processes involved in the laboratory and should consider accrediting these activities for CPD points (Du Boulay, 1999).

The level of participation in CE activities should be documented (Falcone, 1999). The Royal College of Pathologists introduced a portfolio learning record whereby members kept record of their activities (Du Boulay, 1999). Individuals were responsible for planning, documenting and managing their own CPD as well as recognising obligations to their employer (Du Boulay, 1999). Equally, employers have a corporate commitment to CPD (Du Boulay, 1999). The Canadian Society of Clinical Chemists and the Canadian Academy of Clinical Biochemistry implemented a new professional development programme (Collier *et al.,* 2001). It comprised voluntary participation based on a three year cycle and the cost of coordinating the programme was minimal (Collier *et al.,* 2001). At the end of each year members submitted a form for credit allocation (Collier *et al.,* 2001). Du Boulay (1999) indicated that CPD activities for pathologists in the UK were still voluntary but expected them to become mandatory within the next few years.

2.3.3.6 CPD offered on the internet

Continuing educational (CE) activities offered by e-learning proved especially helpful to people working in small towns or in rural areas (Randell, 2001). The advantage of e-learning is that it is cost effective and the participant can participate anywhere and anytime (Randell, 2001). Bacon (1999) agreed that the internet provided a rapid, cost-effective means of communication, offering a high quality of medical information and thereby providing lifelong learning to physicians in the UK.

Sectish, Floriani, Badat, Perelman and Bernstein (2002) indicated that time and money were the main reasons why paediatricians did not attend continuing medical education (CME) activities regularly. The American Academy of Pediatricians (AAP) designed an internet-based learning system called PediaLink where paediatricians could participate in self-directed learning (Sectish *et al.,* 2002). The Raven Department of Education in the

UK is continuously developing new electronic courses for the CPD programme (Murfitt and Peyton, 2000).

An electronic portfolio course (named PC Diary) was designed and consultants in diabetes / endocrinology from the Royal College of Physicians, London, were offered a one year free use of the PC Diary (Dornan, Carroll and Parboosingh, 2002). At the end of that year participants completed a questionnaire on how they experienced the course. Time to participate was a dominant problem and also the lack of information technology experienced by some of the participants (Dornan *et al.,* 2002).

Weir, Stieb, Abelsohn, Mak and Kosatsky (2004) reported on the e-mail course designed to be used by family physicians and specialists on outdoor air pollution and health. Shortcomings of the course were the time participants took to read through the e-mails and also the estimated moderator time that took much longer than expected (Weir *et al.,* 2004). Those physicians who completed the course indicated that their level of knowledge about the subject matter increased and on the follow-up evaluation admitted that it had a lasting impact on their practice (Weir *et al.,* 2004). The same results were found by Harris, Salasche and Harris (2001) who developed an on-line skin cancer education programme, a six week course completed by 354 physicians. The result was that those who participated increased their confidence and knowledge of skin cancer (Harris *et al.,* 2001).

2.3.3.7 Practising CPD in the rural areas

A survey conducted on registered dieticians indicated that those who lived in rural areas of the USA found continuing professional education (CPE) activities less accessible because the activities were mainly offered in metropolitan areas (Williams, Keim and

Johnson, 2004). They had to take time off from work and spend additional money on travel and accommodation to attend CDP activities (Williams *et al.,* 2004).

Australia experienced a critical shortage of occupational therapists in the rural areas (Lannin and Longland, 2003). These rural occupational therapists needed not only clinical, but also administrative competencies that should be included in their CPD programme (Lannin and Longland, 2003). Rural therapists were not funded by the current Australian health system for participating in the CPD programme, which resulted in significant travel and accommodation costs whenever attending CPD activities away from home (Lannin and Longland, 2003). Postgraduate university opportunities in rural Australia were also limited and resulted in many occupational therapists leaving the rural areas to undertake postgraduate study (Lannin and Longland, 2003).

Roberts and Scott (1988) did a comparative study on five allied health professionals in rural California, determining their needs regarding participation in continuing education programmes. The professionals involved were paramedics, physiotherapists, pharmacists, clinical psychologists and medical technologists. Medical technology was the only profession of the five investigated that did not have to participate in continuing education to retain registration in order to practise (Roberts and Scott, 1988). The clinical psychologists were in the fortunate position that they had employer-sponsored CE programmes, which was not the case with the other professionals in the survey (Roberts and Scott, 1988). The results indicated that there was a strong need for high quality, moderate cost, locally offered continuing education seminars (Roberts and Scott, 1988). This indicated that the health professionals employed in the agricultural regions of California were in need of centrally coordinated continuing education opportunities (Roberts and Scott, 1988).

No information on CPD being practised in rural areas of South Africa was available. The expected circumstances would however be similar to those experienced in Australia, the USA and Canada as described above.

2.4 THE FUTURE OF CPD

According to Eraut (2001) from an education department in the UK, CPD must be integrated into the business plan of the employer. It is important that learning opportunities should form part of on-the-job training and that employees should concentrate on further learning rather than just concentrating on follow-up learning opportunities of existing knowledge (Eraut, 2001).

Over the last decade, researchers in CME have been successful in generating knowledge, but have been less effective in applying that knowledge in practice (Fox, 2000). The gap between theory and practice needs to be narrowed (Fox, 2000; Leist and Green, 2000). The literature is too rich in theory and too poor in application and solutions to the problems (Fox, 2000). CPD serves as a link between clinical practice and medical science for physicians, but has poor links between its science and practice (Fox, 2000). It is advisable that CPD research should begin with a problem and evaluate the outcomes of the research in practice (Fox, 2000).

Leist and Green (2000) concluded after the fourth international meeting on CME that CME must emphasize performance in practice and health care outcomes. More opportunities are needed to share research relating to new technologies, educational processes and evaluation methodologies (Leist and Green, 2000). CME offices should also learn to be financially independent. The health professions need to provide leadership on how to conduct outcomes research, including the identification and use of appropriate data to measure results (Leist and Green, 2000).

Mathers, Challis, Howe and Field (1999) were dissatisfied with the current arrangements for CME for GPs in the UK. This was agreed upon by McKay, (2000) also from the UK. Many courses offered were not up to standard and GPs attended the nearest and cheapest courses because of time, energy and costs (Mathers *et al.,* 1999). They compared the PEGA point system with portfolio-based learning. Portfolio-based learning enables participants to be proactive in their own learning, identify their own educational needs, develop strategies to meet educational needs and to complete a learning cycle by applying new learning to practice (Mathers *et al.,* 1999; McKay, 2000). Tutors were appointed to support and evaluate the portfolio-based learning (Mathers *et al.,* 1999). It was concluded that portfolio-based learning was more effective in that participants could apply their learning to practice. The learning was efficient because participants had control over how, what and when they learned although it took more time compared to the PEGA evaluation because of the paper work involved (Mathers *et al.,* 1999). McKay (2000) described the point system as the starting point in CME evaluation and believed that in following the portfolio system educational goals would be reached.

2.5 ENUMERATION

In order to practise, medical technologists and technicians must register with the HPCSA, the regulating body protecting the public against malpractice by health professionals. To maintain their registration they pay an annual registration fee and as from 2002 comply with the compulsory CPD requirements.

Medical technologists and technicians analyse human tissues, blood and body fluids to determine the presence, extent or the absence of a disease. As newly qualified practitioners, both medical technologists and technicians, start off doing routine bench

analyses. As they progress medical technologists have a better opportunity of performing more advanced investigations and occupy leadership positions or get involved in lecturing.

The USA and Canada experience a shortage of qualified medical technologists. Young people are no longer interested in qualifying as medical technologists because of the awkward working hours, low salaries and the career not being recognised as a profession. The risk factor in working with HIV contaminated blood is making the profession less attractive. The same factors also contribute to medical technologists and technicians experiencing job dissatisfaction. In addition they experience high stress levels caused by daily frustrations such as the breakdown of machines, high workload and the pressure of emergency requirements.

The SMLTSA is responsible for the promotion and regulation of the profession of medical technology and sees to the needs of medical technologists and technicians. The Society also serves in an advisory capacity in the training and education of medical technologists and technicians. The SMLTSA not only administers CPD on behalf of the HPCSA but is also actively involved in organising CPD activities.

CPD is a structured form of lifelong learning well described among health professionals. The goal of participating in CPD is to keep updated to the needs of patients, the health service and the profession. In medical technology it also means to keep abreast of the latest developments, especially technological advancements in the profession.

When first initiating CPD programmes, most professionals did so by measuring CPD in hours spend on educational activities or credits earned per annum. The trend lately is to move towards measuring CPD by means of a personal portfolio system. Further research is suggested to refine the best ways of conducting and measuring the impact of CPD on health professionals.

The younger generation in the health professions were more inclined to participate in CPD activities. The younger CPD participants were also more in favour of participating in internet activities, because they could master the computer programmes more easily. In general, hands-on CPD activities were preferred to passive attendance of CPD activities, though participating in journal club discussions remains the most popular form of CPD activity because of their accessibility. It was suggested that CPD activities should be practised across the different professional disciplines especially when employed in a primary care setting.

The main obstacles professionals experienced by participating in CPD activities, were lack of time and financial constraints. Shortage of staff and the inability to access formal education were also obstacles. These obstacles were an even greater problem to those employed in rural areas. In exceptional instances professionals were sponsored by their employees to take part in CPD activities away from home, though in general it was the individuals' own responsibility to cover costs and find the necessary time to take part in CPD activities.

Internationally pathologists, medical technologists and technicians were involved in CPD activities. One group of technologists reported that their main reason for participating was to keep abreast of the latest developments in their profession.

Limited published information on CPD in South Africa was available. Information mainly concerned the original implementation and latest developments concerning point allocation in the current CPD programme under revision. A South African pathologist pleaded in a published letter that the commercial marketing element in CPD needs to be eliminated to stimulate the culture of lifelong learning (Dhatt, 2002).

It was therefore important to determine the expectations and concerns medical technologists and technicians experience in participating in the CPD programme. The question also arose whether medical technologists and technicians were sufficiently informed about the CPD programme, especially those in rural areas. Obstacles that could prevent employees from taking part in CPD activities needed to be identified and solutions sought to overcome those obstacles. The main concern was to compile a CPD framework that assists in establishing a CPD programme that could be implemented by all medical technologists and technicians throughout South Africa.

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CHAPTER 3

QUANTITATIVE AND QUALITATIVE IDENTIFICATION OF AND POSSIBLE SOLUTIONS OF OBSTACLES TO OBTAINING CPD CREDITS

3.1 INTRODUCTION

Lifelong learning is a learning process that starts at the cradle and continues till the grave (Longworth and Davies 1996). In the professional context Peck, McCall, McLaren and Rotem (2000) defined continuing professional development (CPD) as a process of lifelong learning in practice. CPD in the health sciences is the continuous upgrading of knowledge and skills that are beneficial to the individual, the institution and the patient (Du Boulay, 1999; Peck *et al.*, 2000). Participation in and the outcomes gained from participating in CPD must however, be evaluated (Collier, Growe, Stinson, Chu and Houlden, 2001). CPD programmes could be evaluated by means of a credit system, whereby a prescribed number of credits must be accumulated within a time period (Collier *et al.*, 2001) or prescribed hours spent on CPD activities during a time period (Govier, 1999). Some professionals implemented a portfolio system for measuring CPD activities (McKay, 2000; Keim, Gates and Johnson, 2001). Dhatt (2000) pointed out that the purpose of CPD is not only to collect points, but specifically to promote a culture of lifelong learning.

CPD systems in the medical professions are practised internationally in the United Kingdom (UK) (Field, 1998), United States of America (USA) (Fox, 2000), Australia and New Zealand (Peck *et al.*, 2000; Lannin and Longland, 2003). Pathology laboratories participating in CPD programmes are clinical chemists and clinical biochemists in Canada (Collier *et al.*, 2001),

medical technologists and technicians in the USA (Falcone, 1999) and pathology laboratories in the UK (Du Boulay, 1999).

In South Africa medical professionals registered with the Health Professions Council of South Africa (HPCSA) currently participate in compulsory CPD programmes. A compulsory CPD programme for registered medical technologists and technicians was implemented in April 2002. The prescribed programme entailed that medical technologists and technicians had to accumulate CPD points annually valid for that specific year (HPCSA, 2002). This programme showed resemblance to the programme described by Collier *et al.* (2001) for Canadian clinical chemists and clinical biochemists. These CPD points could be accumulated by participating in journal discussions, formal education and by attending congresses, to name a few. The HPCSA is in the process of revising the CPD programme (HPCSA, 2004[b]) for all health professions. The CPD programme under revision proposes that professionals accumulate fewer credits per 12 months period and that these credits would be valid for 24 months (HPCSA, 2004[a]).

Although it is now compulsory for medical technologists and technicians in South Africa to obtain the necessary credits, to renew their registration annually, obstacles to complying with the CPD programmes in the health professions have been identified in other countries and described in the literature. In the UK, Govier (1999) mentioned the lack of funding and study leave, shortage of staff and the inability to access educational courses as the main barriers nursing staff experienced to complying with their CPD requirements. In a report to an international meeting on CME, Leist and Green (2000) mentioned that lack of time and knowledge to conduct research were barriers they experience to implementing research and thereby to participation in the CME programme. Hallam (1985) and Falcone (1999) stated that because of shrinking resources there are less money and time available for medical

technologists to participate in educational activities. In contrast, larger laboratories were still in a position to support travelling costs and were also in a better position to offer in-house workshops (Hallam, 1985). Roberts and Scott (1988) looked into the continuing educational needs of five allied health professions in rural California. The groups selected were paramedics, physiotherapists, pharmacists, clinical psychologists and medical technologists. The results indicated that there was an overwhelming need for continuing educational seminars presented locally and especially medical technologists experienced difficulty in accessing literature searches in rural areas (Roberts and Scott, 1988). Lannin and Longland (2003) conducted a survey on the critical shortage of occupational therapists in the rural areas of Australia. These therapists found travelling and accommodation fees to attend CPD activities very costly because CPD activities were not funded by the Australian health system (Lannin and Longland, 2003). The lack of higher education opportunities in rural areas of Australia contributed to experienced therapists leaving to further their education and never to return (Lannin and Longland, 2003). These therapists in rural areas experienced professional isolation that quickly develops into professional dissatisfaction (Lannin and Longland, 2003).

Compulsory CPD in South Africa is still a new concept. The only literature obtained pertaining to CPD in South Africa after an extensive literature search, were instructions distributed during the implementation of the compulsory CPD programme for medical technologists and technicians and revision of the existing programme and one letter published by a pathologist expressing his concern regarding the marketing aspect of CPD (Dhatt, 2000). Obstacles identified in participating in CPD activities unique to South African conditions were not obtainable from the literature. People in urban areas should not experience major problems in collecting CPD points because CPD activities are more accessible in metropolitan areas. With the current economic conditions, where fewer staff does more work, staff shortages and work overload could contribute to barriers to

participation in CPD activities. Time available for CPD activities, either during or after working hours will differ according to the service offered by the laboratory. It could be assumed that long distance travelling, financial implications in attending CPD activities would be the main obstacles to those from rural areas. If medical technologists and technicians from remote areas will be unable to renew their registration with the HPCSA it could lead to a serious shortage in the provision of diagnostic services in the rural parts of South Africa. This might not involve a large number of registered medical technologists and technicians but the impact in those isolated areas might be huge.

To identify the problems in accumulating CPD points and finding ways to overcome these barriers, a questionnaire was compiled and mailed to at least 40% of the registered medical technologists and technicians. Information obtained from the mailed questionnaire contributed to the compilation of an interview questionnaire. The second questionnaire was used to conduct personal interviews with 50 registered medical technologists and technicians in rural and urban areas throughout South Africa.

3.2 METHODS AND MATERIALS

3.2.1 Introduction

The main objective of the study was to identify qualitative and quantitative barriers to collecting CPD credits and possible solutions to overcome these barriers. It was therefore essential to obtain information from participants with a wide spectrum of work experience in medical technology, from both pathology laboratories and related careers.

A mailed questionnaire was compiled and distributed to HPCSA registered medical technologists and medical technicians to obtain mainly quantitative information on CPD participation and to identify the barriers to participation. This was succeeded by a structured interviewed questionnaire that aimed at gathering mainly qualitative information on the already identified barriers and possible ways of crossing these barriers.

3.2.2 Materials

3.2.2.1 Subjects selected for mailed questionnaire

According to the Professional Board for Medical Technology (PBMT) Register of 11 July 2001, 3803 medical technologists, 889 medical technicians and 50 supplementary medical technicians, were registered (HPCSA, 2001). The subject selection criteria involved the selection of at least 40% of registered medical technologists and technicians that included more then 2000 subjects, which according to statistical criteria, is sufficient. No supplementary medical technicians were included in the study, because no further registration of this category is foreseen in the future. Supplementary medical technicians obtained no formal education but were registered with the HPCSA because of years experience in medical laboratories.

A letter was published in the Medical Technology News (MTN) (Appendix 3.1) requesting registered medical technologists and technicians to participate in a national questionnaire on compulsory CPD programmes (Brand, 2002). Those who replied to the letter in the MTN, were the first to be included and the rest of the subjects were randomly selected from the HPCSA register. Medical technicians were listed alphabetically in the register and so were

the medical technologists. Random selection meant the picking of every third name from the alphabetical list.

3.2.2.2 Subjects selected for interviewed questionnaire

It was decided to interview 50 subjects, as that would be a sufficient number to confirm or disagree with information already identified by means of the mailed questionnaire. There were also practical implications such as travelling distances, travelling and accommodation expenditure and time to visit the destinations throughout South Africa. The aim was to select subjects employed in well-equipped, academic laboratories, smaller laboratories and laboratories run by a single person in isolated areas, as well as registered medical technologists and technicians not employed in pathology laboratories, but working in medical laboratory related careers. These subjects were to be representative of rural, suburban and urban areas. A further prerequisite was that they occupied a variety of positions at work.

The selection criteria therefore involved identifying laboratories in cities, towns and villages throughout all nine provinces of South Africa. Two subjects, preferably one senior and one junior medical technologist or technician, were interviewed in larger laboratories. In the smaller laboratories, one-person laboratories and those from other pathology related careers mainly one subject was interviewed.

3.2.2.3 Mailed questionnaire

A questionnaire was compiled (in English and Afrikaans) (Appendices 3.2, 3.3, 3.4 and 3.5) to gather information regarding the background of medical technologists and technicians and their attitude towards CPD. The content of the questionnaire was aimed at seeking mainly

quantitative information from participants regarding the current status of the profession, current CPD activities and obstacles that could prevent them from participating in the CPD programme. The following categories were addressed, mainly through closed-ended questions, although respondents could elaborate through open-ended questions at the end of each category whereby qualitative information were gathered:

- Geographic information of respondents
- Demographic information of respondents
- Current employment
- Biographic information
- Membership and participation in activities of the Society of Medical Laboratory Technologists of South Africa (SMLTSA)
- Involvement in HPCSA suggested CPD activities (individual, small group and organisational)
- Attitude towards CPD, past and present
- Reasons for not participating in CPD activities
- Possible activities that medical technologists and technicians could participate in during routine working hours
- General inputs to open-ended questions

3.2.2.4 Interviewed questionnaire

An interview questionnaire was compiled (in English) (Appendices 3.6 and 3.7) based on the information gathered from the mailed questionnaire. The contents of this questionnaire were based on participants' qualitative viewpoints on known information. The following categories were addressed:

- Geographic information

- Demographic information
- Employment
- The individual's attitude to and perception of CPD and how the individual perceived CPD in the work environment
- Inputs towards obstacles to obtaining CPD points already identified
- Ways to overcome some of these obstacles
- The contribution to CPD of senior staff members in managerial positions
- Suggestions for implementation of CPD activities

3.2.3 Methods

3.2.3.1 Mailed questionnaire

The questionnaire was tested by means of two separate pilot runs on local Bloemfontein medical technologists and technicians, as well as on HPCSA registered workers in medical laboratories in the Northern Cape. Ten of the fifteen people who were selected, responded and the questionnaire was subsequently rephrased and modified according to inputs received from respondents to the pilot runs. The questionnaire packet that was sent out contained a cover letter, the questionnaire and a self-addressed postage paid, return envelope. The subjects were assured by means of the cover letter that information gathered would be strictly confidential and made available as aggregated information only. It took ± 40 minutes to complete the questionnaire. The questionnaire packets were posted by mid-June 2002 and respondents were requested to return the completed questionnaires not later than 31 July 2002. No reminders were sent, as respondents could remain anonymous.

3.2.3.2 Statistical analysis of mailed questionnaire

The information obtained from the returned questionnaires was entered onto the Excel data base. No personal identifying information from the respondents was included on the data base. Data analysis was carried out using the STATISTICA software package. Data was presented as descriptive statistics. The Pearson's chi-square analysis was used to determine significant differences between categories. All statistical tests were conducted at a significant level of 0.05.

3.2.3.3 Interviewed questionnaire

The questionnaire was tested by means of a pilot run on medical technologists and technicians working in Bloemfontein. Five of the ten people selected, responded and the questionnaire was rephrased and modified as suggested. Over a period of nine months, starting in June 2003, medical laboratories in eight of the provinces in South Africa were visited. One institution in the ninth province was contacted *via* e-mail after telephonic consultation because of the time factor. Thirty-six laboratories in urban and rural areas were visited, six of which were one-person laboratories. Medical technologists in managerial positions were requested one to two weeks prior to the visit, to have one senior and one bench worker available to be interviewed. One-person laboratories were contacted accordingly. Interviews conducted with bench workers lasted ± 30 minutes and interviews with senior staff members up to one hour because of the extra section incorporated in the questionnaire as mentioned under material. At the interview each participant received a cover letter with details of the project and the assurance that the information gathered would be strictly confidential and made available as aggregated information only.

3.2.3.4 Analysis of interviewed questionnaire

The information obtained from the interviewed questionnaires was entered onto the Excel data base. No personal identifying information from the participants was included in the data. Data analysis was carried out using Microsoft Excel. Data was presented as descriptive statistics.

3.3 RESULTS AND DISCUSSION

Results of the mailed questionnaire are presented in the same sequence as the questionnaire. The results thus cover the background information of the respondents, their association with the SMLTSA and participation in CPD activities. The results identified obstacles to participating in CPD activities and suggestions as to how some of these obstacles could be overcome.

Results of the interviewed questionnaire include background of the respondents, their attitude towards and how they experienced CPD, as well as the participants' inputs regarding obstacles identified in the mailed questionnaire and ways to overcome these obstacles. The participants in managerial positions provided information on their contribution to CPD. The section ends with suggestions for the implementation of CPD activities.

RESULTS OF THE MAILED QUESTIONNAIRE

Two thousand and forty (2040) medical technologists and technicians were requested to complete the questionnaire. A total of 338 (16.6%) questionnaires that could be analysed were returned. Even though the percentage feedback was a disappointment, a response of

over 300 participants covering urban and rural areas throughout South Africa was statistically significant according to the statistician.

3.3.1 Geographic origin

Two hundred and eight (208) respondents were employed in urban areas and 120 in rural areas, whilst ten did not indicate their geographic origin (Table 3.1). Seventy cities, towns and villages were represented with the highest response from Cape Town (Table 3.2).

Table 3.1: Responding technologists and technicians classified into urban and rural areas

Total number of respondents = 338				
Technologists = 263		Profession anonymous = 2	**Technicians = 73**	
Indicated work city or town = 259		Work city or town anonymous = 10	Indicated work city or town = 69	
Urban	**Rural**	Total number of locations represented = 70	**Urban**	**Rural**
172 (66%)	87 (34%)	Indicated their locations = 328	36 (52%)	33 (48%)

Table 3.2: Geographic locations

Cities and towns represented by 328 respondents				
Aliwal-North (1)	Boksburg (1)	Braamfontein (1)	Brits (1)	Bosbokrand (1)
Giyani (1)	Graaff-Reinet (1)	Hermanus (1)	Kemptonpark (1)	Kleinsee (1)
King Williamstown (1)	Komatiepoort (1)	Krugersdorp (1)	Kuruman (1)	Ladysmith (1)
Linkfield (1)	Maandagshoek (1)	Mbabane (1)	Mdantsane (1)	Oudtshoorn (1)
Parktown (1)	Queenstown (1)	Roodepoort (1)	Scottburgh (1)	Secunda (1)
Seshego (1)	Somerset East (1)	Springs (1)	Stellenbosch (1)	Stanger (1)

Cities and towns represented by 328 respondents				
Thohoyandou (1)	Uitenhage (1)	Vanderbijlpark (1)	Zeerust (1)	Ermelo (2)
Grahamstown (2)	Greytown (2)	Kroonstad (2)	Lenasia (2)	Midrand (2)
Newcastle (2)	Nylstroom (2)	Paarl (2)	Phalaborwa (2)	Richard's Bay (2)
Umtata (2)	Vryheid (2)	Wentworth (2)	Witbank (2)	Worcester (2)
Bethlehem (3)	East London (3)	Ellisras (3)	Empangeni (3)	Kimberley (4)
Nelspruit (4)	Polokwane (4)	Rustenburg (4)	Potchefstroom (5)	Port Shepstone (5)
Tzaneen (6)	George (8)	Klerksdorp (9)	Pietermaritzburg (12)	Port Elizabeth (15)
Bloemfontein (19)	Pretoria (28)	Johannesburg (36)	Durban (44)	Cape Town (47)

Number of respondents in brackets

Even though the total response rate to the questionnaire was disappointing, 70 geographic locations throughout South Africa covering all nine provinces were represented (Table 3.2). This indicates that the respondents were representative of a wide spectrum of laboratories in both rural and urban areas. In total 62% of the respondents were from urban areas.

3.3.2 Employment

National Health Laboratory Service (NHLS) (37%) was the main employer of those who responded, followed by private pathologists (25%) and the blood transfusion services (14%) (Table 3.3). Only nineteen respondents were employed in a work situation with no connection with laboratory work.

Table 3.3: Employers of respondents

Employer	Medical Technologists	Medical Technicians	Total
NHLS (previously provincial laboratories)	55	9	64
NHLS (previously SAIMR*)	49	11	60
Total NHLS			**124 (37%)**
Government (provincial) laboratories	30	1	**31 (9%)**
Private pathologists - laboratories in a hospital	39	8	47
Private pathologists - central laboratories in a city or town	27	8	35
Total private pathologists			**82 (25%)**
Blood transfusion services – blood bank in a hospital	5	16	21
Blood transfusion services – central blood bank in city / town	11	16	27
Total blood transfusion services			**48 (14%)**
Private practice – self-employed	5	0	5
Higher education institutions	16	1	17
Commercial (e.g. beer brewery / cheese factory)	1	0	1
Company selling and / or servicing medical laboratory products	4	0	4
Missing	3	0	3
Other	17	2	19
Total			**334****

* SAIMR = South African Institute for Medical Research ** No information on 4 respondents

Eighty-nine percent (302) of the respondents were employed full-time (Figure 3.1). Sixteen (16) respondents were employed part-time and only six (6) worked on a contract basis. Eleven (11) respondents did not indicate their type of employment.

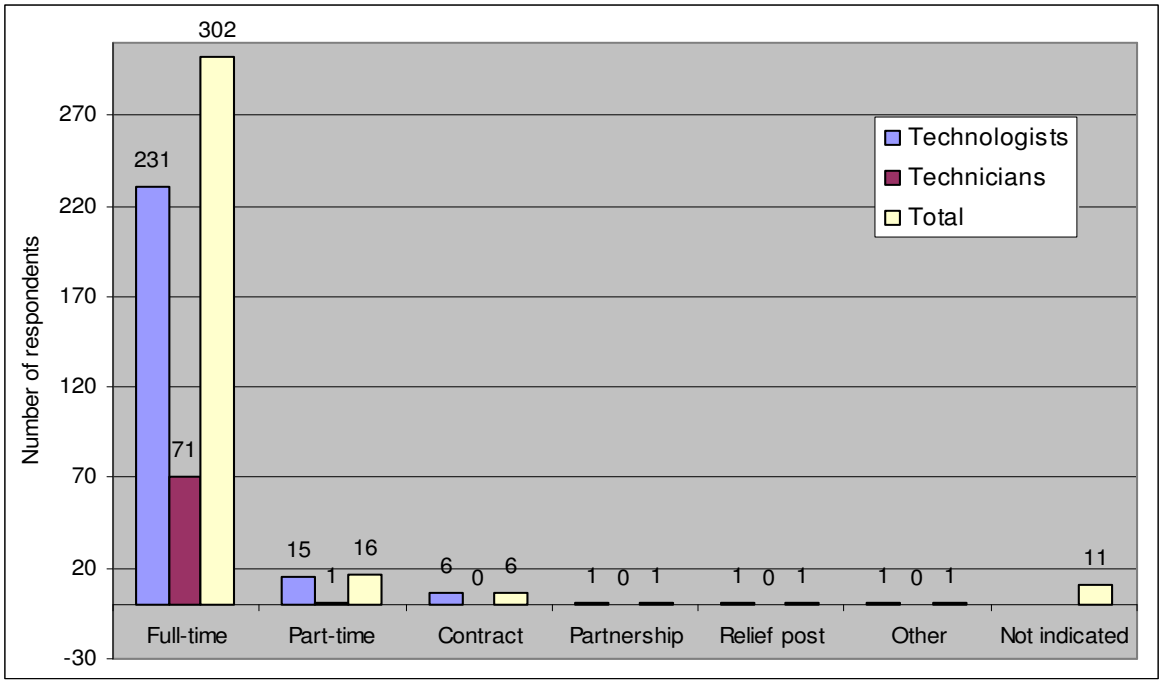

Figure 3.1: Types of employment of respondents

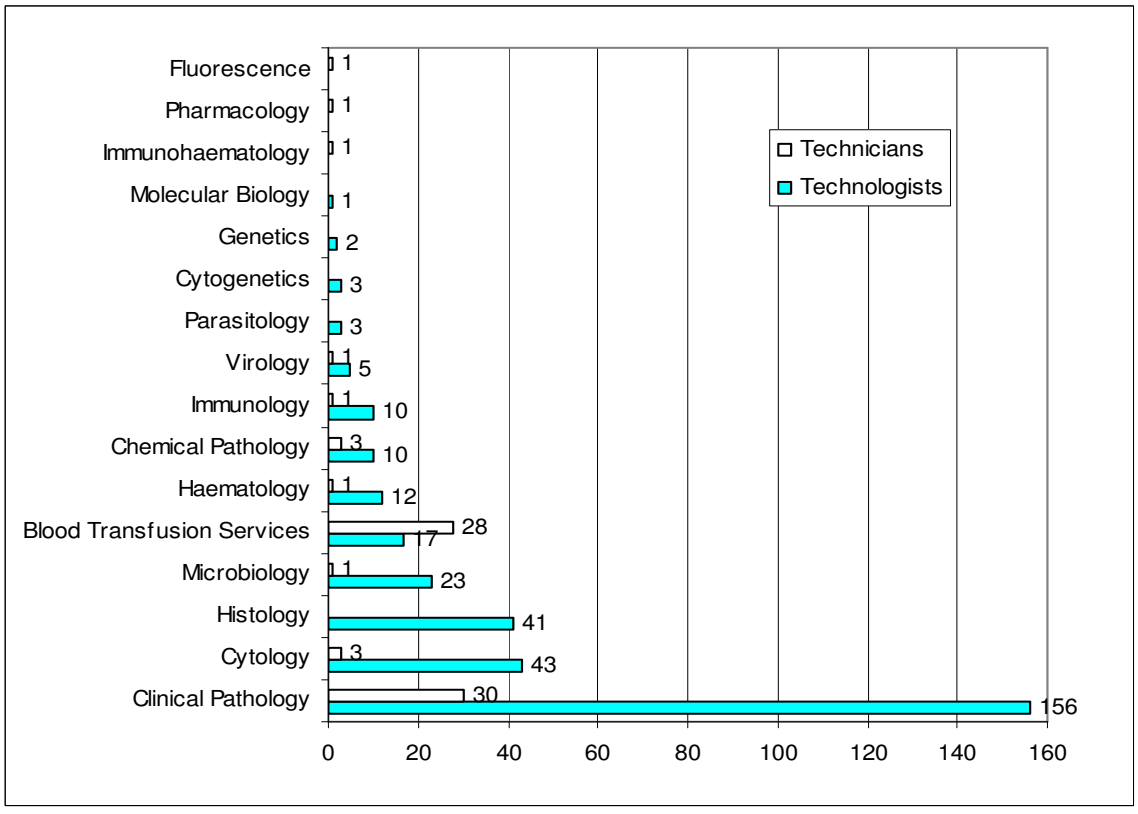

Figure 3.2: Number of respondents in the specialised fields of employment

A large number of respondents, 156 technologists and 30 technicians, were employed in clinical pathology laboratories. The ratio of technologists to technicians was the opposite in the blood transfusion services (Figure 3.2). The blood transfusion services went through a period of training and employing mainly medical technicians but are currently in the process of rectifying the ratio by employing one medical technologist for every five technicians.

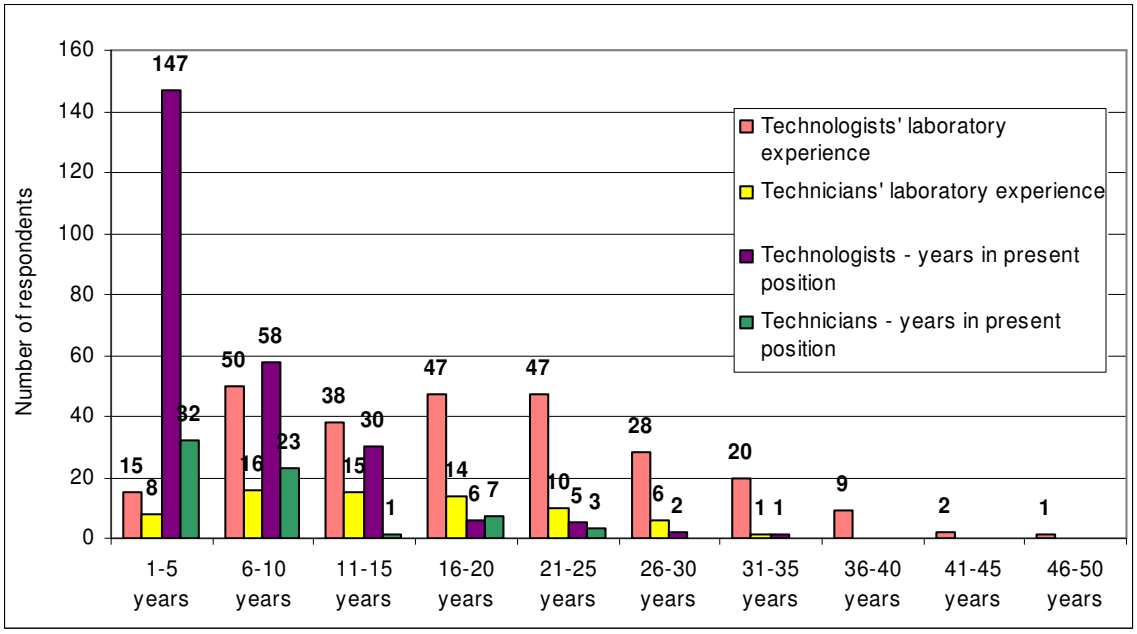

Figure 3.3: Years' laboratory experience compared to the years in present position

The average period of employment of the respondents was 17.8 years in a laboratory with an average of 6.6 years in a specific position. In response to the question on the standard of the laboratories, 145 respondents indicated that they worked in an accredited laboratory and 188 respondents indicated that their laboratories were registered for training. Sixty-eight (68) respondents experienced a high turnover of staff in their laboratories and 39 indicated that they consider a high turnover as normal. Eighty-five percent (288) of the respondents indicated that newly appointed staff in their laboratories underwent a training period.

One hundred (100) respondents occupied a chief technologist or unit supervisor position, 82 a senior position and 69 occupied qualified technologists' or technicians' positions (Table 3.4). Three (3) respondents were lecturing at higher education institutions.

Table 3.4: Respondents' employment positions

Position	Technologists	Technicians	Total
Employer	7	0	7
Manager	41	5	46
Assistant Director	4	1	5
Control position	8	1	9
Chief position / Unit supervisor	85	15	100
Senior position	60	22	82
Qualified Technologist / Technician	43	26	69
Lecturer	3	0	3
Representative	1	0	1
Instrument Technician	1	0	1
Other*	4	2	6
Not specified	0	0	9
Total			**338**

* The other positions included an information technology specialist, receptionist, research assistant and one person was retired.

The results indicated that salary ranges of the technicians reach an average plateau much lower than those of the medical technologists' (Table 3.5). The annual salary of a technician could reach R174 000 and that of a technologist could exceed R200 000.

Table 3.5: Annual salaries of respondents

Salary ranges per annum	Technologists	Technicians	Total
Less than R99 000	142	56	198
Between R100 000 - R149 000	74	9	83
Between R150 000 – R174 000	14	2	16
Between R175 000 – R199 000	9	0	9
R200 000 and above	9	0	9
Total	**248**	**67**	**315**

The NHLS was established by the amalgamation of the South African Institute for Medical Research (SAIMR) laboratories and provincial laboratories (South Africa Government Gazette, 2000). As observed from the questionnaire it is apparent that the NHLS is currently the main employer of medical technologists and technicians (Table 3.3). The NHLS is widely distributed throughout South Africa with approximately 250 laboratories (NHLS, 2005). The results indicate that private pathologists are the second largest employers of medical technologists and technicians, followed by the blood transfusion services. Since 1991 medical technologists have been allowed to register their own private laboratories (SMLTSA, 2004) and five respondents indicated that they work for themselves. Higher education institutions employed a few of the respondents. Employers of a few of the respondents were medical companies that supply laboratory reagents and equipment and commercial companies such as the beer brewery.

Thirty to forty years ago part-time appointments were very popular among married medical technology women with children. As derived from the feedback, this is no longer the case (Figure 3.1). It could be because of economic reasons, better childcare facilities, or that part-time positions are no longer available. Most of the respondents were employed full-time.

It is a prerequisite that a person must be qualified in the category in which they are practising (Wilson, 2000; HPCSA, 2005). A large number of respondents worked in clinical pathology laboratories and were qualified accordingly (Figure 3.2). Clinical pathology laboratories offer haematology, microbiology and chemical pathology. In the USA they are called multi-disciplinary clinical settings and include haematology, immunology, clinical chemistry and microbiology (Tetzlaff, 2003). A fairly large number of respondents worked in either cytology or histology.

An average employment period of 17.8 years indicates that many of the respondents had many years of laboratory experience. The average period in one position was 6.6 years. The high turnover of staff considered normal by some respondents could indicate job dissatisfaction according to Matteson, Ivancevich and McMahon (1977). The computing Pearson's chi-square statistics yielded a significant relationship between positions occupied and years of experience in a laboratory (p-value = 0.000) as well as the positions occupied and annual salaries (p-value = 0.000). This indicates that respondents were promoted and salaries adjusted according to years' laboratory experience.

The large number of respondents who indicated that they worked in accredited laboratories and laboratories registered for training indicates that those laboratories comply with the very high standards set by the HPCSA (SMLTSA, 2004). After an inspection by the PBMT a number of NHLS laboratories lost their registration to train student medical technologists and technicians (SMLTSA, 2004).

The lack of a normal positioning pyramid distribution of medical technologists and technicians as is apparent from the questionnaire (Table 3.4) could be attributed to the fact that hardly

any appointments were made prior to the establishment of the NHLS in 2000 to avoid any duplication of laboratory services (Crisp, 2005). Those employed in the then provincial laboratories and the SAIMR were promoted, but a limited number of qualified technologists were additionally employed.

It may be concluded that the majority of medical technologists and technicians were employed full-time at the NHLS, private pathologists and the blood transfusion services. The most popular specialised discipline for both medical technologists and technicians was clinical pathology. A large number of the respondents were employed in laboratories complying with very high standards. The abnormal positioning distribution of juniors and seniors will hopefully be rectified within a couple of years with the NHLS appointing newly qualified medical technologists.

3.3.3 Biographic information

Two hundred and fifty-nine (259) medical technologists and 77 technicians were registered. The percentage feedback from technicians was 0.5% higher than that of the technologists (Table 3.6).

A technician or technologist must be qualified in a specific category e.g. haematology as prerequisite to practice in a haematology laboratory (HPCSA, 2005). Individuals often qualified in more than one specialised field to meet the demands of specific laboratories or to satisfy themselves (Figure 3.4). Specialised qualifications obtained by the respondents are summarised below.

Table 3.6: Medical technologists and technicians who responded to the mailed questionnaire

	Registered with the HPCSA, July 2001	Invited to reply to questionnaire	Responded	Registered
Medical Technologist	3803	1584	263 (16.6%)	259
Medical Technician	889	456	78 (17.1%)	77
Total	**4692**	**2040**	**341***	**336****

* Some may be qualified as both medical technologist and technician ** Two respondents did not indicate their profession

Table 3.7: Number of respondents qualified in specialised categories

Qualifications	**Medical Technologist**	**Medical Technician**	**Total**
Clinical Pathology	135	12	147
Blood Transfusion Technology	19	36	55
Haematology	37	6	43
Microbiology	65	11	76
Chemical Pathology	46	9	55
Histology	26	5	31
Cellular Pathology	15	3	18
Virology	6	0	6
Parasitology	6	0	6
Immunology	4	0	4
Genetics	3	0	3
Pharmacology	1	0	1
Other			3
Total			**448**

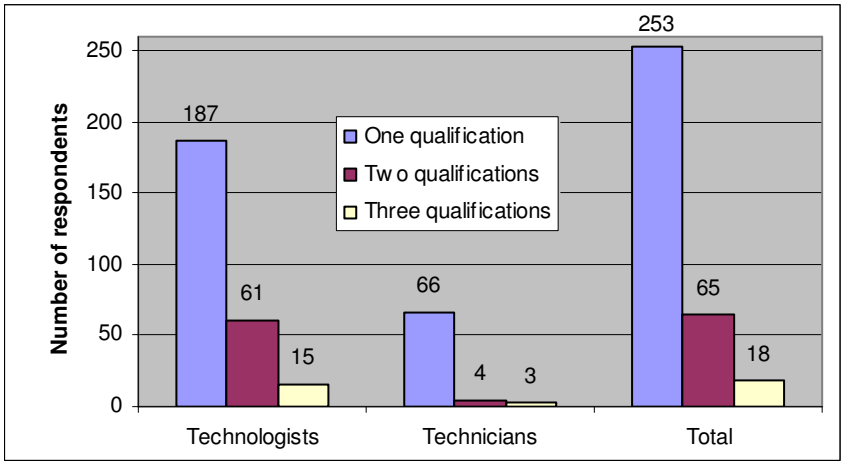

Figure 3.4: Specialised qualification(s) per respondent

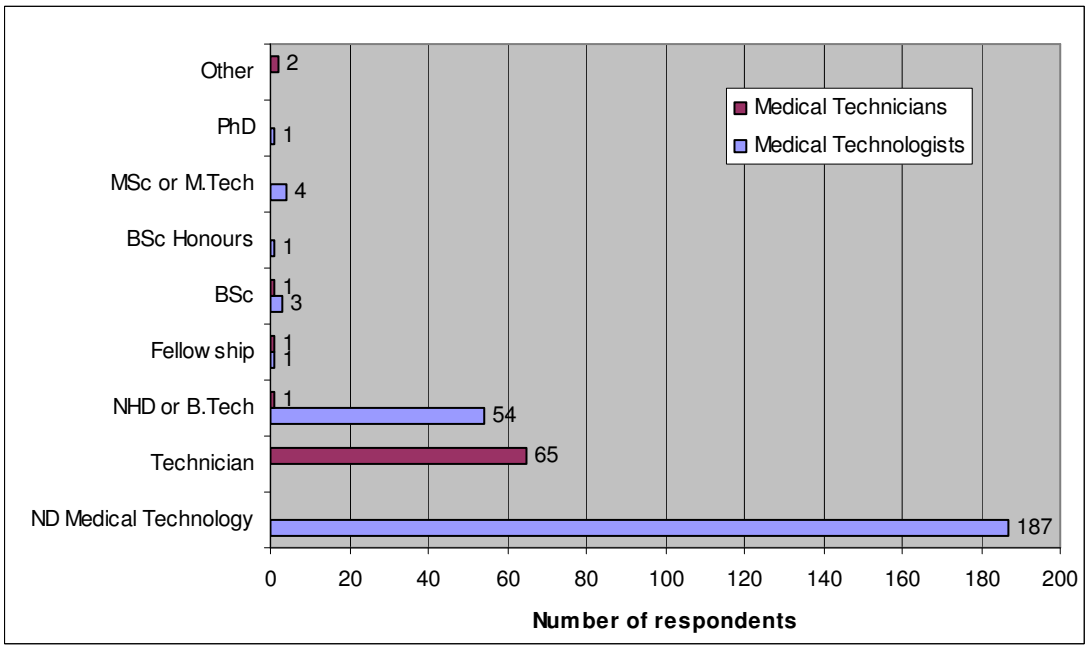

Figure 3.5: Respondents' qualifications

Fifteen technologists and three technicians obtained three specialised qualifications each and 61 technologists and four technicians, two specialised qualifications each (Figure 3.4). As indicated in Figure 3.5, respondents not only obtained a basic qualification, but improved their qualifications. Fifty-four technologists completed either the National Higher Diploma (NHD) or

B.Tech in Biomedical Technology. Sixty-five (65) technicians and 238 technologists obtained their qualifications between 1964 and 2002 (Figure 3.6).

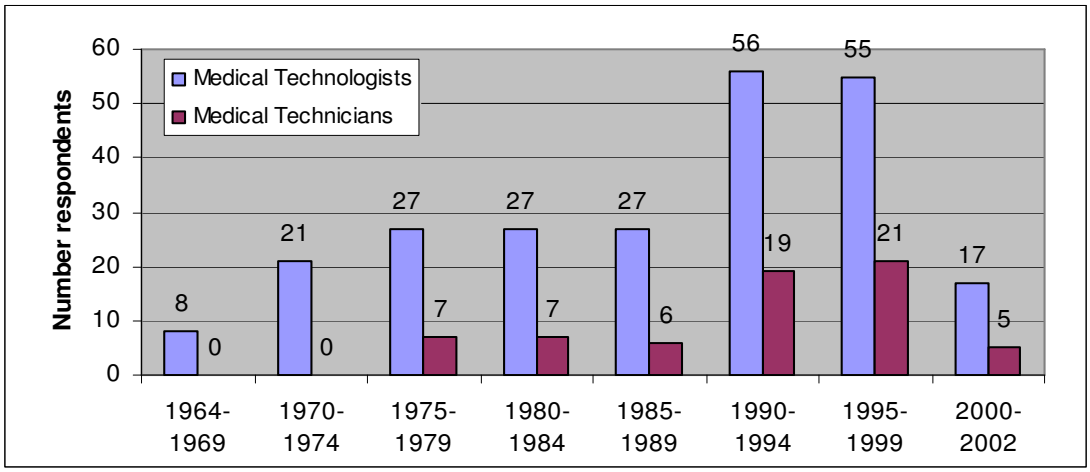

Figure 3.6: Periods when qualifications were obtained

During the survey, 39 (15%) medical technologists and 24 (31%) technicians were busy with further qualifications, and 81 medical technologists and 29 technicians indicated that they intended to improve their qualifications. Of these 128 who specifically mentioned the qualifications they intended obtaining, 56 (44%) were appropriate for medical laboratory work, while the rest intended to study in a completely different direction. Reasons why respondents did not intend to improve their qualifications are tabulated in Table 3.8.

Table 3.8: The major reasons for not considering any further qualifications

Reasons	Urban group	Rural group	Total respondents
Recently obtained latest qualification / other qualification	2	1	3
Working plus studying exhausting	3	1	4
Workload / irregular working hours	6	2	8

Reasons	Urban group	Rural group	Total respondents
No motivation (incentive) by employer / profession	9	2	11
Not required for position at work	10	1	11
Family responsibilities	9	3	12
No promotion	9	5	14
No salary increases	10	5	15
No education centre in vicinity	5	10	15
Financial	17	9	26
Time factor	21	5	26
Near retirement	24	7	31
Total	**125**	**51**	**176**

Two hundred and ninety-eight (298) respondents indicated their gender, 83 were male and 215 female (Table 3.9). Two hundred and thirty (230) of the respondents were between 30 and 49 years old. No technician older than 60 replied to the questionnaire.

Table 3.9 Gender and age groups of respondents

Gender and age groups	Technologists		Technicians		Total
Male	60	25%	23	37%	83 (28%)
Female	176	75%	39	63%	215 (72%)
Total	236		62		298
20 – 29 years	26	10%	13	18%	39 (11.5%)
30 – 39 years	86	33%	30	41%	116 (34.5%)
40- 49 years	94	36%	20	27%	114 (34%)

Gender and age groups	Technologists		Technicians		Total
50-59 years	49	19%	10	14%	59 (17.5%)
60 years and older	8	3%	0	0	8 (2.5%)
Total	**263**		**73**		**336**

Two hundred and fifty-nine (259) of the respondents were registered as technologists and 77 as technicians. Technicians can improve their qualifications and become technologists, thus have two job qualifications, but they register with the HPCSA only as technologists, hence the total of 341 instead of 338 in Table 3.6. To be qualified as both medical technician and medical technologist is a common phenomenon in the blood transfusion services.

The largest number of respondents was qualified in clinical pathology, as mentioned above. Eighty-three of the respondents had either two or three specialised qualifications. Prior to the implementation of the NHD in Medical Technology, no further qualification opportunities, except for the Fellowship of the SMLTSA, a HPCSA recognised qualification, were available to the profession (SMLTSA, 2004). A number of respondents obtained post-diploma qualifications and some of the respondents (19%) were studying towards a higher qualification. Respondents indicated that higher qualifications were not required in their job (Table 3.8). This was statistically confirmed by the fact that the relationship between respondents' positions and their qualifications was significant (p-value = 0.00). All statistical tests were done at a significant level of 0.05. There was, however, a non-significant relationship between the categories of level of qualification and years of experience in the laboratory (p-value = 0.89). As early as 1985 Hallam recommended that ambitious medical technologists in the USA should continue with their education in spite of the negativism among some workers towards medical technology (Hallam, 1985). Participation in formal

education in medical technology or related careers is classified as individual CPD activities can thus contribute substantially towards attaining CPD credits.

The reasons respondents gave for not continuing with further qualifications were the time-factor and financial implications. Similarly, Govier (1999) reported that the lack of funding, study leave and staff shortages were the main reasons why nursing staff in the UK did not access formal courses. The perception among medical technologists is that the graduate or post-graduate qualifications in biomedical technology are not always taken into account for promotion and salary increases in private pathology laboratories, the NHLS and the blood transfusion services. In this regard it is significant that the South African National Blood Service (SANBS) is currently encouraging technicians to qualify as technologists to rectify the ratio of at least one technologist for every five technicians. Statistics yielded no significant relationship between the qualification and annual salary (p-value = 0.057) showing that motivation for further study is lacking in the profession.

Seventy-two percent of the respondents were female, a finding that is in agreement with the literature that describes medical technology as predominantly a female career (Blau and Tatum, 2000) and as an ideal field for women who can divide their priorities between the home and their career (Hallam, 1985). French and Rezler (1976) conducted a survey on personality and job satisfaction among medical technologists in the USA and they chose only women as subjects, because medical technology being pre-dominantly a female profession.

Results in Figure 3.6, indicated that there was a dramatic increase among respondents who qualified as medical technologists and technicians from 1990. This is in contrast to the situation in the USA where a tremendous decrease is experienced in people applying to enter the course in medical technology, because of hazards associated with the immunodeficiency

virus (HIV) (Szabo, 2001). Monahan (2001) in the USA indicated that low salaries, the on the job risk factor due to HIV and irregular working hours were the main reasons why young people did not consider entering the profession. In England and Wales there is a shortage of biomedical scientists, with 62% positions currently vacant (Hallworth, Hyde, Cumming and Peake, 2002). No information was obtained on the employment situation of medical technologists in Australia, New Zealand or in the rest of Europe.

In contrast to what is happening in the USA and the UK, medical technology is still in demand as a career among young people in South Africa. During the past fifteen years an increase in respondents who qualified as medical technologists and medical technicians was observed in this survey (Figure 3.6). South African qualified medical technologists are also in high demand in the UK.

3.3.4 Membership: Society of Medical Laboratory Technologists of South Africa (SMLTSA)

One hundred and eighty–seven (187) of the 320 respondents were members of the Society. Thirty-one percent (31%) were non-members from rural areas, the main reason being that there was no branch of the Society in their vicinity. Only 16% of the respondents regularly attended academic activities organised by the SMLTSA-branches, 12% of whom were from rural areas.

Table 3.10: Involvement in the SMLTSA

SMLTSA	Rural respondents		Urban respondents		Total respondents	
	Total	Positive response	Total	Positive response	Total	Positive response
Membership of the Society	118	64 (54%)	202	123 (61%)	320	187 (58%)
Non-member due to transport problems	121	24 (20%)	209	21 (10%)	330	45 (14%)
Non-member due to time factor	121	39 (32%)	209	58 (28%)	330	97 (29%)
Non-member due to absence of branch in vicinity	121	37 (31%)	209	14 (7%)	330	51 (15%)
Aware that the Society administers CPD	117	94 (80%)	200	175 (88%)	317	269 (85%)
Attend CPD activities:						
Never	111	64 (58%)	201	77 (38%)	312	141 (45%)
Occasionally	111	34 (31%)	201	88 (44%)	312	122 (39%)
Regularly	111	13 (12%)	201	36 (18%)	312	49 (16%)

The purpose of the SMLTSA is to promote and regulate the profession of medical technology in South Africa (SMLTSA, 2004). The Society administers the CPD programme on behalf of the HPCSA and keeps members informed of CPD activities locally and nationally. The Society organises the national medical technology congress every second year. Certain SMLTSA branches organise CPD accredited evenings, workshops and mini-congresses.

According to the Society 20%-25% medical technologists and technicians ought to be members (SMLTSA, 2004) although 58% of the respondents indicated that they were members. The higher membership indicated in the questionnaire could be attributed to more

medical technologists and technicians being members of the Society because of CPD, or to the possibility that Society members are more inclined to respond to questionnaires. Non-membership was due to transport problems, the time constraints and because there was no branch of the Society in the vicinity of the respondents.

Members of the Society are automatically subscribers to the journal Medical Technology South Africa (MTSA) and receive it twice a year. As a subscriber to the MTSA members earn five CPD points per annum classified as other CPD activities summarised in Appendix 1.1 (HPCSA, 2002). By answering the questions to the articles in the journal, members could earn another three points per journal. Subscription to the MTSA and answering the questions caused a great deal of criticism by those who did not agree with these actions as CPD activities. Being a subscriber does not guarantee that the articles in the journal are read. One respondent indicated that her husband, with no medical background, was in a position to answer the questions. However, reading relevant articles and answering the questions was also an activity by physicians who participated in the Royal College of Physicians and Surgeons of Canada Maintenance of Certification Programme (Coblentz, 2001). These programmes were designed to assist specialists in identifying their educational needs (Coblentz, 2001). Membership of the Society also meant being informed of CPD activities and reduced or no entrance fees to some of the activities organised by the Society.

Only 16% of the respondents attended the SMLTSA academic events regularly. As expected, this was a bigger problem for respondents in rural areas as the activities are mainly presented in urban areas.

It is beneficial for every medical technologist and medical technician to be a member of the Society not only for the profession of medical technology, but also for collecting CPD credits.

A solution for those in rural areas who must travel far to attend SMLTSA meetings and CPD activities would be to form more sub-branches of the Society.

3.3.5 Continuing professional development

3.3.5.1 Participation

All HPCSA registered members were informed by the HPCSA of the compulsory CPD programme introduced in April 2002 (HPCSA, 2002). CPD categories were classified under organisational, small group, individual and other. In the questionnaire respondents indicated their level of participation in the first three categories mentioned, as well as reasons for not participating.

Forty-four percent (44%) of the respondents from urban areas believed that it would be possible to publish from routine laboratory work as there was sufficient material available such as interesting case studies. However, respondents indicated that they lack sufficient knowledge of research methodology (31%). Twenty-one (21) of the respondents mentioned that time was the problem for not attempting publications (Table 3.11).

Fifty-four percent (54%) and 55% respectively of the respondents from the rural areas indicated that they could help to present workshops in rural areas, or present courses or lectures. Journal discussions (56%) and attendance of short courses (69%) were well established in urban areas. Seventy-three percent (73%) of the total number of respondents indicated that they could initiate a small group activity (Table 3.11).

Fifty-five percent (55%) of the respondents attended seminars, national congresses or conferences, with 11% presenting a paper and nine percent (9%) presenting a poster (Table 3.11). Respondents were not always informed of organisational activities (16%). Financial constraints were a barrier to 29% of the respondents to attend activities. Five (5) respondents indicated that no leave was granted to attend activities and four (4) that they were limited by the fact that not everyone may attend congresses.

Table 3.11: Participation in individual, small group and organisational activities

	Rural respondents		**Urban respondents**		**Total respondents**	
Individual:						
Participation in publications	Total	Positive response	Total	Positive response	Total	Positive response
From routine work	113	29 (26%)	197	87 (44%)	310	116 (37%)
From research work	115	7 (6%)	203	33 (16%)	318	40 (13%)
Within the next five years	114	15 (13%)	193	46 (24%)	307	61 (20%)
No publications attributed to:						
Lack of knowledge of research methodology	121	53 (44%)	209	50 (24%)	330	103 (31%)
Not motivated or encouraged by senior staff members	121	37 (31%)	209	58 (28%)	330	95 (29%)
Would like to publish but lack experience	121	47 (39%)	209	41 (20%)	330	88 (27%)
Response to open-ended question on the reason for no publications:						
Time constraints	9		12		21	
Lack of academic facilities	4		7		11	

	Rural respondents		Urban respondents		Total respondents	
Participation in education:						
Assist as part-time lecturer	117	4 (3%)	203	35 (17%)	320	39 (12%)
Could help in rural areas – present workshops	102	55 (54%)	185	78 (42%)	287	133 (46%)
Could help in rural areas – present courses / lectures on relevant cases	99	54 (55%)	188	83 (44%)	287	137 (47%)
Could help in rural areas – distribute audiovisual recordings	100	52 (52%)	170	(34%)	270	110 (41%)
Participation in small group activities:						
Involved in journal discussions	107	32 (30%)	189	106 (56%)	296	138 (47%)
Departmental discussions	110	56 (51%)	183	121 (66%)	293	177 (60%)
Workshops	109	45 (41%)	183	93 (51%)	292	138 (47%)
Attend short courses	114	71 (62%)	193	134 (69%)	307	205 (67%)
Could initiate an activity	86	65 (75%)	119	85 (71%)	205	150 (73%)
Participation in organisational activities:						
Attend seminars, national congresses and / or conferences	114	44 (39%)	202	129 (64%)	316	173 (55%)
To attend only	121	42 (35%)	209	96 (46%)	330	138 (42%)
To present a paper	121	3 (2%)	209	33 (16%)	330	36 (11%)
To present a poster	121	4 (3%)	209	27 (13%)	330	31 (9%)
To act as chairperson or other capacity	0	0 (0%)	209	30 (14%)	330	30 (9%)
Reasons for not attending the above activities:						
Lack of information regarding activities	121	25 (21%)	209	27 (13%)	330	52 (16%)

	Rural respondents		Urban respondents		Total respondents	
Workload	121	40 (33%)	209	46 (22%)	330	86 (26%)
Financial constraints	121	47 (39%)	209	50 (24%)	330	97 (29%)
Do not wish to attend	121	4 (3%)	209	8 (4%)	330	12 (4%)
Comment to open-ended question – additional reasons for not attending the above activities:						
Staff shortage	2		3		5	
No leave granted	2		3		5	
Limited to who may attend	2		2		4	

Regarding individual CPD activities, including research, publications and formal education, respondents from the urban areas, compared with those from the rural areas, showed a greater interest in publishing from routine work and in participating in research work. This could possibly be attributed to the fact that medical technologists working in urban areas are more exposed to research conducted in their own laboratories or might even be involved in performing the analyses for research projects. This unfortunately does not mean that they are knowledgeable about doing research as respondents indicated that they lack knowledge of research methodology (Table 3.11). The subject research methodology is offered as part of the course B.Tech. in Biomedical Technology (CUT, 2005). Respondents not qualified in B.Tech.: Biomedical Technology or those with no prior exposure to research projects, would therefore find it very difficult to start off with a research project on their own. Lack of time was also given as a reason for not conducting research. Likewise, Leist and Green (2000) reported at a continuing medical education congress that physicians in the USA experienced time and knowledge to conduct research as important barriers to participating in the CME programme.

Collier *et al.* (2001) found that the lecturer spends many hours in preparing a new lecture and should be accredited accordingly. According to the CPD guideline (HPCSA, 2002), the presenter of an activity earns double the number of credits than the attendees earn for the same period. Respondents were willing to present workshops, courses or lectures on relevant cases in rural areas. The logistics of how and when these presentations could be offered are not so simple. Respondents requested that such presentations be offered on a Saturday or over a week-end at a central point in the specific rural area so that everybody in the vicinity would have an opportunity to attend. Fortunately a large number of those who answered in favour of presenting activities in rural areas were employed in rural areas.

Many respondents stated that they could initiate small group activities themselves. Small group activities are easy to organise and more accessible during working hours. Radiologists in Canada have a category called small group learning as part of their CPD programme, fairly similar to that suggested by the HPCSA (Shannon, 2000; HPCSA, 2002). Journal discussions were well established in urban areas, but people in rural areas experienced problems in obtaining journals. Short courses were also fairly well attended.

The main reason for medical technologists and technicians not being informed on organised CPD activities could be that they are not members of the SMLTSA or that they work in isolated areas with no interaction with other colleagues. The biennial national congress, organised by the SMLTSA *via* a branch of the Society, an organisational activity, is an ideal opportunity for earning CPD points. The view of most employers is that only those members who present at a congress will be allowed to attend the congress. This might explain why only 55% of the respondents attended congresses in the past. Respondents indicated that financial constraints and no leave granted were reasons for not attending congresses. Some

branches of the Society offer mini-congresses, well attended by branch members in the vicinity and are becoming very popular (SMLTSA, 2004).

In may be concluded that small group activities were the best attended by the respondents. Organisational activities were fairly well attended. Limited numbers of respondents were granted permission by their employers to attend congresses when offered away from home. Not many respondents found individual CPD activities accessible because they were not actively involved in research projects and lacked experience in publishing journal articles.

3.3.5.2 Perception of CPD

Respondents were requested to give a general indication of their perception of CPD. Sixty-two percent (62%) of the respondents from urban areas participated in the voluntary CPD programmes. A large percentage of the respondents (82%) believed that CPD would improve the quality of laboratory work. Many respondents (88%) were aware that they could lose their registration with the HPCSA if they do not comply with the CPD programme and 52% were informed about CPD activities and their credit allocation. Respondents realised that the CPD programme would entail annual personal expenses; 11% calculated that these personal expenses might be more that R4000 a year.

Table 3.12: Perception of CPD

	Rural respondents		Urban respondents		Total respondents	
	Total	Positive response	Total	Positive response	Total	Positive response
Participation in voluntary CPD programmes	111	45 (41%)	195	120 (62%)	306	165 (54%)
CPD improves the quality and standard of laboratory work	110	94 (86%)	194	153 (79%)	304	247 (82%)
Aware that CPD has became compulsory	119	110 (92%)	208	194 (93%)	327	304 (93%)
Could lose registration if one does not comply with CPD programme	120	109 (91%)	208	181 (87%)	328	290 (88%)
Informed about CPD activities	117	42 (36%)	208	128 (61%)	325	170 (52%)
Informed about CPD credit allocation	118	49 (42%)	204	120 (59%)	322	169 (52%)
CPD entails annual personal expenses	119	108 (91%)	199	169 (85%)	318	277 (87%)
Up to R200	102	9 (8%)	156	28 (18%)	258	37 (14%)
Between R201 – R1000	102	32 (32%)	156	75 (48%)	258	107 (42%)
Between R1001 – R2000	102	25 (24%)	156	26 (17%)	258	51 (20%)
Between R2001 – R3000	102	16 (16%)	156	12 (8%)	258	28 (11%)
Between R3001 – R4000	102	2 (2%)	156	4 (3%)	258	6 (2%)
R4001 or more	102	18 (18%)	156	11 (7%)	258	29 (11%)
Employers should contribute financially towards CPD activities	116	23 (20%)	204	39 (19%)	320	62 (19%)

It is generally accepted that the financial constraints involved in CPD activities should be cost effective as published by Du Boulay (1999) in the UK and Lannin and Longland (2003) in

Australia. Respondents to this questionnaire were very diverse in their expectations concerning the annual financial costs involved in participating in CPD activities would involve.

3.3.5.3 Electronic devices

The availability of electronic devices in the workplace was high as indicated by the fact that 98% of the respondents had access to the telephone and 92% had access to a fax machine. Unfortunately only 40% of respondents in the rural areas had access to e-mail (Table 3.13).

Table 3.13: Access to electronic facilities

Electronic facilities	Rural respondents		Urban respondents		Total respondents	
	Total	Positive response	Total	Positive response	Total	Positive response
Telephone	121	119 (98%)	209	203 (97%)	330	322 (98%)
Fax machine	121	114 (94%)	209	190 (91%)	330	304 (92%)
e-mail	121	48 (40%)	209	134 (64%)	330	182 (55%)

All three electronic devices, telephone, fax machine and e-mail are ideal communication sources for informing people of CPD activities. Most respondents had access to the first two devices but only 40% of the participants from rural areas and 64% from urban areas had access to e-mail. Electronic CPD activities are ideal in that people can participate in these activities at work or home, at a time that suits the individual (Falcone, 1999; Sectish, Floriani, Badat, Perelman and Bernstein, 2002). A successful case of participation in internet accredited CPD activities was published by Harris, Salasche and Harris (2001); where physicians participated in an online programme through which knowledge and skills on skin cancer were improved.

3.3.5.4 Obstacles to obtaining CPD credits

Sixteen (16) obstacles were listed and respondents were requested to indicate at least four that prevented them from taking part in CPD activities. One-hundred and seventy-one (171) indicated lack of time and 150 respondents experienced financial constraints as their major obstacles. Shortage of staff was a barrier to 105 respondents and 38 experienced travelling over long distances as a barrier.

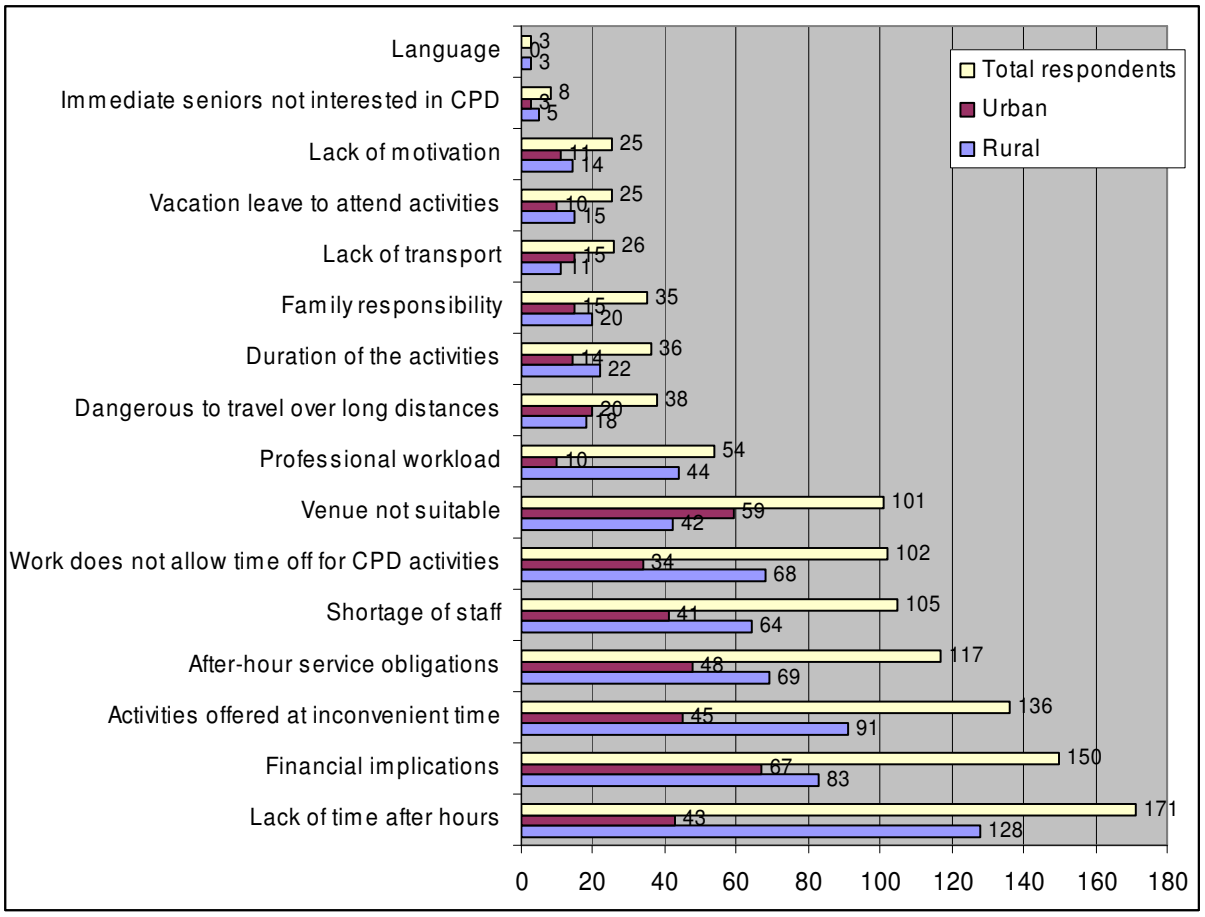

Figure 3.7: The number of respondents indicated their major problems for participation in CPD activities

A substantial number of respondents experienced lack of time after hours as a problem that impacted on their participation in CPD activities. A large number of the participants were involved in after hour service obligations. In some laboratories the workload was so high that no time was allowed off during working hours to participate in CPD activities. Falcone (1999) reported that shrinking resources means less time and money for staff members to attend educational seminars, a statement that is supported by the responses obtained from the present study. Some respondents indicated that activities were offered at inconvenient times. When a laboratory offers a 24-hour service, it follows that it would be difficult to get everybody together for CPD activities either during or after working hours.

A large number of respondents indicated that financial constraints were an obstacle to obtaining CPD credits. Financial implications in participating in the programme are a major barrier not only in South Africa but internationally in countries such as the USA and Australia (Hallam, 1985; Falcone, 1999; Lannin and Longland, 2003). Govier (1999) as well as Kerr and Vinjamuri (2001) stated that CPD programmes should be cost effective to the participant both in nursing and radiography. The respondents in rural areas believed that their personal expenses for CPD activities would be higher than those in urban areas (Table 3.12). Costs to attend CPD activities involve travelling, attendance fees and often also accommodation (Lannin and Longland, 2003). A small percentage of respondents expected their employers to contribute financially towards CPD activities. French and Rezler (1976) stated that paid time-off to attend professional meetings and continuing education programmes contributed to job satisfaction. As early as 1979, Fritsma, Matthews, Schoeff and Young indicated that technologists appeared to be willing to attend programmes in their own time and even at their own cost.

Other obstacles that contributed towards respondents not participating in CPD activities, were the shortage of staff, the venue of a scheduled CPD activity that did not always suit everybody, professional workload and danger of travelling long distances. The obstacle regarding travel mainly applied to those respondents from rural areas who attended activities in the cities. Family responsibilities were a problem especially to women with children. Blau, Tatum and Ward-Cook (2003) confirmed that work interfering with the family could relate to work exhaustion. Respondents stated that special leave was not always granted to attend CPD activities during working hours. According to Du Boulay (1999) protected time and study leave should be available for participants to attend CPD activities. A few respondents indicated that there was a lack of motivation from management for participating in CPD activities and that their immediate seniors were not interested in CPD.

3.3.5.5 CPD activities available

To implement CPD successfully in the medical technology profession it is necessary for medical technologists and technicians to be creative and identify CPD activities in their daily routine work. Nursing staff in the UK successfully identified CPD learning activities in the workplace, such as being part of the project team in a unit, work-shadow someone in a senior position or compile a patient information pack (Hinchliff, 1999).

Table 3.14: CPD activities during daily routine work

Possible CPD activities	**Rural respondents**		**Urban respondents**		**Total respondents**	
	Total	Positive response	Total	Positive response	Total	Positive response
Interesting case studies	114	88 (77%)	190	134 (71%)	304	222 (73%)

Possible CPD activities	Rural respondents		Urban respondents		Total respondents	
Sharing information with co-technologists	106	83 (78%)	178	135 (76%)	284	218 (77%)
Convey this information in a form of a lecture or presentation	101	68 (67%)	169	112 (66%)	270	180 (67%)
Take photo's of abnormalities	115	7 (6%)	184	71 (39%)	299	78 (26%)
Distribute glass slides or colour slides as presentation – local and / or national	104	41 (39%)	163	85 (52%)	267	126 (47%)
Report extraordinary cases	104	74 (71%)	161	101 (63%)	265	175 (66%)
Personnel from reference lab give presentations / lectures	96	79 (82%)	142	110 (77%)	238	189 (79%)
Visits by medical representatives	113	81 (72%)	188	161 (86%)	301	242 (80%)
Representatives inform you of the latest techniques	107	71 (66%)	185	134 (72%)	292	205 (70%)
Upgrading existing techniques with the latest on the market	117	26 (22%)	183	57 (31%)	300	82 (28%)
Would the lab benefit by such upgrading?	112	102 (91%)	163	145 (89%)	275	247 (90%)
Compare old and new techniques in the form of a presentation	103	23 (22%)	163	40 (25%)	266	203 (24%)
Your lab adopt a foster lab	104	50 (48%)	163	79 (48%)	267	129 (48%)
Journal discussions with a lab in the vicinity	110	96 (87%)	149	118 (79%)	259	214 (83%)
Obtain adequate information for journal discussions	106	52 (49%)	169	103 (61%)	275	155 (56%)

Lab = laboratory

As indicated in Table 3.14, interesting case studies were common among respondents in rural (77%) and urban areas (71%). According to 67% of the respondents, it was possible to share these case studies in the form of a lecture or presentation with immediate co-technologists or convey them as a form of lecture or presentation, locally or even nationally. Collier *et al.* (2001) reported that Canadian clinical chemists and clinical biochemists earn CPD credits by submitting case studies accompanied by questions to be answered by professionals in the group. In South Africa specific pathological abnormalities are regionally bound and this creates an excellent opportunity for technologists from one region of the country to share uncommon information with colleagues from another region and thereby earning CPD credits.

Seventy-nine percent (79%) of respondents indicated that personnel from reference laboratories could give presentations or lectures when visiting their laboratories. Representatives from medical companies were in the position to offer CPD accredited presentations when visiting laboratories, according to 70% of those who replied to the questionnaire. These representatives are usually well informed on the latest international developments in medical technology as observed in commercial journals such as Analytical and Laboratory Marketing Spectrum (LMN).

Journal discussion is a formal group learning CPD activity with the Canadian Society of Clinical Chemists and Clinical Biochemists, according to Collier *et al.* (2001), an activity that is also fairly well established in South Africa with respondents from urban areas, as observed in Table 3.11. Journal discussions with laboratory staff in the same town were a feasible option to 83% of the participants (Table 3.14). Respondents in rural areas, running a one-

person or small laboratory could organise journal discussions with medical technologists and technicians in their vicinity. This is a cost effective way to earn CPD credits in rural areas.

The idea of a bigger laboratory adopting a foster laboratory was well received by 48% of both rural and urban respondents (Table 3.14). In an open-ended question (Appendix 3.8), respondents could give their view of the feasibility of one laboratory adopting another. Feedback was received from rural and urban respondents. Twenty (20) respondents from urban areas and six (6) from rural areas stated the adoption of a small laboratory by a large, well-equipped one would improve the standard of work, as well as quality control, in the adopted laboratory. Seventeen (17) respondents reasoned that this type of laboratory interaction could assist in distributing the latest developments in medical technology to the adopted laboratories. Nine (9) respondents believed that it could contribute towards establishing a successful CPD programme. Participants stated that staff members of the adopted laboratory would have to give their full support. One respondent from Durban indicated that they had already adopted a laboratory.

3.3.5.6 The SMLTSA and CPD

The SMLTSA administers the CPD programme on behalf of the HPCSA (Table 3.15). Seventy-two percent (72%) of the respondents indicated that they had been informed that they should register with the SMLTSA for CPD administration. Seventy-nine percent (79%) of the respondents were informed that an activity must be accredited with the SMLTSA prior to its presentation. Respondents (88%) were informed that they must receive a certificate or sign an attendance form after attending an activity.

Table 3.15: The individual and the SMLTSA responsibilities pertaining to CPD credits

Awareness of the respondents	Rural respondents		Urban respondents		Total respondents	
	Total	Positive response	Total	Positive response	Total	Positive response
The individual has to register with the SMLTSA for CPD administration	119	88 (74%)	203	144 (71%)	322	232 (72%)
CPD activity must be accredited with the SMLTSA	118	92 (78%)	202	162 (80%)	320	254 (79%)
Must receive a certificate or sign attendance form after attending an activity	119	100 (84%)	205	185 (90%)	324	285 (88%)
Proof of attendance sent to SMLTSA	120	84 (70%)	202	154 (76%)	322	238 (74%)
SMLTSA informs the HPCSA of CPD credit status	120	77 (64%)	197	148 (75%)	317	255 (71%)

Participants were requested to give their expectations of the national CPD administration by the SMLTSA regarding response to queries, communication and providing information pertaining to CPD activities (Appendix 3.9). Twenty-seven (27) respondents indicated that feedback to queries regarding CPD activities needed improvement and 77 respondents expected feedback to queries within seven days. Ten (10) respondents requested that queries should be acknowledged.

Ninety (90) respondents expected regular communication between the individual and SMLTSA head office. Five (5) respondents indicated that they were not informed about the CPD programme prior to receiving this mailed questionnaire. Some participants to the

questionnaire (39) expected an official handout about the CPD programme and 29 respondents requested to be informed about accredited CPD activities by the SMLTSA.

Four positive remarks regarding the role of the SMLTSA in administering CPD were received, namely that the respondents were previously satisfied with the administration of the SMLTSA, respondents were of the opinion that CPD was experiencing teething problems and that the administration will improve, information concerning CPD was received through the MTN and a satisfactory list of CPD activities was received from the SMLTSA by the private pathology laboratories.

The success of a CPD programme is based on the efficiency of the administration of the programme (Eraut, 2001). A large number of participants indicated that they were informed by the PBMT about the procedure to be followed in collecting CPD points and in accrediting a CPD activity with the SMLTSA. However, those respondents who indicated that they were not informed of all the procedures (12% - 29%) were a cause for concern (Table 3.15). It means that those respondents never participated in any CPD activities and were in no position to claim those credits to which they were entitled.

At the time of the survey the administration of the CPD programme by the SMLTSA did not comply with the respondents' requirements. The participants experienced a lack of communication between themselves and the SMLTSA as well as with the HPCSA. Respondents wanted to be informed timeously of CPD activities and their personal CPD point allocation. Those who received and read the MTN were informed of the latest developments pertaining to CPD (Van Rijswijk, 2004).

3.3.5.7 Assistance to medical technologists and technicians in rural areas

Participants were requested to make suggestions for ways in which the SMLTSA, academic laboratories and medical companies could assist rural laboratories in obtaining CPD credits (Appendix 3.10). Twenty-seven (27) respondents from rural and 24 from urban areas requested that presentations in the form of articles, discussions and videos with a questionnaire for credit allocation should be made available to rural laboratories. Twenty-one (21) participants asked for the presentation of seminars, workshops, lectures and courses and the same number of respondents requested electronic presentations. Six respondents (6) admitted that rural laboratories needed guidance in organising talks and journal discussions.

Thirteen (13) medical technologists and technicians from rural laboratories indicated that, in order for them to participate in CPD activities they needed physical support such as the provision of journals, newsletters and overhead projectors. Three (3) respondents asked for replacement staff whilst attending CPD activities away from home as was suggested by Du Boulay (1999) in the UK thereby preventing the temporary closing down of the laboratory. Twenty-one (21) respondents requested that activities should be offered on a Saturday or over week-ends making it possible for a larger number of respondents to attend.

In response to the open-ended question requesting suggestions for ways in which staff members from rural laboratories could be assisted to earn CPD credits, the answers were overwhelming. Suggestions from respondents were that presentations with questionnaires for credit allocation, seminars, workshops, lectures and courses should be made available by the SMLTSA, academic laboratories and medical companies to people in rural areas.

Respondents requested training courses, refresher courses, journals and overhead projectors to enable those from rural areas to establish their own CPD activities.

Respondents requested electronic CPD activities. New electronic courses for CPD are continuously being developed as indicated by Murfitt and Peyton (2000) in the UK who were in the process of developing a course for physicians.

3.3.5.8 Additional responses to the open-ended question

Irrelevant responses were also made to the open-ended question on assistance to medical technologists and technicians from rural laboratories in obtaining the annual CPD credits (Appendix 3.11). Respondents were unhappy at not being consulted prior to the implementation of the CPD programme. They were unhappy with the annual CPD point allocation and requested a general lower point allocation or a difference between point allocation in rural and urban areas. Respondents were unhappy with the NHLS, the SMLTSA and the CPD programme. They requested equal opportunities for all the staff members to attend CPD activities. Qualified medical technologists and technicians not currently employed were concerned that they might lose their registration with the HPCSA for not participating in CPD activities.

Respondents complained about the travelling costs, and the distance they need to travel for one CPD point. Despite their negativism however they saw CPD as training and developing opportunities and would like to continue with further education and start research projects in their individual laboratories.

It became clear that respondents were not in agreement with the annual CPD point allocation expected of all registered medical technologists and technicians (Appendix 3.11). The financial costs involved and time spent on travelling to and from activities were major concerns to those from rural areas. Similar concerns were raised by dietetic professionals in the USA as described by Keim *et al.* (2001). Respondents who were not practising their profession at the time of the survey, but intend to practice medical technology in future, were concerned that they might lose their registration. Losing their registration was also raised as a concern by dietetic professionals in the USA (Keim *et al.,* 2001).

RESULTS OF THE INTERVIEWED QUESTIONNAIRE

Thirty-three (33) medical technologists and 17 technicians were interviewed by means of a structured interview questionnaire.

3.3.6 Geographic information

Thirteen (13) of the participants were from rural areas, 26 from sub-urban and 11 from urban areas, in total 22 places, covering all nine provinces of South Africa (Table 3.16).

Table 3.16: Participants interviewed in places throughout South Africa

Province	Places visited	Total participants
Western Cape	Beaufort Wes, Somerset West, Paarl	6
Free State	Bloemfontein	5
Northern Cape	Kimberley, Upington, Kuruman	9
North West	Tshuragano, Vryburg, Ganyesa, Taung	6

Province	Places visited	Total participants
Limpopo Province	Letaba, Tzaneen, Phalaborwa, Namakgale	9
Mpumalanga	Themba, Nelspruit	6
Kwazulu-Natal	Newcastle, Ladysmith	4
Eastern Cape	Queenstown, Cradock	4
Gauteng	Vanderbijlpark	1
Total	**22 Places**	**50**

3.3.7 Demographic information

In response to questions on gender, age, qualifications and language spoken the following information was gathered. Seventeen (17) men and 33 women were interviewed. Their ages varied from 23 to 58, with an average of 41 years. Twenty-three of those interviewed were 40 years and younger, 19 were between 41 and 50 years and 8 were between 51 and 58 years old.

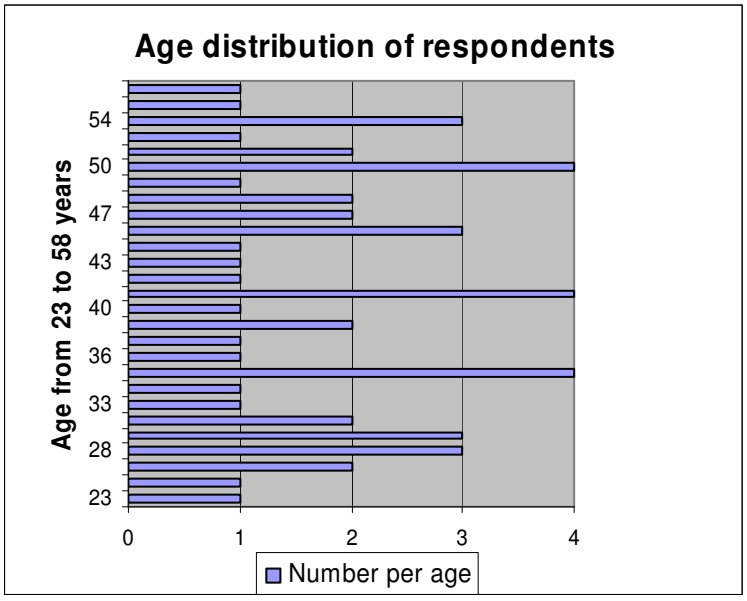

Figure 3.8: Ages of the interviewed participants varied between 23 and 58 years

One (1) technician and two (2) technologists were qualified in three (3) specialised categories and three (3) technologists had two specialised (2) qualifications each. Similar to the results obtained from the mailed questionnaire survey, clinical pathology was the most popular qualification with 25 participants who indicated their specialised category as clinical pathology.

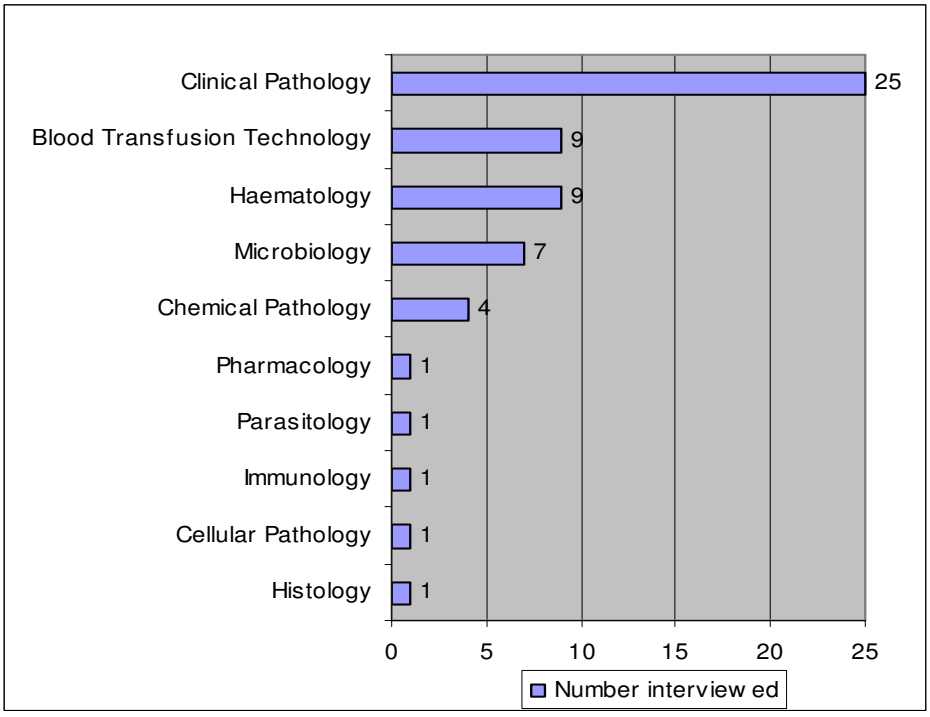

Figure 3.9: Fifty (50) respondents with 59 specialised qualifications

Some of the participants obtained additional qualifications. One (1) participant intended enrolling for a PhD. Table 3.17, depicts the qualifications obtained by those interviewed.

Although South Africa has 11 official languages, most respondents spoke Afrikaans (23) and English (10) at home (Figure 3.10). Eight (8) respondents indicated that they spoke Setswana. Five (5) of the other indigenous languages were also spoken by the respondents.

Table 3.17: Total qualifications obtained in the interviewed group

Qualification	Number	Year and / or period qualification(s) obtained
Technician Certificate	19	1975 – 2001
ND Biomedical Technology	9	1993 – 2001
ND Medical Technology (Professional Board Qualification)	32	1968 – 2003
B.Tech or NHD in Biomedical Technology	7	1992 – 2002
M.Tech Biomedical Technology	1	2003
BSc	2	1985 and 1999
B.Med.Sc	1	1989
NHD Management	1	1992
Nursing qualification	2	Not asked
Total	**74**	

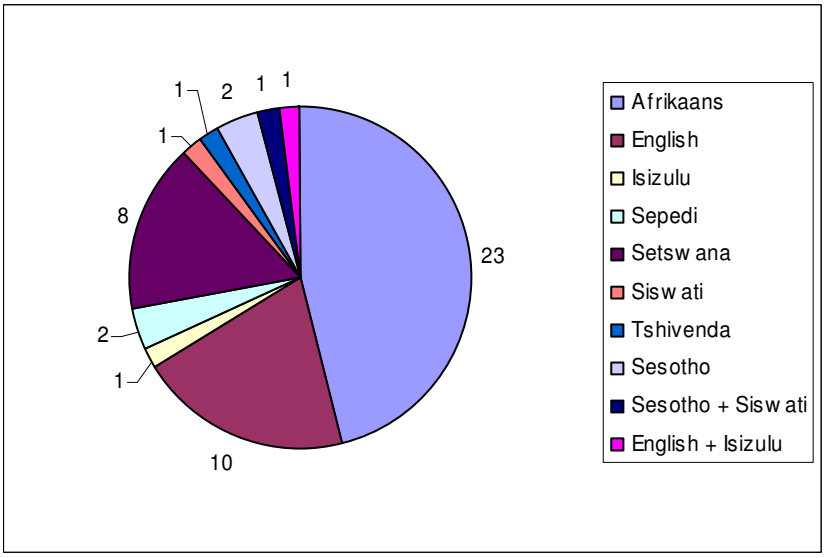

Figure 3.10: Languages spoken at home

In the work situation a combination of English and Afrikaans were spoken (26), or only English (7) or only Afrikaans (2) with the rest of the participants speaking English and one (1) of the other official languages (Figure 3.11).

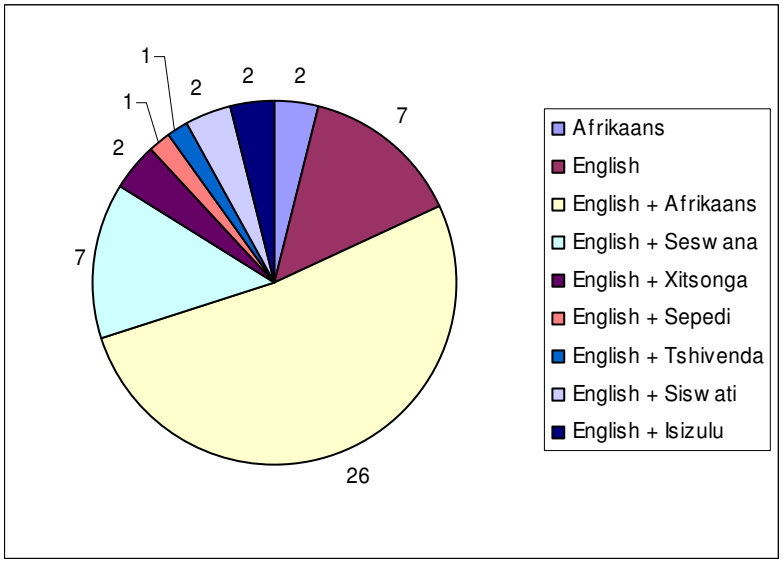

Figure 3.11: Languages spoken at work

From the results obtained it was evident that a heterozygous group of medical technologists and technicians were interviewed scattered over a large area of South Africa, which was one of the objectives of the interviews. The male:female ratio of those interviewed was 1:2, thus not completely representative of the ratio currently in the profession, which, according to Blau and Tatum (2000), was a 70% or more, female dominance. The age distribution, average of 41 years, included participants with many years and others with hardly any laboratory experience, thus a well representative group with relevance to experience in the profession.

Clinical pathology as a specialised category includes haematology, chemical pathology and microbiology, the basis of pathological analysis in a routine laboratory and therefore the most suitable qualification for working in a laboratory in rural areas. According to Hallworth *et al.*

(2002) a laboratory in rural areas should serve the needs of the local population with the inclusion of some aspects of specialist service. Twenty-five (25) of the participants were qualified in clinical pathology. Some of them worked in specialised categories for which they were not suitably qualified, as required by the HPCSA (HPCSA, 2005), though they intended to obtain additional specialised qualifications according to their verbal responses (not documented). Nine technicians interviewed at blood banks were qualified accordingly.

Participants with different cultural backgrounds were interviewed. Some spoke Afrikaans or English at home and 17 respondents spoke indigenous languages. The official language at work was English, with the exception of two respondents.

The diversity of the participants in the interviewed questionnaire substantiates the fact that a CPD programme should be flexible in providing opportunities for individuals' requirements and accessibility to CPD activities.

3.3.8 Employment

The main employers of medical laboratory workers in South Africa were the NHLS, private pathologists and the blood transfusion services (Figure 3.12). Twenty-four (24) of the participants were employed by the NHLS, nine (9) by the blood banks and nine (9) by private pathologists. Twenty-five (25) of the respondents indicated that their laboratories were registered to train medical technologists and technicians. Six participants were employed in HPCSA accredited laboratories.

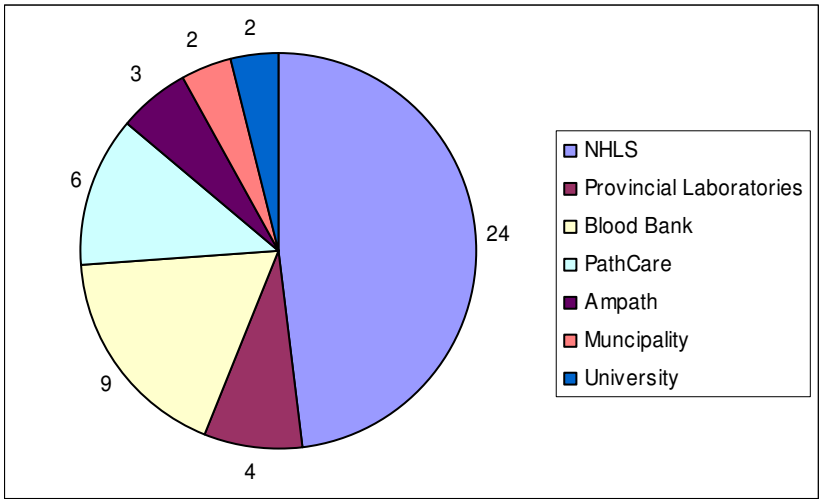

Table 3.12: Employers of the participants

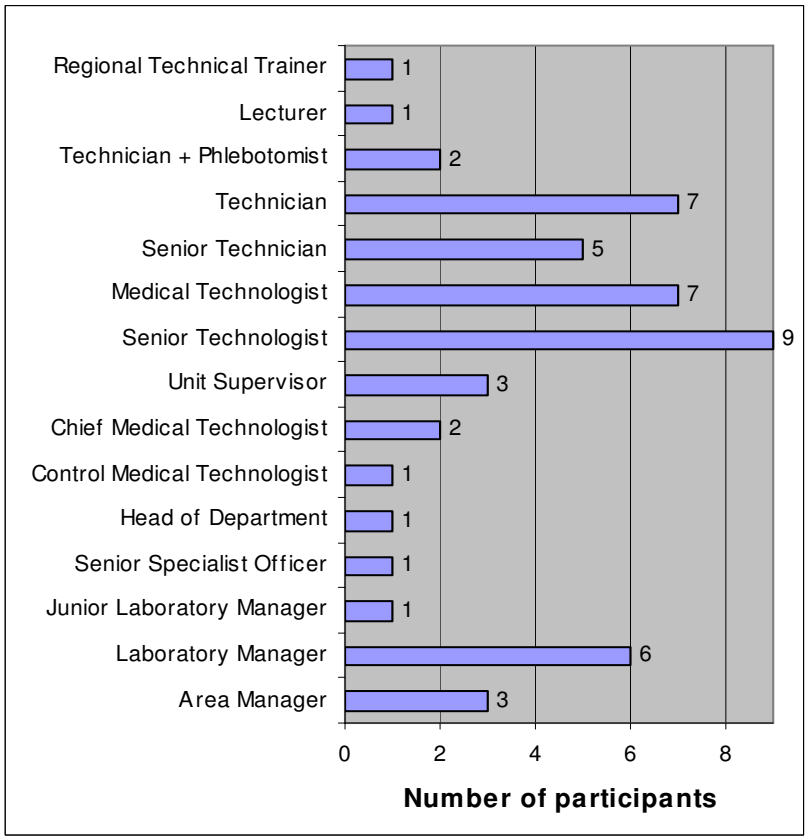

Figure 3.13: Positions occupied by the respondents

The respondents occupied 15 different positions and their job descriptions varied from working on the bench to lecturing (Figure 3.13). Two (2) people employed as educators were one (1) full-time lecturer at a higher education institution and one (1) regional training officer in a blood transfusion service. Two (2) qualified nurses were also qualified as technicians and employed in the blood transfusion services.

Table 3.18: Responsibilities at work

Main task at work	**Number**
Laboratory bench work	18
Supervising a section in the laboratory plus bench work	6
Supervising a department plus bench work	14
Supervising a department	1
Supervising plus organising a department	5
In control of a number of laboratories spread over an area	2
Administrative	1
Phlebotomy	2
Research	1
Training	1
Lecturing	1

Judging from responses to open-ended questions in the mailed questionnaire it was evident that job dissatisfaction was experienced by some respondents (Appendix 3.11). Specific questions relating to job dissatisfaction were therefore included in the interviewed questionnaire. According to this survey 22% of the participants experienced job dissatisfaction, whilst 26% remained neutral. Thirty-one (31) of the participants admitted that they experienced a change in job satisfaction during the last five years.

Reasons rated highest as possible causes of job dissatisfaction were salaries (36 respondents), working hours (31 respondents) and staff shortage (31 respondents). An additional reason given was that medical technologists were not respected by other professionals in the hospital.

Fourty-two of the respondents experienced responsibility pressure. Only 19 (38%) of the participants indicated that they would choose the same career again if given the choice.

Table 3.19: General perceptions of work environment

Statement	**Positive response**	**Negative response**	**Neutral**
Experience job satisfaction	26 (52%)	11	13
Job satisfaction changed during last five years	31 (62%)	16	3
Effective career counselling would improve job satisfaction	43 (86%)	2	5
Effective communication between superiors and bench workers would improve job satisfaction	47 (94%)	0	3
Reasons for job satisfaction: • Technological improvement in the private laboratories • Promotion • Independent research decisions • Current position more challenging	**Reasons for job dissatisfaction:** • NHLS – insecure / shortage of staff • Manager's position – not recognised accordingly • Isolated – would like to continue education • Frustrated because of equipment		
Attitude towards the occupation influenced by:	**Positive response**	**Negative response**	**Neutral**

Statement	Positive response	Negative response	Neutral
Salary	36	10	4
Working hours	31	17	2
Staff shortage	31	16	3
Irritations at work	30	14	6
Job insecurity because of the NHLS / rumours	15	26	9
Stress levels at work	25	18	7
Stress levels at home	7	36	7
Career burnout	13	30	7

Additional reasons:

- Unhappy because of salary / overtime payment
- Profession not respected by fellow hospital workers
- Responsibility – too much / not appointed in position but must take the responsibility
- Management problems
- One person laboratory – replacement when attending CPD activities in the next town

Perception of the job:	Positive response	Negative response	Neutral
Experience responsibility pressure – must do the job correctly and quickly	42	8	0
Experience intrinsic rewards – internal satisfaction	32	5	13
Experience extrinsic rewards – working conditions and fringe benefits	16	14	20
Manual tasks replaced by modern technology – cause for dissatisfaction?	16	25	9
Manual tasks replaced by modern technology – respondent affected?	15	29	6
Would have chosen the same career when young	19	21	10
Recommend job to young people	27	16	7

Statement	Positive response	Negative response	Neutral
Elaborate on work integrity: • Automated techniques – workload requires automation • Medical technology training – training excellent but students lack basic scientific knowledge			

Participants were employed by the NHLS, private pathologists, blood banks, provincial laboratories, universities and the municipality. Respondents from the blood banks and to a lesser extent those from private pathologists were not overly concerned about the CPD programmes because opportunities to participate in CPD activities were created by their employers. Unfortunately this was not the case with the NHLS.

Their positions at work and in the job descriptions varied from routine bench workers to the manager running the laboratory or area manager controlling a couple of laboratories in a specific area. Qualified nurses appointed in blood banks to do phlebotomy, often complete the technician's course in blood transfusion technology, to assist with laboratory bench work, as was the case with two of the participants. One respondent, a training officer in the blood bank, was responsible for training technicians within a certain area. Two participants were employed at universities; one involved in research full-time and the other a full-time lecturer. This is a situation predicted by Harmening, Castleberry and Lunz (1995) that when medical technologists advance in their profession they might go into research or lecturing.

Job dissatisfaction is well documented in the medical technology profession. Similarly, a number of respondents indicated that they experience job dissatisfaction for a number of reasons, e.g. shortage of staff, awkward working hours, salaries, isolation and automation of techniques, to name a few. A change from job satisfaction to job dissatisfaction was

experienced by some respondents during the last five years. This could be attributed to the formation of the NHLS, where participants experience a shortage of staff and job insecurity (Table 3.19). Long and awkward working hours influenced the respondents' attitude towards their occupation. The awkward working hours was one of the reasons Monahan (2001) in the USA gave for young people not interested in medical technology. The respondents were unhappy about their salaries and overtime pay. Frazer and Sechrist (1994) listed poor pay as one of the stressors causing job dissatisfaction among medical technologists in the USA while Pitt and Sands (2002) gave poor pay as a reason why medical technologists in the UK did not feel valued.

One respondent from a rural area indicated that she wanted to continue her education but felt very isolated. Kushnir, Cohin and Kitai (2000) referred to professional isolation when professionals lack educational opportunities due to the lack of professional interaction and stimulation. Some of the respondents felt that medical technologists are not respected by fellow hospital workers. Hallam (1985) and Byrd (1998) found that this was the case where medical technologists were called 'the girl in the white coat' or 'the nurse'. Matteson and Ivancevich (1982) stated that communication in the laboratory should improve, as confirmed by 94% of the respondents. Lehman and Leiken (1990) asked whether automation of techniques contributed to job dissatisfaction and 32% of the respondents agreed, but admitted that to finish the amount of work, automation was a necessity. In a study by Frazer and Sechrist (1994) on stressors experienced by medical technologists, equipment breakdowns were rated the highest stressor.

Those respondents experiencing job satisfaction gave reasons such as improvement in laboratory equipment, promotions and performing individual research projects. Thirty-eight

percent of those interviewed would have chosen the same career and 54% would recommend the career to young people.

The respondents were employed by a variety of employers, filled different positions and their responsibilities were diverse. Job dissatisfaction was definitely experienced by 22% of the respondents, but the majority experienced job satisfaction.

3.3.9 Continuing professional development

3.3.9.1 The attitude to and perception of CPD

The reasons respondents gave for attending CPD activities were to collect the CPD points (27) and to keep up with the latest developments (30) in medical technology. Balanchandran and Branch (2001) reported that cytotechnologists in the USA ranked the following reasons very high for their participation in the CPD programme; namely professional development and improvement, professional commitment and collegial interaction, professional and personal benefits and professional service.

Thirteen (26%) of the participants experienced a positive atmosphere towards CPD at work. The general attitude of employers towards CPD, as observed by the participants, was 80% in favour of CPD.

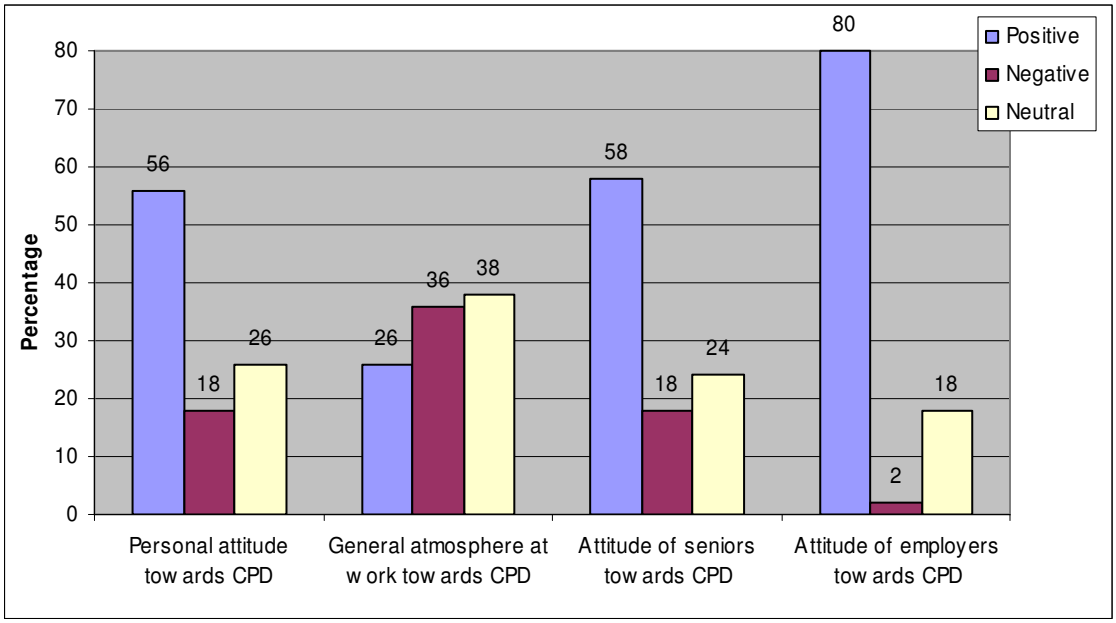

Figure 3.14: Attitude to and perception of CPD (individual and in groups)

Most of the participants believed that CPD, when administered correctly, would be beneficial to the profession. Eighty-eight percent (88%) of the respondents experienced CPD as beneficial to the individual and 90% were of the opinion that the profession would benefit by CPD activities (Table 3.20).

Journal discussions in the workplace were a possibility for 33 of the respondents and journal discussions with staff from other laboratories in the vicinity for 31 respondents. Presenting case studies to their immediate colleagues was possible for 60% of those interviewed.

Table 3.20: Foresee CPD as beneficial or not beneficial to the career

CPD beneficial or not beneficial	Positive response	Negative response	Neutral
Individuals will benefit from CPD	44	2	4

CPD beneficial or not beneficial	**Positive response**	**Negative response**	**Neutral**
Situation at work will benefit from CPD	43	2	5
CPD could result in feeling / jealousy among laboratory staff	25	17	8
Some staff members would spend more time on CPD activities and thereby neglect routine laboratory work during working hours	19	26	5
The latest technology in medical technology will be implemented through CPD	40	3	7
CPD will uplift the standard of the laboratory (outputs / results)	44	1	5
Profession / occupation of medical technology will benefit by CPD activities	45	1	4
Dishonesty in declaring CPD credits	27	20	3
Temporary close-down of laboratory to attend CPD activities	13	28	9

Additional comments:

- All staff members should have equal opportunities during working hours to attend CPD activities
- Some staff members will use CPD as an excuse to get time off from work during working hours
- Very informative when presentation combines clinical conditions with laboratory results
- The success of the CPD programme will be determined by the efficiency of its administration

Opportunities at work to earn CPD points	**Positive response**	**Negative response**	**Neutral**
Journal discussions in workplace	33	16	1
Journal discussions with staff from other laboratories in vicinity	31	18	1
Presenting case studies to immediate colleagues	30	17	3
Presenting slide (Kodachrome / glass) presentations with a questionnaire to fellow-workers	25	24	1

CPD beneficial or not beneficial	Positive response	Negative response	Neutral
Presenting case studies to staff at other laboratories	26	22	2
Presenting or distributing unique laboratory results with a questionnaire – nationally	17	24	9
Organising a workshop	23	23	4
Requesting visiting representatives to give presentations	30	18	2
Requesting staff from supervising laboratories to give presentations	20	23	7
Foster laboratory supervision – beneficial to supervising laboratory	39	5	6
Foster laboratory supervision – beneficial to foster laboratory	39	5	6

All those interviewed had fax facilities at work and 40% (20) had e-mail facilities. Randell (2001) found that e-learning for continuing education can be particularly helpful to people working in small towns and rural areas.

CPD not only pertains to knowledge and skills, but also to attitude (Du Boulay, 1999). The perception was that the majority of employers' attitude towards CPD was positive. The attitude to CPD at work of 36% of the respondents was negative, though the personal attitude and that of the seniors was better. CPD can only be successfully implemented if the attitude of the recipients becomes positive.

The respondents' perception of CPD was that the individual as well as the profession would benefit by participating in CPD activities, the situation at work will be improved by CPD and CPD will uplift the quality of work delivered by the laboratory. In contrast, however, some respondents foresaw that in certain instances the temporary closing of a laboratory to attend CPD activities would be unavoidable with a negative impact on service delivery.

The possibility that people might be dishonest in claiming CPD credits did exist. Taylor (1996) reported that town planning professionals could probably 'make up' a plausible CPD record.

Opportunities at work to earn CPD credits should be promoted. Some of the respondents indicated that journal discussions, case studies and presentations by visiting representatives could be implemented. Foster laboratory supervision should count towards CPD credits for the supervising laboratory as well as for the foster laboratory.

It may be concluded that a positive attitude is needed for the successful implementation of CPD. The respondents agreed that CPD will be beneficial to the individual and the profession.

3.3.9.2 Obstacles already identified

Outcomes of the mailed questionnaire survey indicated that the time factor, financial implications and travelling distances were major obstacles to collecting CPD points. It was therefore important to determine to what extent these barriers were affecting respondents who were interviewed.

Table 3.21: Obstacles identified from the mailed questionnaire

Time	Positive response	Negative response	Neutral
Time available during working hours for CPD activities	18	26	6
Time available after working hours for CPD activities	26	20	4

CPD activities offered at inconvenient times	27	9	14
General impression of time as an obstacle: • The combination of time away from work plus distance to travel • Overtime shifts – difficult to attend activities / damper to further qualifications • CPD activities during working hours – determined by workload at time of activity • Solution – internet and postal activities could be carried out in own time • Involved in offering CPD activities – shortage of time for preparation			
Financial	**Positive response**	**Negative response**	**Neutral**
Foresee attendance at local CPD activities will entail personal expenses	28	19	3
Attending congresses, seminars and workshops at personal expenses	32	16	2
Organisation supplies journals for journal discussions	17	27	6
General impression of financial aspects as an obstacle: • Request that costs to some activities be partly sponsored by employer • Some activities attended were very expensive • Journals provided by head office or available from internet • Employers (PathCare, Ampath and SANBS) provided financial assistance for CPD activities			
Travelling	**Positive response**	**Negative response**	**Neutral**
Find travelling to CPD activities expensive	33	14	3
Find travelling to CPD activities dangerous	26	21	3
Have to travel long distances to attend CPD activities	41	9	0

General impression of travelling as an obstacle:

- Travelling was a major problem to some
- Travelling at night dangerous – especially when only women are in the car
- NHLS should consider contributing towards expenses
- Reduce travelling – participate in activities on the internet
- Travelling expenses paid by private pathologists and SANBS

Other	**Positive response**	**Negative response**	**Neutral**
Venues for CPD activities suitable	28	5	17
In the past – took vacation leave to attend CPD activities	8	40	2
Allowed to take special leave to attend congresses / workshops and seminars	28	16	6
Experience a lack of motivation for CPD	26	17	7
Find 50 CPD credits acceptable	22	23	5
Believe annual CPD credits for rural and urban areas should be the same	17	28	5
Restricted in participating in CPD activities because of family responsibilities	24	23	3

General comments to the last obstacles:

- Point allocation – same in rural and urban areas - the same profession and should be equally knowledgeable
- Point allocation – same points to avoid feelings and double standards
- Point allocation – hard to obtain for those in rural areas – should be fewer

3.3.9.3 Results of obstacles and discussion

Twenty-six (26) respondents had no time available for CPD activities during working hours, 20 respondents had no time available after working hours and 27 respondents found that CPD was offered at inconvenient times. Time to attend activities was a problem with those participants who preferred CPD activities being offered during working hours and others after hours. General health practitioners in the UK were always under heavy time constraint and found it very difficult to participate in CPD activities (Carter, O'Hara, Wright, Benato, Mott and Clarke, 2003).

Financial implications were the other major barrier experienced by the participants. Twenty-eight (28) respondents expected that attendance at local CPD activities would cost them money, and 32 expected the same of national activities. Expenses included the attendance fees, transport and in certain cases accommodation. According to Du Boulay (1999), Govier (1999) and Lannin and Longland (2003), CPD should be cost effective. The combination of shortage of time, lack of funds and long distance travelling were the major problems experienced by occupational therapists in rural Australia when attending CPD activities in metropolitan areas (Lannin and Longland, 2003). Some private pathologists and the SANBS provide financial support for CPD activities.

Travelling to CPD activities was expensive for 33 respondents, 26 experienced travelling as dangerous, while 41 had to travel long distances to attend activities. Medical technologists and technicians working in rural areas must travel to attend CPD activities and in those instances it is impossible to separate travelling from financial constraints and the time factor. Du Boulay (1999) suggested that when activities take place outside of the workplace employers should grant staff time off or allow for study leave.

Fifty-four percent (54%) of the participants had no access to journals for journal discussions. This was a problem for those with no medical libraries in the vicinity and when journals were not supplied by the employer. Additional obstacles mentioned were special leave not granted to attend congresses and / or workshops by 16 respondents and family responsibilities were a problem for 24 respondents.

The accumulation of the required number of credits a year were acceptable to some but not to others. The credit allocation is in the process of being reduced to fewer credits required per annum with a longer expiry period (HPCSA, 2004[a]).

3.3.9.4 Solutions and discussion

Respondents were requested to suggest possible solutions to overcome the obstacles in gathering CPD credits. Fifty (100%) participants indicated that presentations should be taken to rural areas (Figure 3.15). Roberts and Scott (1988) indicated that five allied health professions in rural California preferred to attend CPD activities locally.

Thirty-three (66%) participants were in favour of a locum replacing them while attending activities in another town although they were sceptical about the feasibility of a locum. Du Boulay (1999) suggested replacing the employee by a locum when activities take place outside of the workplace.

Other solutions mentioned were participation in accredited CPD activities on internet and to establish a video and / or journal library. To administer the latter would be another barrier to overcome. Lannin and Longland (2003), reported that occupational therapists in rural

Australia, found e-mail, video-conferencing and internet-based programmes to be a solution with the limitation that it lacked personnel interaction.

Where articles for journal discussions are a problem, respondents should be on the look out for trade journals (Laboratory Marketing Spectrum, Analytical) which in many cases are distributed free of charge to most laboratories. Falcone (1999) reported that medical technologists in the USA obtained valuable articles from trade journals for journal discussions. Additional information could be obtained from the MTN which is distributed to all registered technologists and the MTSA to all members of the Society. A SMLTSA branch provided articles with questionnaires to be answered to a respondent running a one-person laboratory, an example that should be followed.

Participants suggested that the NHLS should be of more assistance to their employees concerning the CPD programme. Further suggestions were that people working in rural areas should initiate activities themselves.

The major barriers, namely time, costs and travelling to obtain CPD credits as identified from the mailed questionnaire were confirmed by the participants in the interviewed questionnaire. People working in rural areas will experience more difficulty in obtaining CPD credits and will find it more costly to collect the required number of annual points.

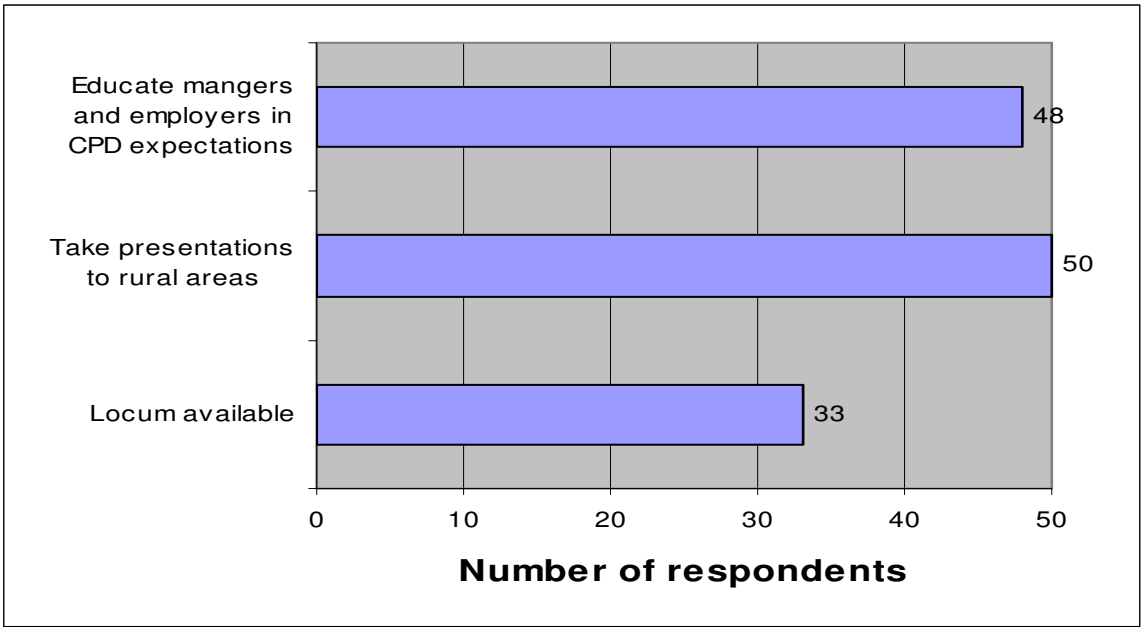

Figure 3.15: Possible solutions to overcome some of the obstacles identified

A number of possible solutions to overcome barriers were presented by the respondents. These solutions could be implemented in a framework to facilitate a successful CPD programme for medical technologists and technicians.

3.3.10 Involvement of the SMLTSA

CPD activities are organised by local SMLTSA-branches. Eighteen percent (18%) of the participants requested that more branches be formed and 62% would like more sub-branches to be formed.

Table 3. 22: Society as a means of enhancing CPD programmes

Statement	Positive response
Society to offer CPD activities to members in the urban areas	49 (98%)
Society to offer CPD activities to members in the rural areas	49 (98%)
As administrator of CPD on behalf of HPCSA - should reply to queries	49 (98%)
As administrator of CPD on behalf of HPCSA – provide information on CPD activities	50 (100%)
Request more SMLTSA branches	9 (18%)
Request that SMLTSA sub-branches be formed in rural areas	31 (62%)
As SMLTSA members increase – CPD activities should increase accordingly	39 (78%)
Members of main branches should reach out to laboratory staff in rural areas	46 (92%)
All race groups to have equal opportunities to become members of the society	48 (96%)

Participants requested that the Society should offer CPD activities not only in the urban but also in the rural areas. According to the participants the Society should respond to queries about CPD and keep participants informed of CPD activities. The participants also felt that an increase in the number of sub-branches would make membership of the Society more accessible.

Non-documented information conveyed during the interviews made it clear that medical technologists and medical technicians where not properly informed about the CPD programme. Those participants from isolated laboratories in the rural areas who received the information from HPCSA (HPCSA, 2002), either did not understand or did not read the instructions. Members of the Society and respondents living closer to bigger cities were better informed.

3.3.11 Contribution of people in managerial positions to CPD

The request was that only those in managerial positions should complete this section. Twenty-three (23) participants responded. Only ten (10) respondents were familiar with the concept lifelong learning. Nine (9) and eight (8) respondents respectively indicated that representatives or pathologists should give presentations to their staff members. Thirteen (13) could not assist their personnel in completing forms claiming CPD credits.

Table 3.23: The attitude of employers and / or managers towards CPD

Topic	Statement	Positive response
Employers / managers	Familiar with the concept - lifelong learning	10 (43%)
	Offer CPD accredited presentations	6 (26%)
	Organise workshops for CPD	3 (13%)
	Invite representative to educate staff on the latest technology for CPD points	9 (39%)
	Invite pathologists / medical practitioners to give presentations for CPD points	8 (35%)
Skills development	Institution to contribute towards Skills	11 (48%)
	Money contributed towards Skills – to cover some CPD activities	7 (30%)
Time	An hour per week during working hours spent on CPD activities	11 (48%)
	An hour per week before, during lunch time or after working hours set aside for CPD activities	10 (43%)
	Organise special leave for staff to attend workshops / congresses on rotation	14 (61%)

Topic	Statement	Positive response
	basis	
Motivate	Personal attitude to CPD - encourage staff members to participate in CPD activities	14 (61%)
Comment	Some staff members need the extra motivation	1 (2%)
	Respondent participated in CPD activities	18 (78%)
Administration of CPD	Advise the staff on how to obtain CPD credits	13 (66%)
	Assist the staff in completing forms to accredit a CPD activity	10 (43%)
	Assist the staff in completing forms for claiming CPD credits	10 (43%)

Fewer than half of the respondents in managerial positions were familiar with the concept of lifelong learning. Very few had in the past offered accredited presentations or workshops. Not many invited representative from medical companies or pathologists to offer CPD accredited activities to their staff members. Less than half of the participants were fully informed or involved in the CPD programme. In contrast to the negativism to CPD by the majority of the respondents, some responding managers were positive about CPD and were involved and motivating their staff to participate in CPD activities.

3.3.12 Suggestions for implementation of CPD activities

At the end of each interview participants made suggestions for the implementation of CPD activities. The comments are summarised in Table 3.24.

Table 3.24: Suggestions for CPD activities

Statement	Suggestions:
As an employer / manager or routine worker	**Suggestions for CPD activities:** • Journal clubs – foresee administration thereof as a problem • Postal or internet activities with feedback for CPD credits • Videos with questionnaires • Availability of journals
Managers / employers educated about lifelong learning – implement CPD	**Suggestions on how this could be done:** • Medical companies advertise and inform through the MTN*, Analytical and the LMS** • Academic events through the society • Internet
According to literature hands-on CPD activities – more lasting impression	**Suggestions that apply in laboratory:** • Respondents in favour of hands-on workshops • One suggestion was that higher education institution and laboratories offer workshops in combination
Every smaller group should have a CPD representative	**Suggestions on how this could be done:** • Representatives exist in George, Port Elizabeth, Polokwane and in all the branches of the SANBS • Society secretary informs members of activities
Contribution towards Skills	Whether activities organised under Skills could be accredited as CPD activities: • NHLS not active – intend to contribute towards Skills
Other	Positive response:

Statement	Suggestions:
	• Experience CPD as a challenge – medical technology should become more professional • CPD programme will improve – recently started will refine with time

*MTN = Medical Technology News **LMS = Laboratory Marketing Spectrum

Participants of the interview questionnaire did not contribute new ideas to be implemented as CPD activities. A CPD representative could be very useful in co-ordinating and informing people of CPD activities as proposed by Kerr and Vinjamuri (2001) for radiography in the UK. The blood banks and branches of the Society identified representatives and they were making a valuable contribution in organising and informing members of CPD activities. A few positive remarks were made, namely to experience CPD as a challenge and CPD could contribute to professionalism. The concept CPD is new, it will refine as administrative and practical problems are solved. According to Kushnir *et al.* (2000) physicians in Israel indicated that CME contributed to job satisfaction and lower stress levels. A possible explanation for the physicians' perception was that if they participate in CME activities it would reduce stress and thus enhance job satisfaction (Kushnir *et al.,* 2000).

3.4 CONCLUSION

The primary aim of the study was to identify obstacles medical technologists and medical technicians experience in obtaining CPD credits and to gain information from medical technologists and technicians for possible solutions to these barriers. The main obstacles identified were insufficient time available to participate in CPD activities, either during working hours or after hours, and the financial constraint associated with attending CPD activities.

The shrinking resources in laboratories meant less money and time for participating in continuing educational activities.

Another problem was the negative attitude towards CPD in the workplace and more specifically the example set by those in managerial positions. In those laboratories where the manager or supervisor was enthusiastic about CPD and organised and promoted CPD activities, the evidence was reflected in the rest of the laboratory staff. The opposite was also detected in those laboratories where the manager was not interested in CPD, no CPD activities took place during working hours and the laboratory staff totality rejected CPD.

One possible solution to some of these barriers was the co-operation given by employers in providing transport for the attendance of CPD activities. This was unfortunately not the case with all the employers. Earning CPD credits during working hours by means of journal discussions or case studies were well established in many of the urban laboratories. This could, however, improve in smaller laboratories if different laboratories e.g. the private pathologist, NHLS and the blood bank met together for journal discussions and case studies.

Membership of the SMLTSA and participation in activities organised by the Society was a main source of CPD credits. Non-members should be encouraged to become members of the Society, and medical technologists and technicians working in isolated areas should consider establishing sub-branches of the Society in their vicinity.

Those who are in a position to continue with formal education and / or those involved in research with the potential of publication are in an excellent position to collect CPD credits. The most important investment in education is formal education.

Participation in accredited CPD activities on internet was a solution for those to whom time was an obstacle as well as to those from rural areas with access to the internet. A success story was described in which physicians' confidence and knowledge of skin cancer increased by participation in internet CPD activities.

The attitude towards CPD will change once medical technologists and technicians are familiar with and participating in the CPD programme and the pitfalls in administering the CPD programme have been solved. CPD will then be beneficial to the individual, the work environment and the profession.

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Appendix 3.1: Letter in the MTN

LET US BE POSITIVE ABOUT CPD

Continuing Professional Development (CPD) and Continuing Professional Education (CPE) programmes are implemented throughout the world in many professions, with prominence in the medical professions. The general major obstacles experienced worldwide are: time to attend events, costs involved, distances that need to be travelled and lack of enthusiasm. These problems are even worse for those working in the country.

In South Africa we expect to be confronted with similar problems. Those of us working in bigger institutions and especially in academic hospitals are fortunate in having many opportunities to gather CPD credits. It is our colleagues running the smaller laboratories in the rural areas who will find it very hard to collect the required number of credits.

As part of a research project I intend describing a model whereby medical technologists and technicians can approach the whole issue of CPD programmes and their accompanying difficulties.

The first thing I am going to do is to send out a questionnaire to as many technologists and technicians as possible. This could help me in identifying our problem areas. I would also appreciate suggestions as to how we could overcome these problems. This will be followed by personal interviews with specific participants.

The outcomes obtained from the questionnaire will be compiled as a basis for a model that must be evaluated by a selected group of laboratories. Once an acceptable model is compiled, it must be implemented countrywide throughout South Africa.

I would appreciate it if as many technologist and technicians as possible could contact me at any of the contact numbers / addresses below and provide suggestions as well as their e-mail addresses. (Please give me an indication whether you want an English or Afrikaans questionnaire.)

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Appendix 3.2: Questionnaire cover letter

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24 June 2002

QUESTIONNAIRE: CPD CREDITS FOR MEDICAL TECHNOLOGISTS AND TECHNICIANS

Continuing professional development (CPD) is an accomplished fact for all medical professions in South Africa. We as medical technologists and technicians must accumulate 50 credits per year as from 1 April 2002 to maintain our registration with the Health Professions Council of South Africa (HPCSA).

Some of us are not really going to have any difficulties in collecting the required number of credits, seeing that many of these activities are within reach or obtainable without putting in too much of an effort. But unfortunately there are those working far away from academic institutions that will experience problems in collecting the required number of credits. The main problems as identified from the literature are time, travelling distances and finances. It could be that we in South Africa have additional problems that need to be addressed.

By means of a study we would like to identify problems and find solutions to those problems through inputs from participants. For this reason it is important to include as many registered technologists and technicians as possible, in the study.

The basis of this study will consist of questionnaires and personal interviews. We would like to compile a model whereby CPD can be implemented successfully in medical laboratories. This model will be tested and a final version submitted to the HPCSA for implementation in all medical laboratories.

All the information obtained from the questionnaires and interviews will be strictly confidential and made available as aggregated information within group format either at a national congress or in a scientific journal.

You are hereby requested to complete the questionnaire and post it to reach us by 31 July 2002. Please feel free to provide any additional comments regarding CPD.

Your co-operation is sincerely appreciated.

Thank you

_____	_____
Miss Marina Brand	Prof L de Jager
Lecturer: School of Health Technology	Head: School of Health Technology
Student: D.Tech: Biomedical Technology	Promotor: D.Tech: Biomed. Tech. Project

Appendix 3.3: Questionnaire in English

QUESTIONNAIRE: CPD CREDITS FOR MEDICAL TECHNOLOGISTS AND TECHNICIANS

THANK YOU FOR YOUR PARTICIPATION BY COMPLETING THIS QUESTIONNAIRE.

The following sections are addressed:

SECTION 1: EMPLOYMENT
SECTION 2: BIOGRAPHIC
SECTION 3: SMLTSA
SECTION 4: INDIVIDUAL, SMALL GROUP AND ORGANISATIONAL ACTIVITIES
SECTION 5: OTHER CPD ASPECTS

Please post the completed questionnaire as soon as possible, to reach us by 31 July 2002 at the latest.

Note:
* Mark your answer by making a cross next to your choice.
* When more than one answer is required to a question, it will be indicated as such.
* Please read through the whole question before making a selection.
* Please print when commenting on an answer.
* Please be frank with your answers.

City, suburb, town or nearest city / town where you work: _

If you are prepared to participate in follow-up enquiries, please provide the following information:

INITIALS AND SURNAME: _

MT REGISTRATION NUMBER: _.

SECTION 1: EMPLOYMENT

1	Which of the following is the best description of your organisation:		
	NHLS (previously provincial hospitals)	1.1	
	NHLS (previously SAIMR)	1.2	
	State pathologists / State hospitals	1.3	
	Private pathologists with laboratories in a hospital	1.4	
	Private pathologists with central laboratories	1.5	
	SA National Blood Services – blood bank in a hospital	1.6	
	SA National Blood Services – central blood bank in town / city	1.7	
	Private practice – self-employed	1.8	
	Private practice – working for a medical technologist	1.9	

	Higher education institution (technikon / university)								1.10	
	Commercial (e.g. beer brewery / cheese industry)								1.11	
	Company selling and / or servicing medical / laboratory products								1.12	
	Other, please specify:								1.13	
2.1	Provide a general description of your laboratory (e.g. Kimberley Blood Bank or Tygerberg Haematology).								2.1	
2.2	Which speciality category(ies) is / are serviced by your laboratory (e.g. Clinical Pathology or Cytology)?								2.2	
2.3	Number of medical technologists working in your laboratory (2.1 above).					Number			2.3	
2.4	Number of medical technicians working in your laboratory (2.1 above).					Number			2.4	
3	Stipulate your appointment:								3	
	Permanent full-time appointment	3.1		Partnership					3.4	
	Part-time appointment	3.2		Relief post					3.5	
	Contract appointment	3.3		Any other, please specify:					3.6	
4	Specify your present position:								4	
	Employer	4.1		Senior Technologist / Technician					4.6	
	Manager	4.2		Technologist / Technician					4.7	
	Assistant Director	4.3		Representative					4.8	
	Control Technologist / Technician	4.4		Other, please specify:					4.9	
	Chief Technologist / Technician / Unit Supervisor	4.5								
5.1	How may years have you worked in a laboratory?					Years			5.1	
5.2	How many years have you been in your present position?					Years			5.2	
6	If you vacate your present post, how difficult will it be to replace you?								6	
	Easy	6.1		Difficult	6.2		Extremely difficult		6.3	
7	If you supervise other staff members, provide the numbers of:									
	Technologists					Number			7.1	
	Student technologists					Number			7.2	
	Technicians					Number			7.3	
	Student technicians					Number			7.4	
	Other staff					Number			7.5	
8	Specify your annual salary range:								8	
	Less than R99 000 p.a.	8.1		Between R175,000 – R199,000 p.a.					8.4	
	Between R100,000 – R149,000 p.a.	8.2		R200,000 or more p.a.					8.5	
	Between R150,000 – R174,000 p.a.	8.3								
9	How many patient specimens / blood bank units / research specimens does your laboratory / section, on average, handle per month? If you don't know, leave blank.					Number			9	
10	Is your laboratory accredited?					Yes		No	10	
11	Is your laboratory registered as a training laboratory?					Yes		No	11	
12	Do you have a high turnover of staff in your laboratory?					Yes		No	12	
13	If you have a high turnover of staff, do you consider it to be normal?					Yes		No	13	
14	Do newly appointed laboratory staff undergo a training period before you allow them to work independently?					Yes		No	14	

SECTION 2: BIOGRAPHICAL

15	Are you a technologist?	Yes		No	15.1	
	Are you a technician?	Yes		No	15.2	
	Are you registered as a technologist?	Yes		No	15.3	

	Are you registered as a technician?					Yes		No		15.4	
16	Please indicate your speciality qualification(s):									16	
	Clinical Pathology	16.1		Chemical Pathology						16.5	
	Blood Transfusion Technology	16.2		Histology						16.6	
	Haematology	16.3		Other, please specify:						16.7	
	Microbiology	16.4									
17	Indicate your highest qualification in this profession and the year obtained:			Qualification						17.1	
				Year						17.2	
18	Are you currently engaged in studies towards gaining a further qualification?					Yes		No		18	
19	If "no" to 18, do you anticipate enrolling for any further qualification(s) within the next 5 years?					Yes		No		19	
20	If "yes" to 18, name the qualification(s).									20	
21	If "no" to 19, provide at most two reasons why not.									21	
22	How old are you?									22	
	Between 20 – 29	22.1		Between 40 – 49	22.3		60 years or older			22.5	
	Between 30 – 39	22.2		Between 50 – 59	22.4						
23	Please indicate your gender:					Male		Female		23	

SECTION 3: SMLTSA

24	Are you currently a member of the SMLTSA?					Yes		No		24	
25	Please provide your reason(s) for not being a member of the Society:									25	
	Transport problems in attending the after-hours activities.									25.1	
	Time factor: very difficult to attend academic activities, social events and annual meetings after hours.									25.2	
	There is no branch of the society in the immediate area.									25.3	
	Any other reasons, please specify:									25.4	
26	Are you aware that the society administers CPD activities for members?					Yes		No		26	
27	Do you attend any academic activities, as organised by the society?									27	
	Never	27.1		Occasionally	27.2		Regularly			27.3	

SECTION 4: INDIVIDUAL, SMALL GROUP AND ORGANISATIONAL ACTIVITIES

	Publications:					
28.1	Is the type of work that you perform of such a nature (e.g. case studies or comparing techniques) that publications are possible?	Yes		No	28.1	
28.2	Are you currently engaged in research work from which publications are possible?	Yes		No	28.2	
28.3	Do you intend publishing article(s) within the next five years?	Yes		No	28.3	
29	If you foresee no publications, could it be attributed to any of the following?				29	
	Lack of research methodology (don't know where to start).				29.1	
	You are not motivated / encouraged by your senior staff members to participate in publications.				29.2	
	You actually wish to publish interesting incidents, but lack experience.				29.3	

	Other, please specify:							29.4	
	Lecturing:								
30	Do you sometimes assist as part-time lecturer at a technikon or any other institution?	Yes		No				30	
31	Could you help in rural areas by:							31	
31.1	Presenting workshop(s)?	Yes		No				31.1	
31.2	Presenting courses / lectures on relevant cases / incidents?	Yes		No				31.2	
31.3	Distributing audiovisual recordings?	Yes		No				31.3	
	Small group activities:								
32	Is your laboratory / section / department involved in any of the following:							32	
32.1	Journal discussions?	Yes		No				32.1	
32.2	Departmental discussions (case studies / laboratory results)?	Yes		No				32.2	
32.3	Workshops?	Yes		No				32.3	
32.4	Do you attend any short courses (refresher courses / laboratory management)?	Yes		No				32.4	
32.5	If no small group activity takes place at your laboratory, could you initiate such a project?	Yes		No				32.5	
	Organisational activities:								
33	Do you attend seminars, national congresses and / or conferences?	Yes		No				33	
34	If "yes" to 33, in what capacity?							34	
	To attend only	34.1		To present a paper				34.3	
	To present a poster	34.2		To act as chairperson of sessions				34.4	
35	If "no" to 33, mark the main reason:							35	
	Lack of information regarding the activities:							35.1	
	Workload							35.2	
	Financial constraints							35.3	
	Do not wish to attend							35.4	
	Other reason(s), please specify:							35.5	

SECTION 5: CPD ACTIVITIES

36	Did you participate in the voluntary CPD programmes?	Yes		No				36	
37	Will CPD programmes improve the quality and standard of work in a laboratory?	Yes		No				37	
38	Are you aware that participation in CPD activities has become compulsory since 1 April 2002?	Yes		No				38	
39	Are you aware that you could lose your registration with the HPCSA if you do not obtain the required credits annually?	Yes		No				39	
40	Are you informed about CPD activities?	Yes		No				40	
41	Are you informed about the credits allocation in the CPD programmes?	Yes		No				41	
42	Do you foresee that participation in CPD programmes could entail annual personal expense?	Yes		No				42	
43	If "yes" to 42, how much do you anticipate it would cost annually?							43	
	Up to R200 p.a.	43.1		Between R2001 – R3000 p.a.				43.4	
	Between R201 – R1000 p.a.	43.2		Between R3001 – R4000 p.a.				43.5	

	Between R1001 – R2000 p.a.	43.3		R4001 p.a. or more					43.6	
44	Are you aware that your employer is compelled to contribute financially towards CPD programmes?		Yes		No				44	
45	Select a maximum of **four options** from the obstacles listed, that would restrict your participation in CPD programmes:								45	
45.1	Lack of time after hours.								45.1	
45.2	Your work does not allow time off for CPD activities.								45.2	
45.3	After–hour service obligations.								45.3	
45.4	Time when CPD activities are offered is inconvenient.								45.4	
45.5	Duration of the activities.								45.5	
45.6	The venue where the activities are presented is not suitable.								45.6	
45.7	Financial implications.								45.7	
45.8	Professional workload.								45.8	
45.9	Shortage of staff.								45.9	
45.10	Personal vacation leave must be taken in order to attend certain CPD activities.								45.10	
45.11	Immediate senior(s) not interested in CPD activities.								45.11	
45.12	Lack of motivation.								45.12	
45.13	Dangerous to travel over long distances.								45.13	
45.14	Lack of transport.								45.14	
45.15	Family responsibilities (e.g. single parent).								45.15	
45.16	Language in which the activities are offered.								45.16	
45.17	Any problem(s) not listed:								45.17	
46	CPD credits for your daily routine work.								46	
46.1	Do you encounter interesting cases during your daily routine work?		Yes		No				46.1	
46.2	Have you ever thought of sharing the information (46.1) with co-technologists / technicians?		Yes		No				46.2	
46.3	Would it be possible to convey this information (46.1) in the form of a lecture or presentation?		Yes		No				46.3	
46.4	Do you have the facility to take photos of rare incidents / cases?		Yes		No				46.4	
46.5	Can you distribute such microscope slides / photos (46.4) with questions / information to other technologists / technicians?		Yes		No				46.5	
46.6	Do you as a laboratory report notifiable diseases?		Yes		No				46.6	
46.7	Do you as a laboratory report extraordinary cases to an overhead authority?		Yes		No				46.7	
46.8	Are you ever visited by staff from your nearest reference laboratory?		Yes		No				46.8	
46.9	Would it be possible for personnel from 46.8 to give you presentations / lectures?		Yes		No				46.9	
46.10	Do medical representatives visit your laboratory?		Yes		No				46.10	
46.11	Are you (by means of the above visits) informed of the latest techniques / apparatus on the market?		Yes		No				46.11	
46.12	Is it within your authority to upgrade the existing techniques with the latest on the market?		Yes		No				46.12	
46.13	Would the outcomes / standard of your laboratory benefit by such upgrading?		Yes		No				46.13	
46.14	If the upgrading (46.12) transpires, could you present the comparison between the two techniques in the form of a lecture / presentation?		Yes		No				46.14	
46.15	Would it be possible to adopt a foster laboratory and motivate / assist their staff members to obtain CPD credits?		Yes		No				46.15	
46.16	If you do not participate in journal discussions, would you		Yes		No				46.16	

	consider discussions with a laboratory in your vicinity?						
46.17	Could you obtain adequate information / material to conduct journal discussions on a regular basis?	Yes		No		46.17	
46.18	If an academic laboratory adopts a rural laboratory as a foster laboratory, what would the expectations of the adopted / foster laboratory be?					46.18	
47	Which of the following electronic facilities do you have at your disposal during working hours?					47	
	Telephone	47.1		Fax machine	47.2	e-mail	47.3
48	Procedures to obtaining CPD credits: did you know that:					48	
48.1	You must register with the SMLTSA?	Yes		No		48.1	
48.2	A CPD activity must be registered with the SMLTSA?	Yes		No		48.2	
48.3	When attending an activity you must either receive a certificate or sign a group attendance register?	Yes		No		48.3	
48.4	The proof of attendance is sent to the SMLTSA for administrative purposes.	Yes		No		48.4	
48.5	The SMLTSA informs the HPCSA annually of your CPD credits obtained.	Yes		No		48.5	
49	Please give your expectations of the national CPD administration, concerning:					49	
49.1	Responding to queries:					49.1	
49.2	Communication					49.2	
49.3	Providing information					49.3	
50	Make suggestions for ways in which the SMLTSA / academic laboratories / medical companies can help rural laboratories to obtain CPD credits?					50	

Thank you very much for completing the questionnaire.
Any further suggestions would be appreciated.
Would you please return
the questionnaire as soon as possible?

Marina Brand

Appendix 3.4: Vraelys dekbrief

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24 Junie 2002

VRAELYS: VPO / "CPD"-KREDIETE VIR GENEESKUNDIGE TEGNOLOë EN TEGNICI

Voortgesette professionele ontwikkeling (VPO / "CPD") is 'n voldonge feit vir alle geneeskundige beroepe in Suid-Afrika. Ons as geneeskundige tegnoloë en tegnici is vanaf 1 April 2002 verplig om 50 krediete per jaar te verwerf om ons registrasie by die Professionele Raad vir Gesondheidsberoepe van Suid-Afrika (PRGSA / "HPCSA") te behou.

Sommige mense gaan nie werklik probleme ondervind om die nodige krediete te verwerf nie, aangesien baie van die aktiwiteite binne bereik is, of met min moeite haalbaar is. Daar is egter diegene, wat veral ver van akademiese instansies werksaam is, vir wie dit werklik probleme gaan veroorsaak om die nodige krediete te verwerf. Die grootste probleme soos uit die literatuur geïdentifiseer, is tyd, afstand wat gereis moet word en finansies. Moontlik het ons hier in Suid-Afrika nog baie addisionele probleme wat aangespreek sal moet word.

Deur middel van 'n studie wil ons dus probleme identifiseer en oplossings probeer vind en is ons verleë oor deelnemers vir insette. Dit is dus noodsaaklik dat soveel moontlik geregistreerde tegnoloë en tegnici in die studie betrek word.

Die basis van die studie gaan uit vraelyste en persoonlike onderhoude bestaan. Ons wil 'n model opstel waarvolgens VPO / "CPD" lewensvatbaar in laboratoriums geïmplementeer kan word. Hierdie model sal getoets word en 'n finale weergawe aan die PRGSA / "HPCSA" voorgelê word vir moontlike instelling in alle geneeskundige laboratoriums.

Alle inligting verkry vanuit die vraelyste en onderhoude sal as streng vertroulik beskou word en sal as saamgevoegde inligting in groepverband bekend gemaak word, hetsy by 'n nasionale kongres of in 'n wetenskaplike joernaal.

U word hiermee versoek om asseblief die vraelys te voltooi en terug te pos om ons te bereik teen 31 Julie 2002. Neem asseblief die vrymoedigheid om enige addisionele inligting omtrent CPD te verskaf.

U samewerking word opreg waardeer.

Baie dankie

_____	_____
Mej Marina Brand	Prof L de Jager
Lektrise: Skool vir Gesondheidstegnologie	Hoof: Skool vir Gesondheidstegnologie
Student: D.Tech: Biomediese Tegnologie	Promotor: D.Tech: Biomed. Teg. Projek

Appendix 3.5: Vraelys in Afrikaans

VRAELYS: CPD-KREDIETE VIR GENEESKUNDIGE TEGNOLOë EN TEGNICI

Deurlopend word die afkorting CPD in stede van VPO, en HPCSA in stede van PRGSA gebruik.

BAIE DANKIE VIR U DEELNAME DEUR DIE VRAELYS TE VOLTOOI.

Die volgende afdelings word aangespreek:

AFDELING 1: WERK
AFDELING 2: BIOGRAFIES
AFDELING 3: VGLTSA
AFDELING 4: INDIVIDUELE, KLEINGROEP EN ORGANISATORIESE AKTIWITEITE
AFDELING 5: ANDER VPO (CPD)-ASPEKTE

Pos asseblief die voltooide vraelys so gou moontlik om ons nie later as 31 Julie 2002 te bereik nie.

Vir kennisname:
* Merk u antwoord deur ‘n kruis langs u keuse te maak.
* Wanneer meer as een antwoord in ‘n vraag verlang word, sal dit as sodanig aangedui word.
* Lees asseblief deur die hele vraag voordat u ‘n keuse maak.
* Waar u kommentaar lewer, gebruik asseblief drukskrif.
* Verskaf asseblief openhartige antwoorde.

Stad, voorstad, dorp of naaste stad / dorp waar u werksaam is: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ .

Indien u bereid is om vir opvolg navraag genader te word, verskaf asseblief:

VOORLETTERS EN VAN: _

MT REGISTRASIE NOMMER: _

AFDELING 1: WERK

1	Watter een van die volgende is die beste beskrywing van u organisasie:		
	NHLS (voorheen provinsiale hospitale)	1.1	
	NHLS (voorheen SAIMN)	1.2	
	Staatspatoloë / Staatshospitale	1.3	
	Privaat patoloë met laboratoria in ‘n hospitaal	1.4	
	Privaat patoloë met sentrale laboratoria	1.5	

	SA Nasionale Bloeddienste – bloedbank in 'n hospital							1.6	
	SA Nasionale Bloeddienste – bloedbank in die stad / dorp							1.7	
	Privaatpraktyk – werk vir uself							1.8	
	Privaatpraktyk – werk vir geneeskundige tegnoloog							1.9	
	Hoër onderwys instelling (technikon / universiteit)							1.10	
	Kommersieël (bv. bierbrouery of kaasindustrie)							1.11	
	Firma wat geneeskundige / laboratorium produkte versprei / in stand hou							1.12	
	Enige ander, spesifiseer:							1.13	
2.1	Verskaf 'n algemene beskrywing van u laboratorium (bv. Kimberley Bloedbank of Tygerberg Hematologie):							2.1	
2.2	Watter spesialis kategorie(ë) word deur u laboratorium bedien (bv Kliniese Patologie of Sitologie)?							2.2	
2.3	Getal geneeskundige tegnoloë wat in u laboratorium werk (2.1 hierbo).			Getal				2.3	
2.4	Getal geneeskundige tegnici wat in u laboratorium werk (2.1 hierbo).			Getal				2.4	
3	Dui u aanstelling aan:							3	
	Permanente voltydse aanstelling	3.1		Vennootskap				3.4	
	Deeltydse aanstelling	3.2		Aflos pos				3.5	
	Kontrak aanstelling	3.3		Enige ander, spesifiseer asseblief:				3.6	
4	Spesifiseer u huidige posisie:							4	
	Werkgewer	4.1		Senior Tegnoloog / Tegnikus				4.6	
	Bestuurder	4.2		Tegnoloog / Tegnikus				4.7	
	Assistent Direkteur	4.3		Verteenwoordiger				4.8	
	Beheer Tegnoloog / Tegnikus	4.4		Enige ander, spesifiseer:				4.9	
	Hoof Tegnolooog / Tegnikus / Eenheid Toesighouer	4.5							
5.1	Dui u jare werksondervinding in 'n laboratorium aan.			Jare				5.1	
5.2	Hoe lank is u in u huidige posisie?			Jare				5.2	
6	Indien u u huidige pos verlaat, hoe moeilik sal dit wees om u te vervang?							6	
	Maklik	6.1		Moeilik	6.2		Baie moeilik	6.3	
7	Indien u toesig hou oor ander personeel, verskaf die getal van:							7	
	Tegnoloë			Getal				7.1	
	Student tegnoloë			Getal				7.2	
	Tegnici			Getal				7.3	
	Student tegnici			Getal				7.4	
	Ander personeel:			Getal				7.5	
8	Spesifiseer u jaarlikse salarisskaal:							8	
	Minder as R99 000 p.j.	8.1		Tussen R175 000 – R199 000 p.j.				8.4	
	Tussen R100 000 – R149 000 p.j.	8.2		R200 000 of meer p.j.				8.5	
	Tussen R150 000 – R174 000 p.j.	8.3							
9	Hoeveel pasiëntmonsters / bloedbankeenhede / navorsingsmonsters hanteer u laboratorium / afdeling gemiddeld per maand? Indien u nie weet nie, los blanko.			Getal				9	
10	Is u laboratorium ge-akkrediteer?			Ja		Nee		10	
11	Is u laboratorium geregistreer as 'n opleidingslaboratorium?			Ja		Nee		11	
12	Het u 'n groot omset van personeel in u laboratorium?			Ja		Nee		12	
13	Indien u wel 'n groot wisseling van personeel het, beskou u dit as normaal?			Ja		Nee		13	
14	Indien u nuwe laboratoriumpersoneel inneem, gaan hulle deur 'n opleidingsperiode voordat hulle toegelaat word om onafhanklik te werk?			Ja		Nee		14	

AFDELING 2: BIOGRAFIES

15	Is u 'n tegnoloog?					Ja		Nee		15.1	
	Is u 'n tegnikus?					Ja		Nee		15.2	
	Is u geregistreer as 'n tegnoloog?					Ja		Nee		15.3	
	Is u geregistreer as 'n tegnikus?					Ja		Nee		15.4	
16	Merk asseblief u spesialis kwalifikasie(s):									16	
	Kliniese Patologie	16.1		Chemiese Patologie						16.5	
	Bloedtransfusie Tegnologie	16.2		Histologie						16.6	
	Hematologie	16.3		Enige ander, spesifiseer:						16.7	
	Mikrobiologie	16.4									
17	Gee u hoogste kwalifikasie in die professie en die jaar wanneer verwerf:			Kwalifikasie						17.1	
				Jaar						17.2	
18	Is u tans besig met studies om u kwalifikasie(s) te verbeter?					Ja		Nee		18	
19	Indien "nee" by 18, oorweeg u om in te skryf vir enige verdere kwalifikasies binne die volgende 5 jaar?					Ja		Nee		19	
20	Indien "ja" in 18, noem die kwalifikasie(s):									20	
21	Indien "nee" in 19, verskaf maksimum twee redes hoekom nie:									21	
22	Hoe oud is u?									22	
	Tussen 20 - 29 jaar	22.1		Tussen 40 – 49 jaar	22.3		60 jaar of ouer			22.5	
	Tussen 30 – 39 jaar	22.1		Tussen 50 – 59 jaar	22.4						
23	Dui asseblief u geslag aan:					Manlik		Vroulik		23	

AFDELING 3: VGLTSA

24	Is u tans 'n lid van die VGLTSA?					Ja		Nee		24	
25	Verskaf asseblief die redes hoekom u nie lid van die Vereniging is nie.									25	
	Vervoerprobleme om na-uurse aktiwiteite by te woon.									25.1	
	Tydfaktor: baie moeilik om akademiese aktiwiteite, sosiale aangeleenthede en jaarlikse vergaderings na-uurs by te woon.									25.2	
	Daar is nie 'n tak van die vereniging in u gebied nie.									25.3	
	Enige ander redes, spesifiseer asseblief:									25.4	
26	Is u bewus daarvan dat die vereniging CPD aktiwiteite vir lede administreer?					Ja		Nee		26	
27	Woon u akademiese aktiwiteite, soos deur die vereniging gereël, by?									27	
	Nooit	27.1		Somtyds	27.2		Gereeld			27.3	

AFDELING 4: INDIVIDUELE, KLEINGROEP EN ORGANISATORIESE AKTIWITEITE

	Publikasies:						
28.1	Is die tipe werk wat u verrig van so 'n aard (bv gevallestudies of vergelyking van tegnieke) dat publikasies daaruit kan voortspruit?	Ja		Nee		28.1	
28.2	Is u tans besig met navorsingswerk waaruit publikasies kan voortspruit?	Ja		Nee		28.2	
28.3	Beoog u om binne die volgende vyf jaar artikel(s) te publiseer?	Ja		Nee		28.3	
29	Indien u geen publikasie voorsien nie, kan dit aan enige van die volgende toegeskryf word?					29	
	Leemte aan navorsingsmetodologie (weet nie hoe of waar om te begin nie).					29.1	
	U word nie deur senior personeel gemotiveer om te publiseer nie.					29.2	
	U het eintlik die begeerte om interessante gevalle te publiseer, maar die ondervinding ontbreek.					29.3	

	Ander, spesifiseer asseblief:							29.4	
	Lesings aanbied:								
30	Tree u soms as deeltyde dosent by ‘n Technikon of enige ander instansie op?	Ja		Nee				30	
31	Sou u kon help in plattelandse gebiede d.m.v:							31	
31.1	Werkswinkels aanbied?	Ja		Nee				31.1	
31.2	Kursusse / lesings aanbied oor relevante gevalle / insidente?	Ja		Nee				31.2	
31.3	Oudiovisuele opnames versprei?	Ja		Nee				31.3	
	Kleingroep aktiwiteite:								
32	Is u laboratorium / afdeling / departement betrokke by enige van die volgende:							32	
32.1	Joernaalbesprekings?	Ja		Nee				32.1	
32.2	Departementele besprekings (gevalle studies / laboratoriumresultate)?	Ja		Nee				32.2	
32.3	Werkswinkels?	Ja		Nee				32.3	
32.4	Woon u enige kort kursusse (opknappingskursusse / laboratoriumbestuur) by?	Ja		Nee				32.4	
32.5	Indien u afdeling / laboratorium nie betrokke is by enige kleingroep aktiwiteite nie, sou u met ‘n aktiwiteit kon begin?	Ja		Nee				32.5	
	Organisatoriese aktiwiteite:								
33	Woon u enige seminare, nasionale kongresse en / of konferensies by?	Ja		Nee				33	
34	Indien “ja” by 33, in watter hoedanigheid?							34	
	Slegs om by te woon	34.1		Om ‘n referaat aan te bied				34.3	
	Om ‘n plakkaat aan te bied	34.2		Om op te tree as sessievoorsitter				34.4	
35	Indien “nee” in 33, verskaf redes:							35	
	Gebrek aan inligting omtrent die aktiwiteite							35.1	
	Werkslading							35.2	
	Finansiële implikasies							35.3	
	Het geen begeerte om dit by te woon nie							35.4	
	Ander rede(s), spesifiseer asseblief.							35.5	

AFDELING 5: CPD-AKTIWITEITE

36	Het u aan die vrywillige CPD-programme deelgeneem?	Ja		Nee				36	
37	Sal CPD-programme die kwaliteit en standaard van werk in ‘n laboratorium verbeter?	Ja		Nee				37	
38	Is u bewus daarvan dat deelname aan CPD-aktiwiteite sedert 1 April 2002 verpligtend is?	Ja		Nee				38	
39	Is u bewus daarvan dat u u registrasie by die HPCSA kan verbeur indien u nie die nodige krediete jaarliks verwerf nie?	Ja		Nee				39	
40	Is u ingelig omtrent die verskillende CPD aktiwiteite?	Ja		Nee				40	
41	Is u ingelig omtrent die puntetoekenning van die CPD-programme?	Ja		Nee				41	
42	Voorsien u dat deelname aan CPD-programme ‘n jaarlikse persoonlike finansiële las gaan meebring?	Ja		Nee				42	
43	Indien “ja” by 42, hoeveel reken u dat dit jaarliks kan behels:							43	
	Tot R200 p.j.	43.1		Tussen R2001 – R3000 p.j.				43.4	
	Tussen R201 – R1000 p.j.	43.2		Tussen R3001 – R4000 p.j.				43.5	
	Tussen R1001 – R2000 p.j.	43.3		R4001 of meer p.j.				43.6	
44	Is u bewus daarvan dat u werkgewer verplig is om finansieël by te dra tot CPD-programme?	Ja		Nee				44	
45	Kies **maksimum vier** uit die gelysde struikelblokke wat u deelname aan CPD-programme kan verhinder:							45	

45.1	Gebrek aan tyd na-uurs.					45.1	
45.2	Die werk staan nie tyd af vir CPD-aktiwiteite nie.					45.2	
45.3	Na-uurse werksverpligtinge.					45.3	
45.4	Tyd wanneer CPD-aktiwiteite aangebied word is nie geskik nie.					45.4	
45.5	Die tydsduur van die aktiwiteite.					45.5	
45.6	Plek waar dit aangebied word is nie geskik nie.					45.6	
45.7	Finansiële implikasies.					45.7	
45.8	Professionele werkslas.					45.8	
45.9	Tekort aan personeel.					45.9	
45.10	Persoonlike vakansie verlof moet gebruik word om sekere aktiwiteite by te woon.					45.10	
45.11	Onmiddelike senior(s) stel nie in CPD-aktiwiteite belang nie.					45.11	
45.12	Motivering ontbreek.					45.12	
45.13	Gevaarlik om oor lang afstande te reis.					45.13	
45.14	Gebrek aan vervoer.					45.14	
45.15	Familie verpligtinge (bv. enkel ouer)					45.15	
45.16	Taal waarin aktiwiteit aangebied word.					45.16	
45.17	Enige probleme wat nie genoem is nie:					45.17	
46	CPD-krediete vir u daaglikse roetine werk:					46	
46.1	Kom u in u daaglikse roetine werk op interessante gevalle af?	Ja		Nee		46.1	
46.2	Het u al ooit daaraan gedink om hierdie inligting (46.1) met ander tegnoloë / tegnici te deel?	Ja		Nee		46.2	
46.3	Sou u die inligting (46.1) in die vorm van ‘n lesing / voordrag kon aanbied?	Ja		Nee		46.3	
46.4	Het u laboratorium die fasiliteite om fotos van skaars insidente of gevalle te neem?	Ja		Nee		46.4	
46.5	Sou u hierdie glasskyfies / foto’s (46.4) met vrae / inligting aan ander tegnoloë / tegnici kon versprei?	Ja		Nee		46.5	
46.6	Meld u laboratorium aanmeldbare siektes aan?	Ja		Nee		46.6	
46.7	Rapporteer u laboratorium aan ‘n oorhoofse outoriteit indien u op uitsonderlike gevalle afkom?	Ja		Nee		46.7	
46.8	Word u ooit deur personeel van u naaste verwysingslaboratorium besoek?	Ja		Nee		46.8	
46.9	Sou dit vir personeel van (46.8) moontlik wees om voordragte / lesings aan te bied?	Ja		Nee		46.9	
46.10	Besoek mediese verteenwoordigers u laboratorium?	Ja		Nee		46.10	
46.11	Word u (d.m.v. hierdie besoeke) ingelig omtrent die nuutste tegnieke / apparatuur wat op die mark is?	Ja		Nee		46.11	
46.12	Is dit binne u vermoë om bestaande tegnieke te vervang met die nuutste op die mark?	Ja		Nee		46.12	
46.13	Sou die uitkomste / standaard van u laboratorium bevoordeel word deur die vervanging van tegnieke?	Ja		Nee		46.13	
46.14	Indien die vervanging van tegnieke (46.12) moontlik is, sou u die vergelyking tussen die twee tegnieke in die vorm van ‘n lesing of voordrag kon aanbied?	Ja		Nee		46.14	
46.15	Sou dit moontlik wees om ‘n plattelandse laboratorium as ‘n pleeglaboratorium aan te neem, en die personeel te motiveer om CPD-krediete te verwerf?	Ja		Nee		46.15	
46.16	Indien u nie aan joernaalbesprekings deelneem nie, sou u dit oorweeg om besprekings met ‘n laboratorium in u omgewing te begin?	Ja		Nee		46.16	
46.17	Kan u voldoende materiaal bekom om joernaalbesprekings lewensvatbaar aan die gang te hou?	Ja		Nee		46.17	

46.18	Indien ‘n akademiese laboratorium ‘n plattelandse laboratorium aanneem, wat is die verwagtings van die laboratorium wat aangeneem is?									46.18	
47	Watter van die volgende elektroniese middels is gedurende werksure tot u beskikking?									47	
	Telefoon	47.1		Faksmasjien	47.2		E-pos			47.3	
48	Prosedures ter verkryging van CPD-krediete: het u geweet dat:									48	
48.1	U by die VGLTSA moet registreer?					Ja		Nee		48.1	
48.2	‘n CPD-aktiwiteit by die VGLTSA geregistreer moet word?					Ja		Nee		48.2	
48.3	Wanneer u ‘n aktiwiteit bywoon u ‘n sertifikaat ontvang of ‘n groep bywoningsregister teken?					Ja		Nee		48.3	
48.4	Die bewys van bywoning aan die VGLTSA gestuur word vir administratiewe doeleindes?					Ja		Nee		48.4	
48.5	Die VGLTSA die HPCSA jaarliks van u CPD-krediete vewittig?					Ja		Nee		48.5	
49	Wat verwag u van die nasionale CPD administrasie, met betrekking tot:									49	
49.1	Reaksie op navrae?									49.1	
49.2	Kommunikasie?									49.2	
49.3	Inligting deurgee?									49.3	
50	Maak voorstelle waarvolgens die VGLTSA / akademiese laboratoriums / mediese firmas u kan help om CPD-krediete te verwerf:									50	

Baie dankie dat u die vraelys voltooi het.

Ek sal enige verdere insette waardeer.

Sal u asseblief die vraelys so spoedig moontlik terugstuur.

Marina Brand

Appendix 3.6: Structured questionnaire cover letter (Afrikaans and English)

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30 Junie 2003

ONDERHOUDSVRAELYS: VPO / "CPD"-KREDIETE VIR GENEESKUNDIGE TEGNOLOë EN TEGNICI

Voortgesette professionele ontwikkeling (VPO / "CPD") is 'n voldonge feit vir alle geneeskundige beroepe in Suid-Afrika. Ons as geneeskundige tegnoloë en tegnici is vanaf 1 April 2002 verplig om 50 krediete per jaar te verwerf om ons registrasie by die Professionele Raad vir Gesondheidsberoepe van Suid-Afrika (PRGSA / "HPCSA") te behou.

Ek is tans besig met 'n D.Tech in Biomediese Tegnologie met die volgende titel:
"A continuing professional development model for medical laboratory technologists / technicians in South Africa, with emphasis on the rural areas"
Promotor: Prof L de Jager
Mede-promotor: Prof LOK Lategan
Mede-promotor: Dr AW van Rijswijk

Ek het verlede jaar d.m.v. 'n vraelys kwantitatiewe struikelblokke met die verkryging van CPD-punte in die beroep geneeskundige tegnologie geïdentifiseer. Die doel van hierdie onderhoudsvraelys is drievoudig:

i) Om kwalitatiewe probleme met die verkryging van CPD-punte te identifiseer
ii) Om moontlike oplossings vir reeds geïdentifiseerde CPD-probleme te vind
iii) Om voorstelle vir 'n bestuurs- en implementeringsmodel vir CPD te identifiseer.

Dit is dus noodsaaklik dat onderhoude gevoer word met geregistreerde tegnoloë en tegnici werksaam in 'n groot verskeidenheid geneeskundige laboratoriums beide in plattelandse en stedelike gebiede.

Die doel is om 'n bestuurs- en implementeringsmodel waarvolgens VPO / "CPD" lewensvatbaar in laboratoriums geïmplementeer kan word, op te stel. Hierdie model sal getoets word en 'n finale weergawe aan die PRGSA / "HPCSA" voorgelê word vir moontlike instelling in alle geneeskundige laboratoriums.

Alle inligting verkry vanuit die vraelys en onderhoud sal as streng vertroulik beskou word en sal as saamgevoegde inligting in groepverband bekend gemaak word, hetsy by 'n nasionale kongres of in 'n wetenskaplike joernaal.

U samewerking word opreg waardeer.

Baie dankie

_____	_____
Mej Marina Brand	Prof L de Jager
Lektrise: Skool vir Gesondheidstegnologie	Hoof: Skool vir Gesondheidstegnologie
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30 June 2003

INTERVIEW QUESTIONNAIRE: CPD CREDITS FOR MEDICAL TECHNOLOGISTS AND TECHNICIANS

Continuing professional development (CPD) is an accomplished fact for all medical occupations in South Africa. We as medical technologists and technicians have been compelled to accumulate 50 credits per year since 1 April 2002 to maintain our registration with the Health Professions Council of South Africa (HPCSA).

I am doing a D.Tech in Biomedical Technology with the following title:
"A continuing professional development model for medical laboratory technologists / technicians in South Africa, with emphasis on the rural areas"
Promotor: Prof L de Jager
Co-promotor: Prof LOK Lategan
Co-promotor: Dr AW van Rijswijk

Quantitative obstacles in obtaining CPD points were identified by means of a questionnaire during the previous year. The purpose of this interview questionnaire is threefold:

i) To identify qualitative problems in obtaining CPD points
ii) To find possible solutions to identified problems
iii) To obtain suggestions for compiling a management and implementation model for CPD.

For this reason it is important to conduct interviews with registered technologists and technicians working in a great variety of medical laboratories both in the rural and urban areas.

The purpose is to compile a management and implementation model whereby CPD can be implemented successfully in medical laboratories. This model will be tested and a final version submitted to the HPCSA for implementation in all medical laboratories.

All the information obtained from the questionnaire and interview will be strictly confidential and made available as aggregated information within group format either at a national congress or in a scientific journal.

Your co-operation is sincerely appreciated.

Thank you

_____	_____
Miss Marina Brand	Prof L de Jager
Lecturer: School of Health Technology	Head: School of Health Technology
Student: D.Tech: Biomedical Technology	Promotor: D.Tech: Biomedical Tech. Project

Appendix 3.7: Structured questionnaire

D.TECH IN CONTINUING PROFESSIONAL DEVELOPMENT: INTERVIEW QUESTIONNAIRE

1. **GEOGRAPHIC INFORMATION:**
2. **DEMOGRAPHIC INFORMATION:**
3. **EMPLOYMENT:**
4. **CPD:**
5. **OBSTACLES:** ALREADY IDENTIFIED / HOW TO OVERCOME SOME OF THE OBSTACLES**:**
6. **SOCIETY OF MEDICAL LABORATORY TECHNOLOGISTS OF SOUTH AFRICA (SMLTSA):**
7. **PEOPLE IN MANAGERIAL POSITIONS:**
8. **SUGGESTIONS FOR THE IMPLEMENTATION OF CPD:**

Where applicable, express your opinion on a scale of 1 – 3.
1 = Disagree 2 = Agree 3 = Strongly agree
1 = Negative 2 = Neutral 3 = Positive

Abbreviations used:

CPD	Continuing professional development
ND	National Diploma
NHD	National Higher Diploma
IT	Information technology
QC	Quality control
Lab	Laboratory

GT number	
MT number	

1. GEOGRAPHIC INFORMATION:

1 and 2. Indicate whether you are working in a rural, suburban or urban area and specify your town or city:

Location	1. Mark the correct one	2. Specify the town or city
Rural	1	1
Suburban	2	2
Urban	3	3

2. DEMOGRAPHIC INFORMATION:

3. Indicate your gender:

Male	1	Female	2

4. Specify your age:

4

5. State your position: Medical Technologist, Medical Technician:

Medical Technologist	1	Medical Technician	2

6. Indicate the category(ies) in which you are qualified:

1 Clinical Pathology	2 Chemical Pathology	3 Haematology	4 Histology	5 Blood Transfusion Technology
6 Microbiology	7 Cellular Pathology	8 Immunology	9 Virology	10 Other

7, 8 and 9. Indicate your qualifications:

Qualification	7. Yes	7. No	8 Number of qualifications on this level	9 Year obtained
Medical Technician Certificate	1	1	1	1
ND in Biomedical Technology	2	2	2	2

ND in Medical (Lab)Technology	3	3	3	3
B.Tech or NHD	4	4	4	4
M.Tech, M.Diploma or MSc	5	5	5	5
D.Tech, D Laureatus or PhD	6	6	6	6

10 and 11. Language at home / Language at work:

Language	10 Language at home	11 Language at work
Afrikaans	1	1
English	2	2
IsiNdebele	3	3
IsiXhosa	4	4
IsiZulu	5	5
Nothern Sotho (Sepedi)	6	6
Sesotho	7	7
Setswana	8	8
SiSwati	9	9
Tshivenda	10	10
Xitsonga	11	11
Other	12	12

3. EMPLOYMENT:

12, 13 and 14. Indicate your employer and status of the laboratory:

12 Employer e.g. NHLS	13 Is the laboratory registered for training?		14 Is the laboratory accredited?	
1	1 Yes	1 No	1 Yes	1 No

15. Indicate your position at work:

e.g. Manager or Senior Technologist / Technician
1

16. Indicate your responsibility at work:

	Yes	No
1 Assisting in laboratory bench work		
2 Laboratory bench work		
3 Supervising a section in the laboratory plus bench work		
4 Supervising a section in the laboratory		
5 Supervising a department plus bench work		
6 Supervising a department		
7 Supervising plus organising a department		
8 In control of a few laboratories spread over an area		
9 Other e.g. IT system for QC		

17-23. Indicate your general perceptions of your work environment:

	No	Neutral	Yes
17.1 Do you experience job satisfaction?			
17.2 Would you say that your job satisfaction has changed during the last five years?			
17.3 Do you think that effective career counselling would improve job satisfaction?			
17.4 Do you think effective communication between superiors and bench workers in the laboratory would improve job satisfaction?			

	No	Neutral	Yes
17.5 If your job satisfaction has changed, give reasons for the change:			
18 Do any of the following influence your attitude towards your occupation?	XX	XX	XX
18.1 Salary			
18.2 Working hours			
18.3 Staff shortage			
18.4 Irritations at work			
18.5 Job insecurity because of the NHLS / rumours			
18.6 Stress levels at work			
18.7 Stress levels at home			
18.8 Career burnout			
18.9 Give reasons if you wish to elaborate on any of the above (18.1-8)			
19 Responsibility pressure: Do you experience an overwhelming responsibility to do the job correctly and quickly despite any problems or inadequancies of equipment or assistance?			
20 Intrinsic rewards: Would you say that your job provides feelings of internal satisfaction, challenge and accomplishment?			
21 Extrinsic rewards: Would you say that your job provides security, good working conditions, and acceptable pay and fringe benefits?			
22 According to the literature, people become dissatisfied when their work becomes oversimplified (manual tasks replaced by modern technology). 22.1 Would you agree with this statement?			
22.2 Does the above statement apply to you?			
23.1 Would you have chosen the same career if you had a second change?			
23.2 Would you recommend your job to young people?			
24. Give reasons if you wish to elaborate on questions 19-23:			

4. CPD

ATTITUDE TO AND PERCEPTION OF CPD, PERSONALLY AND AS A GROUP:

25. Attitude to CPD:

	1 Negative	2 Neutral	3 Positive
1 Your personal attitude to CPD			
2 General attitude at work to CPD			

3 The attitude of seniors to CPD			
4 The attitude of employers to CPD			
5 Why do you participate in CPD activities?			

26. Do you foresee CPD as beneficial or not beneficial?

	No	Neutral	Yes
1 Individuals will benefit from CPD.			
2 The situation at work will benefit from CPD.			
3 CPD could result in feelings / jealousy among laboratory staff.			
4 Some staff members would spend more time on CPD activities and thereby neglect routine laboratory work during working time.			
5 The latest medical technology will be implemented through CPD.			
6 CPD will uplift the standard of the laboratory (outputs / results).			
7 The profession / occupation of medical technology will benefit by CPD activities.			
8 There may be dishonesty in declaring CPD credits.			
9 Temporary close-down of laboratory to attend CPD activities may be necessary.			
10 Other – specify.			

27. What are the opportunities at work for earning CPD points?

	Impossible - No	Neutral	Possible – Yes
1 For having journal discussions in your workplace?			
2 For having journal discussions with staff from other laboratories in your vicinity?			
3 For presenting case studies to your immediate colleagues?			
4 For presenting slide (Kodachrome / glass) presentations from your laboratory with a questionnaire on interesting microscopic results to your fellow-workers.			
5 For presenting case studies to staff at other laboratories.			
6 For presenting or distributing unique laboratory results with a questionnaire – nationally.			
7 For organising a workshop at work?			
8 For requesting visiting representatives to give presentations.			
9 For requesting staff from supervising laboratories to give presentations.			
10 For foster laboratory supervision – beneficial to supervising laboratory.			
11 Foster laboratory supervision – beneficial to foster laboratory.			

28 and 29. Indicate the means of communication available for CPD activities:

	28. Fax facilities	29. e-mail
During working hours	1	1
At home	2	2

5. OBSTACLES IN OBTAINING CPD POINTS - ALREADY IDENTIFIED:

30-33. Obstacles identified from the quantitative survey. Indicate your personal experience:

		No	Neutral	Yes
30. Time	1 Do you have time available during working hours for CPD activities – e.g. small group activities?			
	2 Do you have time available after working hours for CPD activities?			
	3 Do you experience CPD activities offered at inconvenient times?			
	4 Give your general impression of time as an obstacle:			
31. Financial	1 Do you foresee that attendance of local CPD activities will cost you money?			
	2 Do you have to pay for attending national congresses, seminars, workshops, yourself?			
	3 Does your organisation supply journals for journal discussions?			
	4 Give your general impression of financial aspects as an obstacle:			
32. Travelling	1 Do you find that travelling for CPD activities is expensive?			
	2 Do you find travelling, to attend CPD activities, dangerous?			
	3 Do you have to travel long distances to attend some CPD activities?			
	4 Give your general impression of travelling as an obstacle:			
33. Other	1 Do you find the venues of CPD activities suitable?			
	2 Has it ever been necessary to take vacation leave to attend CPD activities?			
	3 Can you take special leave to attend congresses / workshops and seminars?			
	4 Do you experience a lack of motivation for CPD?			
	5 Annual CPD credits – do you think that 50 credits are acceptable?			
	6 Annual CPD credits – do you think that people in rural areas should obtain the same credits as those in urban areas?			
	7 Family responsibilities are a major problem to many – does this apply to you?			

		No	Neutral	Yes
	8 Your general comment on 33 (1-7)			

HOW TO OVERCOME SOME OF THE OBSTACLES:

34-37. Possible solutions to obstacles.

	No	Neutral	Yes
34 Locum available for a one-person, two-person laboratory, while attending CPD activities – should that be implemented?			
35 Take presentations to the rural areas.			
36 Managers and/or employers should be educated in CPD expectations.			
37 Other - specify.			

6. SOCIETY OF MEDICAL LABORATORY TECHNOLOGISTS OF SOUTH AFRICA (SMLTSA):

38-46. Society as a means of enhancing CPD programs:

	No	Neutral	Yes
38. Should the society offer CPD activities to members in urban areas?			
39. Should the society offer CPD activities to members in rural areas?			
40. As the society administers CPD on behalf of the HPCSA – should they be in a position to reply to queries on CPD?			
41. As the society administers CPD on behalf of the HPCSA – should they be in a position to provide information on CPD activities?			
42. A minimum of 20 members can form a branch of the SMLTSA - do you request that the number of branches should increase?			
43. Because of the distance people in the rural areas must travel to attend CPD activities - do you request that sub-branches should be formed?			
44. If more people are motivated to become members, would that increase the number of CPD activities offered?			
45. Members of the main branches should reach out to laboratory staff in rural areas.			
46. All race groups should have equal opportunities to become members of the society.			

7. PEOPLE IN MANAGERIAL POSITIONS: THIS SECTION MUST BE COMPLETED BY EMPLOYERS OR THOSE IN CHARGE OF A DEPARTMENT / SATELLITE LABORATORY

		No	Yes
Employers / managers	47. Are you familiar with the concept - lifelong learning?		
	48. Do you offer presentations that could be registered for CPD points?		
	49. Do you organise workshops that could be registered for CPD points?		
	50. Do you invite representatives to educate staff on the latest technology for the purpose of obtaining CPD points?		
	51. Do you invite pathologists / medical practitioners to give presentations on relevant topics for the purpose of obtaining CPD points?		
SKILLS	52.1 Do you contribute towards SKILLS?		
	52.2 Could some of the above money be used for CPD activities – covering costs, for obtaining CPD credits?		
Time	53. Could an hour per week, during working hours, be set aside to spend on CPD activities?		
	54. Could an hour per week be set aside for CPD activities, either before official working hours, during lunchtime or directly after work?		
	55. Could you organise for special leave for the staff to attend workshops / congresses on a rotation basis?		
Motivate	56.1 Does your personal attitude towards CPD encourage staff members to participate in CPD activities?		
	56.2 Could you elaborate on the above answers?		
	57 Do you participate in CPD activities?		
Administration of CPD	58 Could you advise your staff on how to obtain CPD credits?		
	59 Could you assist your staff to complete the forms for registration of CPD activities?		
	60 Could you assist staff members in completing the forms for claiming CPD credits?		

8. SUGGESTIONS FOR THE IMPLEMENTATION OF CPD:

61-66. This study foresees the implementation of a management and implementation CPD model that is user friendly for conditions in South African medical laboratories:

	Suggestions and your participation
61. As an employer / manager or routine worker	Suggestions for CPD activities:

	Suggestions and your participation
62. Managers / employers must be educated about lifelong learning in order to implement CPD activities.	Suggestions on how this can be done:
63. According to the literature hands-on CPD activities have a more lasting effect	Suggestions that apply to your laboratory?
64. Every smaller group of technologists and technicians should have a CPD representative (1:25 or 1:50)	Suggestions on how this could be done
65. Contribution towards SKILLS:	Comment on whether some of the activities organised under SKILLS could be registered as CPD activities.
66. Other - specify	

Appendix 3.8: Expectations of adopted laboratories

Expectations	Rural	Urban	Total
Improvement, uplift standard of work, high standard of work, QC	6	20	26
Distribution of information from latest discoveries and technology	9	8	17
Successful CPD programme, CPD support	4	5	9
The adopted laboratory must give full support	2	7	9
Regular consultation available by experienced staff	0	3	3
Improvement in training and equipment / standardise training	0	5	5
Both parties must gain CPD credits through the interaction	1	2	3
Provision of materials, venues and guidance (helped)	2	1	3
Active participation in CPD programmes	3	0	3
Foster laboratory expect to be academically upgraded	1	1	2
Foster laboratory must provide a service and be a successful laboratory	0	2	2
Improved communication, participation in refresher courses	1	0	1
Sufficient training and support from the academic laboratories	1	0	1
Provide specific (tropical) disease samples	1	0	1
Have a mobile unit visiting rural laboratories	0	1	1
A laboratory in Durban has already adopted a foster laboratory	0	1	1

QC = Quality control

Appendix 3.9: What respondents expected from the SMLTSA

Expectations to queries	**Rural**	**Urban**	**Total**
Feedback within 5 working days or within 7 days	24	53	77
Feedback needs improvement	8	19	27
Feedback should be helpful, satisfactory and accurate	6	20	26
Do not know where to enquire / pinpoint contact person / helpline / toll free number	4	9	13
Queries acknowledged (a.s.a.p. via post, phone, fax or e-mail)	2	8	10
E-mail facility for queries	2	5	7
Make common problems public / compile problems and have clarified answers	2	1	3
Previously satisfied with administration	0	2	2
Realise CPD is in its infancy – infancy problems	1	0	1
Expectations of communication	**Rural**	**Urban**	**Total**
Need regular communication	35	55	90
Communicate via e-mail / telephone / fax mail	11	20	31
Regular feedback about credits obtained	4	8	12
Two-way communication needed	5	5	10
No information on CPD before receiving this questionnaire	1	4	5
Provide communication line (e-mail and faxes) where non-existent	2	0	2
Communicate through branch representative / society	1	1	2
Have speed dial	0	1	1
Provide easy access to activities on the website	0	1	1
Very difficult to communicate with HPCSA	0	1	1
HPCSA should communicate regularly not only when annual fees are required	0	1	1
Expectations of provision of information	**Rural**	**Urban**	**Total**
Members expect regular and accurate information about CPD	16	25	41
An official handout / booklet distributed by SMLTSA detailing rules, regulations,	18	20	39

simple information and contact numbers			
Keep members informed of registered activities / congresses / seminars	9	20	29
Inform individuals (not only the superiors or employers)	5	12	17
Newsletter (with monthly / quarterly information) / e-mail newsletter	6	9	15
Information should be helpful and informative	6	18	24
No information received, not informed about CPD credits	4	5	9
Information by e-mail / electronics	3	5	8
Information about activities in the vicinity	4	3	7
Was informed through the MTN newsletter	1	2	3
Satisfactory, list of CPD activities was provided to most prominent institutions e.g. Lancet and Ampath	1	4	5
Inform rural laboratories in time about activities	2	0	2
Clarify information about CPD point allocation, not clear on website	0	2	2

Appendix 3.10: Assistance to rural laboratories in obtaining CPD credits

Suggestions on how the SMLTSA / academic laboratories / medical companies could assist	**Rural**	**Urban**	**Total**
Presentations (articles, discussions, videos) with questions for credit allocation	27	24	51
Present seminars, workshops, lectures and courses	9	12	21
Distance courses over 26 weeks and / or correspondence courses through higher education institutions	5	2	7
Time workshops should be offered - during the day / on Saturdays / over week-ends	9	12	21
Location for activities - the nearest town in the region, rural areas, mobile unit	13	4	17
Who should offer CPD activities – SMLTSA / technologists in senior positions / pathologists / medical companies / academic laboratories	7	8	15
Willing to offer activities – university lecturer and Beckman Coulter	0	2	2
Electronic / internet / website programme / fax / tele-conference	8	13	21
Inform rural laboratories of presentations	3	1	4
Rural laboratories need guidance in organising talks and journal discussions	4	2	6
Training courses on new equipment and refresher courses	2	3	5
Inter-laboratory visitation and discussions	0	2	2
Regional hospitals should assist rural laboratories with information and other resources	0	1	1
CPD activities on ethics	1	0	1
Academic laboratories can initiate CPD distance learning programmes	0	1	1
Suggestion – SMLTSA could start a journal and video library	0	2	2
Rural laboratories need support	**Rural**	**Urban**	**Total**
Provide material to rural areas / journals and newsletters / overhead projectors	3	10	13
Newsletters and subjects / Reading matter or video material available	3	2	5
Provide transport	0	3	3
People attend functions / journal discussions but don't learn anything	0	3	3

Suggestions on how the SMLTSA / academic laboratories / medical companies could assist	**Rural**	**Urban**	**Total**
Inform rural laboratories about mini-congresses, seminars and academic meetings	2	0	2
Look towards adoption	0	1	1
Open SMLTSA branches in rural areas	1	0	1
Make travel arrangements at minimum costs	0	1	1
Short staff, need replacement when attending activities / exchange workers between rural and urban laboratories / relief staff available for smaller laboratories	2	1	3
Delegates should visit laboratories for CPD evaluation	1	0	1
Positive response - special thanks to those who help rural labs in obtaining credits / presentation should be attended to uplift the standard and not only for the credits / success of CPD dependent on the commitment of all participants	1	2	3

Appendix 3.11: General inputs towards CPD and / or work frustration

Marks allocation	**Rural**	**Urban**	**Total**
Re-evaluate point allocation	4	5	9
50 points unattainable	2	4	6
Difference between marks allocation in urban in rural areas	1	1	2
System open to fraud	0	1	1
Costs and travelling to attend CPD activities	**Rural**	**Urban**	**Total**
Travelling costs - few examples: R130 for one credit point / travel 250 km at night for one point / 300 km for one point at own expense	8	3	11
Request for sponsorship to cover travelling costs, functions congresses and literature	5	6	11
Employers should contribute financially	1	1	2
Pay very high annual fees to HPCSA	0	2	2
As a non-member paid R260 to attend CPD activities	1	0	1
Dissatisfaction	**Rural**	**Urban**	**Total**
NHLS – unhappy in work situation	2	0	2
SMLTSA – disappointed in the Society	0	5	5
Assisting in research – ways in which to accumulate credits?	0	1	1
Change-over to NHLS – CPD came at the wrong time	1	1	2
First world ideals, CPD has merits but should be on a voluntary basis	0	1	1
Improvement	**Rural**	**Urban**	**Total**
Need help with improvement of laboratory techniques	1	0	1
Need help with further education / distance learning programme	1	2	3
Need assistance to start research projects	2	1	3
See CPD as a training and developing issue, should be handled as such	0	1	1
Upgrade management skills – e.g. courses	0	1	1

Not employed in the profession - concerned about registration with the HPCSA	**Rural**	**Urban**	**Total**
How to maintain their registration?	7	6	13
How to obtain credits?	1	3	4
Negativism towards CPD	**Rural**	**Urban**	**Total**
Very negative about CPD	1	6	7
CPD implementation – there was no consultation with medical technologists, personal circumstances or freedom of choice	0	4	4
The employer does not encourage CPD activities	0	1	1
Concerned whether the SMLTSA main office could handle all the administrative work	1	3	4
Not informed about CPD by HPCSA	0	1	1
CPD concept is still new with loopholes and should be straightened out	0	1	1
Inter-staff relationship	**Rural**	**Urban**	**Total**
Equal opportunities to attend CPD activities during working hours	1	3	4
Temporary close-down of laboratory to attend activities	0	1	1
Introduction of new apparatus and products should be offered to all staff members and not only to the head of the department	0	1	1
Inform everybody of CPD activities – not only the seniors	1	0	1

CHAPTER 4

BRIDGING OBSTACLES IN THE CPD PROGRAMME FOR MEDICAL TECHNOLOGISTS AND MEDICAL TECHNICIANS BY COMPILING A CONCEPT CPD FRAMEWORK

4.1 INTRODUCTION

Lifelong learning is the ability to keep abreast of the professional standards and technological developments in a profession (Hull, 2000). The implementation of continuing medical education (CME) resulted in lifelong learning being practised in a structured and measured form by health professionals in the United Kingdom (UK) and Israel (McKay, 2000; Kushnir, Cohen and Kitai, 2000). According to Peck, McCall, McLaren and Rotem (2000) there is no drastic difference between CME and continuing professional development (CPD). CPD is the process by which health professions keep updated to meet the needs of patients, the health service and their individual professional development (Peck *et al.,* 2000).

CPD in the medical professions is practised internationally in the UK (Field, 1998), United States of America (USA) (Fox, 2000), Australia and New Zealand (Peck *et al.,* 2000; Lannin and Longland, 2003). Pathology laboratories participating in CPD programmes are clinical chemists and clinical biochemists in Canada (Collier, Crowe, Stinson, Chu and Houlden, 2001), medical technologists and technicians in the USA (Falcone, 1999) and pathology laboratories in the UK (Du Boulay, 1999).

Medical technologists should participate in CPD activities in order to improve employees' skills, competencies, knowledge and organisational efficiency (Summers, Blau and Ward-Cook, 2000). The same authors stated that supervisors in pathology laboratories should

create an environment that encourages professional development among medical technologists.

A compulsory CPD programme was implemented for medical technologists and medical technicians in South Africa in April 2002. To retain registration with the Health Professions Council of South Africa (HPCSA), registered HPCSA members must comply with the criteria set by the proposed CPD programme (HPCSA, 2002).

4.1.1 Prescribed instructions for the collection of CPD points for medical technologists and medical technicians

The HPCSA has prescribed the regulations and procedures relating to CPD for medical technology (HPCSA, 2002). The required number of points must be accumulated in a year. Points are accumulated through the following activities:

- Organisational activities including national conferences and national congresses
- Small group activities including journal clubs, small group discussions, workshops, lectures, seminars, refresher courses or departmental meetings
- Individual activities including research and publications in accredited journals, teaching and training of undergraduate students and postgraduate students. Paper and poster presentations and lectures to peers, formal education, examination assessments and supervision of degree qualifications
- Other activities including subscription to the Medical Technology South Africa (MTSA), full time employment and part-time employment.

The HPCSA released the final CPD draft document that will be piloted by the Professional Boards for Medical Technology and Dentistry during the last six months of 2005.

According to these guidelines CPD will be practised on a personal portfolio system and at least 30 continuing educational units (CEUs) must be accumulated annually (HPCSA, 2005). These guidelines though did not apply during this study therefore some of the CPD activities valid during this study are no longer valid.

4.1.2 Identified obstacles to CPD and suggestions to overcome them, incorporated into a CPD framework

The compulsory CPD programme for medical technologists and medical technicians was implemented in 2002. The question arose whether the proposed programme was ideal for the achievement of optimal CPD outcomes? To investigate the efficiency of the programme a questionnaire was distributed to HPCSA registered medical technologists and technicians. Feedback from the questionnaire was used to compile an interview questionnaire on participating in the CPD programme. Interviews were conducted with HPCSA registered medical technologists and technicians throughout South Africa.

Subsequently obstacles identified from the questionnaires, supplemented by information obtained from the literature pertaining to medical technologists' and technicians', as well as other health professionals' involvement in CPD activities, were used to compile a concept CPD framework. This framework could be utilised to implement CPD for medical technologists and medical technicians. The framework addresses the obstacles role players experienced in conducting a successful CPD programme and suggests solutions and possible CPD activities. It also requests, by means of open-ended questions, inputs to measure the outcomes of CPD participation (Appendix 4.1).

4.2 OBSTACLES ROLE PLAYERS MUST OVERCOME AND POSSIBLE SOLUTIONS TO ESTABLISH A CPD PROGRAMME

The HPCSA, Society of Medical Laboratory Technologists of South Africa (SMLTSA), employers and managers, the individual, other organisations such as medical companies, health professions and higher education institutions are all contributing to the implementation of the current CPD programme. Barriers that prevent HPCSA registered members from obtaining CPD credits should, where possible, be overcome. CPD should not only be measured by means of CPD credits. Mathers, Challis, Howe and Field (1999) compared postgraduate educational accreditation (PGEA) with portfolio-based learning by physicians in the UK and found portfolio-based learning to be more effective and efficient in that the physicians had more control over how, what and when they learned.

4.2.1 Role of the HPCSA (Professional Board for Medical Technology)

All health professions registered with the HPCSA must participate in compulsory CPD programmes. The HPCSA is therefore responsible for the umbrella organisation and administration of CPD in South Africa. The HPCSA prescribed the annual CPD credits required to retain HPCSA registration. The HPCSA, by means of the different professional boards, informed all the HPCSA registered members about CPD.

The Professional Board for Medical Technology (PBMT) distributed the CPD guidelines in August 2002 to all registered medical technologists and technicians. It was presumed that all registered members received the guidelines, which was, however, not the case, as was conveyed to me during the structured interviews. A control system would therefore be

advisable whereby receivers of guidelines could confirm receipt of the documentation (Category 1.1.2; Appendix 4.1).

Respondents to the mailed questionnaire indicated that they found it very difficult to make contact with the HPCSA. The concept framework therefore suggests that a contact person at the HPCSA should be available by e-mail or telephonically for members who need information regarding CPD (Category 1.2.1; Appendix 4.1).

Respondents were informed that they could lose their registration with the HPCSA if they do not comply with the CPD programme. Not all respondents agreed with the prescribed annual point allocation required for CPD activities. Some respondents wanted a lower point allocation because they could not reach the prescribed number of points and compared their requirements with other allied health professions who required fewer points per annum. Some even requested different point allocations for those in rural and urban areas as accumulating CPD in rural areas was more difficult. Even though respondents from rural areas found it hard to obtain the required points and asked for a lower point allocation, medical technologists and technicians should keep to the prescribed instructions. Whether working in rural or urban laboratories, it remains the same profession and therefore the same standards should be maintained. According to the latest news received from the HPCSA (HPCSA, 2004) the annual credit requirements will be lowered to 30 credits per annum for all health professions registered with the HPCSA as from 2005. Credits will be known as CEUs and will be valid for two years where after they expire (HPCSA, 2005). It will be the responsibility of each individual to keep record of his / her own CEUs with spot checks conducted by the HPCSA (HPCSA, 2005).

The HPCSA should strive to establish a measuring system for the outcomes of CPD activities. Watkins (1999) stated that in the past CPD was measured by inputs, such as number of hours spent on CPD or points accumulated over a period, but this should change where the measurement of CPD is based on outputs (Category 1.2.3; Appendix 4.1).

The framework emphasises the fact that all HPCSA members must be fully informed about CPD and must confirm receipt of the CPD guideline. The HPCSA must be accessible to all registered members to solve queries regarding CPD and HPCSA registration. In addition, the framework states that the outcomes of CPD should be beneficial to the profession of medical technology (Category 1; Appendix 4.1).

4.2.2 Role of the employer and manager

In order to implement CPD successfully, employers of medical technologists and technicians must create a positive attitude to CPD. This is only possible when manager, supervisors and seniors in charge of laboratories are positively disposed towards CPD. Local, regional and national CPD activities should be allowed, within limits, during working hours. The employer must be prepared to contribute financially when employees represent the company at CPD activities. Staff development activities dependent on the Skills Development Fund, should, within limits, be accredited for CPD activities. Employers, with the aid of laboratory managers, must facilitate job satisfaction, and thereby create a positive attitude towards CPD. The general impression of the respondents was that employers were in favour of CPD.

Curnow (2000) in the UK stated that employers must become more aware of the importance of CPD as was the case with the professional statisticians. Falcone (1999) stated that it was difficult at times for clinical laboratories in the USA to have time and money available to send

staff members away for continuing educational seminars. A similar situation developed in South Africa, with most laboratories experiencing staff shortages because of a tight budget (Crisp, 2000). This situation places a burden on both the employer and the manager in charge of the laboratory to balance the allowed CPD activities to be practised during working hours with the demands of effectively running the laboratories.

A barrier to some respondents was the absence of motivation by their seniors to participate in CPD activities. Fewer than half of the participants in managerial positions indicated that they were familiar with the concept lifelong learning and neither were they very active in organising or presenting CPD activities. Most of the interviewed managers could advise their staff on the procedure of obtaining CPD credits, but fewer than half could assist their staff in completing the forms to accredit a CPD activity or to claim CPD credits (HPCSA, 2002). This gave the impression that people in top positions were not very interested in CPD, although a large percentage of those interviewed participated in CPD activities.

Job dissatisfaction in pathology laboratories is not unique to South Africa, but is likewise experienced in the USA and UK (Monahan, 2001; Pitt and Sands, 2002). Factors that contributed to job dissatisfaction among the participants were salaries, working hours and shortage of staff. Respondents working in the National Health Laboratory Service (NHLS) experienced job insecurity with rumours that some laboratories might close down. Poor management was a complaint of some of the participants to the interviewed questionnaire. The question arises whether compulsory CPD would have a positive or negative influence on job dissatisfaction?

Medical technologists, like other allied health professions, work awkward hours. Monahan (2001) said that the general perception is that medical technology is a low-status, low paid job

in the USA. Poor salaries were earned by medical technologists working in Kuwait and the UK (Shah, Chowdhury, Al-Enezi and Shah, 2001; Pitt and Sands, 2002). Job insecurity contributes towards job dissatisfaction among medical technologists (Matteson and Ivancevich, 1982[b]). Some respondents agreed that manual tasks replaced by modern technology were a cause of job dissatisfaction, but to enable workers to finish the workload using modern equipment is a necessity. Lehmann and Leiken (1990) concluded that replacing manual tasks with automatic equipment made work less complicated and therefore less challenging.

Similar causes of job dissatisfaction contributed to respondents not participating in CPD activities during working hours; such as after-hour service obligations, shortage of staff and the professional workload. Some of the respondents also indicated that management did not allow time off for CPD activities. A small number of respondents had to take vacation leave to attend CPD activities.

Acquilla, O'Brien and Kernohan (1998) indicated that the public health physicians in the North of England did not always have the opportunity to participate in CPD activities. In contrast, physicians employed by the National Health Service (NHS) in the UK were entitled to leave for study and professional development (Beirne, 1999). In 1979 Fritsma, Matthews, Schoeff and Young reported that many medical technologists were prepared to attend educational programmes in their own time and some even at their own expense.

Respondents requested that everybody in the laboratory should have equal opportunities during working hours to attend CPD activities. Lack of equal opportunities could contribute to jealousy or negative feelings among the staff. It will be the responsibility of the managers, supervisors and seniors in the laboratory to detect any unpleasantness caused by CPD

activities and to manage a CPD system during working hours that is acceptable to all staff members.

Managers should create a positive attitude towards CPD at work and motivate technologists and technicians to attend and present accredited activities. They should accredit journal discussions, case studies and where possible laboratory-unit interaction discussions for CPD points. Journal discussions and case studies are CPD activities practised by medical technologists in the USA and clinical chemists and clinical biochemists in Canada (Falcone, 1999; Collier *et al.,* 2001). In smaller laboratories, medical technologists and technicians should consider participating in other health professional accredited CPD activities. Internet activities, when accessible and when time permits, should be encouraged among the staff.

About half of the participants indicated that their employers contributed towards the Skills Development Fund and they believed that some of the activities organised under the Skills Development Fund could be accredited as CPD activities. Results indicated that some of the participants in managerial positions managed to organise special leave for their staff to attend workshops, seminars and congresses on a rotation basis. The policy in most medical laboratories is that staff members may attend congresses provided they give presentations. The respondents indicated that in the past, private pathologists and the South African National Blood Service (SANBS) provided financial assistance for CPD activities, travel expenses and in certain instances transport to attend CPD activities.

Beirne (1999) indicated that the NHS in the UK allowed study leave and provided financial assistance for attending educational activities. This, however, put a heavy burden on the NHS, with less money available for patient treatment. Vallance-Owen (1999) said that the employer was under obligation to allow paid time off to attend CPD activities.

Earning CPD credits is no guarantee that those present at an activity benefited by their attendance. In the future a measuring system for the outcomes of CPD would therefore be advisable. The trend in the UK is to move away from the system of point allocation towards keeping a personal portfolio (Mathers *et al.,* 1999; McKay, 2000). If ever this is implemented in pathology laboratories in South Africa, it will put a heavy burden on the employers and managers of laboratories and will have to be administered in close co-operation with the HPCSA.

The concept framework states that employers and managers of laboratories must not only be committed to CPD but must also encourage medical technologists and technicians to participate in CPD activities (Category 2; Appendix 4.1). Creating CPD activities during working hours is cost effective. When activities are offered away from work employers should be prepared to grant paid leave and to cover some of the costs involved. Some staff development activities resorting under the Skills Development Fund could be accredited for CPD credits. The concept framework is adamant that the outcomes of CPD must be reflected in the standard of results leaving the laboratory.

4.2.3 Role of the SMLTSA

The SMLTSA administers CPD on behalf of the HPCSA. The CPD subcommittee approve and allocate points to CPD activities. Activities organised by the Society include the SMLTSA national congress that is presented every second year as well as mini-congresses, workshops and academic events, organised by branches of the Society.

After the first cycle of the compulsory CPD programme it was obvious that the SMLTSA could not handle the administration process. According to feedback to the mailed questionnaire, participants experienced a lack of feedback from the SMLTSA administrative office to their queries about CPD. The respondents expected regular information regarding CPD activities as well as updated point allocation. Most of the respondents were well informed regarding the procedures they must follow for the accreditation of CPD activities and after attending an activity, claiming their individual CPD points. However, these procedures were obstacles to those respondents who were not informed and therefore were not aware that they had to send proof of attendance to the SMLTSA head office.

Non-membership of the Society was due to transport problems, the time factor and absence of a branch of the Society in the vicinity. In all three instances, these barriers were more common among respondents in rural areas.

A small percentage of respondents indicated that they attended SMLTSA organised CPD activities regularly. Just over half of the respondents had attended congresses in the past, the majority of whom were from urban areas. A disappointing small number of respondents presented either papers or posters at congresses and this could possibly be attributed to the small number of respondents involved in research. Reasons given for not attending the SMLTSA national congresses were lack of information regarding activities, workload and financial constraints. Additional reasons given for not attending were shortage of staff, no leave granted and the fact that staff members were limited as to who may attend congresses. Most employers follow the policy that staff members may attend congresses provided they give presentations. This leads to another obstacle in that material for presentations at congresses was limited to a selected group of medical technologists and technicians with the small percentage of respondents involved in research. The possibility of presenting routine

work or case studies was higher but respondents were not always educated in poster or oral presentations.

A participant in the interview questionnaire stated that the success of the CPD programme would be determined by the efficiency of its administration, which is in agreement with Eraut (2001), from an institute of education in the UK, who stated that CPD must be effectively managed in order to be successful. This was confirmed by Carter, O'Hara, Wright, Benato, Mott and Clarke (2003) who referred to the administration of personal development plans (PDP) for health professionals in general practice in the UK where the need for consistent and reliable management was highlighted if they wanted success for their project.

The Medical Technology News (MTN) is distributed to all registered medical technologists and keeps them informed about the latest developments concerning CPD. All members of the SMLTSA are automatically subscribers to the journal MTSA which is worth five CPD points per annum. By answering the questionnaire in the MTSA, distributed bi-annually, SMLTSA members could earn another three points per publication (SMLTSA, 2002). This activity was also practised by radiologists in Canada by reading a relevant article in the journal, Canadian Association of Radiologists and answering the questions for which CPD credits could be earned (Coblentz, 2001). Turner, Hobson, D'Auria and Beach (2004) in the UK trusted that the journal Occupational Medicine for occupational medicine practitioners could be a useful educational tool within the continuing educational process. The American Medical Association started publishing a newsletter in which their members were informed of CME activities (Wentz, Gannon, Osteen and Baldwin, 1989).

The perception from respondents to the structured interview was that branches of the SMLTSA are obliged to offer CPD activities to those in urban and rural areas (Category 3.2.1;

Appendix 4.1). Participants requested that more sub-branches of the Society should be formed. If the head office and branches of the Society could comply with these requests CPD activities would be more accessible to both those in urban and rural areas. Mini-congresses held on a Saturday are ideal opportunities for larger numbers of medical technologists and technicians to attend local activities. The professional societies in the USA took a variety of educational workshops and symposiums to medical technologists nationally and regionally (Falcone, 1999).

Respondents suggested that a journal club should be established and administered by the SMLTSA head office or a branch of the Society. The club could operate as a library where people borrow journals for journal discussions. Establishing a video bank was another possibility that was suggested (Category 3.2.9; Appendix 4.1). A video could be made of an accredited CPD activity and questions compiled to accompany the video. This video could then be borrowed and on return CPD credits allocated to the questions answered. The administration of both a journal club and video bank will not be simple. Roberts and Scott (1988) indicated that medical technologists in rural California requested the availability of a central videotape library.

Falcone (1999) described teleconferences as a convenient way of participating in continuing educational programmes. This would, unfortunately, not always be feasible, as the service could only be available during office hours and only a few medical technologists in rural areas would have access to the service.

As indicated in the framework the SMLTSA administers the CPD programme, approves and allocates credit values to the CPD activities. The branches of the SMLTSA should organise CPD activities. Especially local activities such as mini-congresses are accessible and not

very expensive. Medical technologists and technicians should be informed of CPD activities offered locally as well as nationally. The framework suggests that a video library should be formed (Category 3; Appendix 4.1).

4.2.4 Role of the individual

Since 2002 individuals have been obliged to collect the required number of annual CPD credits as prescribed by the HPCSA to remain registered with the HPCSA in order to be able to practice. Medical technologists and technicians should not only attend but should also be prepared to present CPD activities. Individuals must participate in lifelong learning and thereby keep up with the latest technology.

The current perception in the USA is that medical technology is a low-status and low-paid job with on the job risks and awkward working hours (Monahan, 2001). Employers must therefore facilitate a working environment where employees experience extrinsic job satisfaction. Job satisfaction will result in a positive attitude towards CPD as was evident from the participants in the interviews.

Half of the respondents experienced job satisfaction. According to some respondents, job satisfaction of many medical technologists and technicians changed after the establishment of the NHLS. Some participants experienced intrinsic job satisfaction and a smaller number of participants experienced external job satisfaction. Fewer than half of the participants would have chosen the same profession again if given the choice and about half would recommend the profession to young people. From these results it was clear that even though some participants enjoyed their work, external circumstances made it less attractive. That

would most probably also explain why fewer than half of the respondents would have chosen the same profession if they were given the opportunity.

Half of the participants experienced high stress levels at work with a small percentage experiencing high stress levels at home. This could be ascribed to the fact that a large number of the participants experienced responsibility pressure and therefore wanted to do the job correctly and quickly. Medical technologists were classified into high stress and low stress groups with the type A personality matching the high stress group, the more responsible medical technologist (Matteson and Ivancevich, 1982[a]). Rogers (1983) reported that medical technologists working in laboratories in upper South Carolina experienced job stress and job dissatisfaction. A more recent study by Frazer and Sechrist (1994), identified stress factors in four allied health practitioners. In medical technology the breakdown of equipment ranked the highest, followed by poor management practice, difficult co-workers, lack of time and exposure to the human immunovirus (HIV). These were the top stress factors out of a list of 35.

Kushnir *et al.* (2000) indicated that CME reduced job stress and increased job satisfaction among physicians in Israel. Participants agreed that counselling potential learners, prior admittance to the course in biomedical technology, would eliminate those not fitted for the profession. Laboratory managers should try and minimise the stress levels at work. Lower stress levels at work would result in job satisfaction and individuals being more accepting of CPD. Individuals should stop blaming others for their situation and create a pleasant atmosphere at work.

Reasons participants gave for job satisfaction were the technological improvement respondents experienced in the private pathology laboratories, recent promotions, conducting

independent research and experiencing their current position of more challenging than before. Monahan (2001) said that medical technologists look towards career advancement. Sinclair (1984) described working independently, as a non-financial reward in medical technology.

With reference to the framework, Category 4; Appendix 4.1, registration with the HPCSA requires the accumulation of the required annual CPD credits. In order to participate in lifelong learning each individual should keep up with the latest technology.

4.2.5 Role of other organisations

According to Leist and Green (2000) health professionals should broaden their vision of CME and learn new skills. Other organisations that could assist medical technologists and technicians in this regard and in obtaining CPD credits are medical companies, other health professionals and higher education institutions.

The possibility of medical representatives presenting accredited CPD activities was feasible for most of the respondents as medical representatives are usually knowledgeable about the latest techniques and equipment on the international market (Category 5.1; Appendix 4.1). In many instances the representatives are registered medical technologists and in presenting CPD activities earn their personal CPD credits. Medical companies are the major financial contributors to congresses, mini-congresses and workshops.

A maximum of five CPD points could be earned annually by attending accredited CPD activities organised by other health professionals. These activities could vary from attending accredited ward rounds with physicians to CPD accredited activities organised by, for

instance, radiographers. Attending these activities is especially valuable for people working in small laboratories in rural areas where the opportunities for CPD activities are limited. The framework, Category 5.2; Appendix 4.1, makes provision for medical technologists and technicians to keep updated on the latest developments not only in their own field but also in those of other health professions.

This concept of a broader knowledge in the general medical field was emphasised among primary care practitioners in the UK. The Practice Professional Development Plan (PPDP) for health professions in the UK confirmed the professional development needs of doctors and other professionals in the primary health care team (Field, 1998; Elwyn, Hockling, Burtonwood, Harry and Turner, 2002). It was suggested that a means of moving away from ineffective didactic uni-professional education towards that of learning organisations should be implemented for their CPD programme (Elwyn *et al.,* 2002).

Medical technologists and medical technicians should consider formal education through higher education institutions (Category 5.3.1; Appendix 4.1). These qualifications could be in biomedical technology, information technology and laboratory management.

4.3 OBSTACLES AND SOLUTIONS TO PROPOSED CPD ACTIVITIES

Medical technologists and technicians could participate in local, regional, national and educational CPD activities. The main barriers to cross in taking part in CPD activities are time, the financial constraint and in some instances travelling. No activity can be presented or attended without the sacrifice of time and money. Travelling as an obstacle cannot be separated from time and money as was experienced by Beirne (1999) in the NHS in the UK and occupational therapists described by Lannin and Longland (2003) in Australia.

4.3.1 Time, financial constraints and travelling as obstacles

Time available during or after working hours was given as the major obstacle to participating in the CPD programme. Respondents indicated lack of time after hours was one of the reasons why they did not consider continuing with further qualifications. People doing overtime shifts found it difficult to attend CPD activities. According to results from the mailed questionnaire time was an even greater problem to respondents from rural areas.

Time was not only a problem to medical technologists in South Africa, but was also experienced as a major problem among health care practitioners in the UK and the USA. Medical professions in general practice in the UK were always under heavy time constraint and found it very difficult to participate in CPD activities (Carter *et al.,* 2003). Sectish, Floriani, Badat, Perelman and Bernstein (2002) in the USA found time and money to be the greatest barriers paediatricians experienced in participating in CPD activities, especially time away from the practice.

Respondents to the mailed questionnaire stated that CPD would entail annual personal expenses. Respondents in rural areas anticipated that CPD activities would cost them more annually than those in urban areas. Costs of CPD activities included fees for the activity, travelling and accommodation fees and in those instances where journals were not supplied by the employers, expenditure in obtaining journals for journal discussions. Offering CPD activities, such as workshops or mini-congresses is also very expensive. With reference to costs involved in CPD activities Weir, Stieb, Abelsohn, Mak and Kosatsky, (2004) indicated that costs were involved in compiling an e-mail based course for Canadian physicians and specialists. Lannin and Longland (2003) indicated that rural therapists in Australia incurred

significant travel and accommodation expenses in attending CPD activities. The same was experienced by professional health practitioners employed by the NHS in the UK (Beirne, 1999). Nursing staff in the UK experienced lack of funding and study leave as obstacles to participating in CPD activities (Govier, 1999). CPD activities should be cost-effective as requested by radiographers in the UK (Kerr and Vinjamuri, 2001).

Who must cover the costs of CPD activities? The NHS in the UK, in the past, allowed leave for study and professional development (Beirne, 1999). However, this money must come from somewhere and with more money going into CPD, less would be available for treating patients (Beirne, 1999). The principle that employers must cover some of the costs to CPD activities were shared by Vallance-Owen (1999) and Du Boulay (1999) both in the UK who indicated that employers were under obligation to allow paid time off for attending CPD activities. According to the framework employers are requested to assist in covering costs for attending some activities (Category 2.1.7; Appendix 4.1).

Some respondents found travel to be expensive and dangerous. To some respondents lack of transport was also experienced as an obstacle. Similarly registered dieticians in the USA who lived in rural areas were less likely to find CPD activities geographically accessible as most of the activities were presented in metropolitan areas (Williams, Keim and Johnson, 2004). Distance to a meeting and lack of funding were also barriers to anaesthetists in Scotland (Chambers, Ferguson and Prescott, 2000). The framework suggests that employers should contribute to providing transport to attend CPD activities (Category 2.1.6; Appendix 4.1).

4.3.2 CPD activities as solutions

Matthers *et al.* (1999) stated that general practitioners in the UK preferred to attend activities nearest to home. Some respondents to the mailed questionnaire were involved in journal and departmental discussions, an ideal solution to address costs and when possible attended workshops and short courses. Interesting cases found during the daily routine work could be converted into case study discussions in the local laboratory with the immediate colleagues or with staff members of other laboratories in the same vicinity or even as national case study presentations. These activities are more accessible and therefore better attended by people in urban areas. Results from the mailed questionnaire indicated that journal discussions were well established in urban areas. Journal discussions were, however, problematic in small laboratories and it is therefore suggested that small laboratories in one town or close to one another, manned by two to three technologists or technicians should consider getting together for journal discussions. A large number of the respondents stated that they could initiate CPD activities. According to the framework, medical technologists should not only attend activities, but should also present them (Category 6.1; Appendix 4.1).

Articles for journal discussions could be obtained from the internet, MTN, MTSA and commercial journals such as the Analytical and the Laboratory Marketing Spectrum (LMS), when not supplied by employers. Falcone (1999) said that trade journals and professional society publications provide convenient inexpensive methods to obtaining continuing educational credits. Bacon (1999), a nephrology specialist in the UK referred to daily growth in the availability of high-quality medical information available on internet.

Just over half of the respondents could participate in internet accredited CPD activities because of access to e-mail facilities. Although time is needed to complete activities on

internet it could be done at a time that suits the individual. Accredited CPD activities for medical technologists and technicians in South Africa are available from www.medmall.co.za (Category 6.1.5; Appendix 4.1).

Falcone (1999) reported that the internet provided a convenient, cost-effective and interesting way of participating in continuing educational programmes for medical technologists. Bacon (1999) reported that the internet provided for the need for participation in CPD programmes of medical doctors in the UK. According to Randell (2001) e-learning proved especially helpful to people working in small towns or rural areas who usually have to travel great distances to earn continuing educational points. Harris, Salasche and Harris, (2001) reported on the success story of physicians who participated in a course on skin cancer on the internet. E-mail learning was beneficial to physicians in Canada and paediatricians in the USA. (Sectish *et al.,* 2002; Weir *et al.,* 2004). Paediatricians obtained answers to unsolved problems directly from the internet-based learning system (Sectish *et al.,* 2002). Physicians did a course on outdoor air pollution, where some participants indicated that they improved their knowledge on the topic (Weir *et al.,* 2004).

An additional qualification in medical technology or a related formal qualification is a guaranteed manner of collecting CPD points (Category 6.3.1; Appendix 4.1). A small percentage of medical technologists and slightly more technicians were involved in further qualifications with a higher percentage who intend to further their qualifications in the near future, though unfortunately fewer than half in a medical technology related direction. Francis, Hofherr, Peddecord, Karni and Krolak (2001) stated that medical technologists who perceive themselves as professionals compared with those who perceived themselves to be in a technical field, were more likely to progress in their career and advance their qualifications.

When a laboratory intends changing from an existing method to a new method, it is advisable to compare the results of the two techniques, which could then be presented at a congress, or published in the MTSA. A small percentage of the respondents believed that they could publish from research work. The framework suggests that case studies and research outcomes should be published (Category 6.2.2; Appendix 4.1).

CPD points are allocated to people involved in part-time lecturing. A small number of respondents were involved as part-time lecturers at higher education institutions as proposed in the framework (Category 6.3.4; Appendix 4.1).

Obstacles to obtaining CPD credits cannot be ignored but there are many solutions to the obstacles as captured in the framework, Category 6; Appendix 4.1. These solutions entail; attending CPD accredited activities locally and nationally when the opportunity occurs, present activities, participation in internet activities, engaging in further education and getting involved in lecturing and research. It all comes down to what the individual is prepared to do. Those practising in rural areas will unfortunately have to put in that extra effort to obtain the annual CPD credits.

4.4 ASSISTANCE TO MEDICAL TECHNOLOGISTS AND TECHNICIANS IN RURAL AREAS

In response to the question of what could be done to assist people in rural areas in accumulating their required number of CPD points, the main request from the respondents was that seminars, workshops and lectures should be presented to employees in rural area. The presentations should preferably be offered over a week-end, enabling more people to

attend the activities. These activities could be offered by medical representatives visiting the laboratories, area managers from supervising laboratories and the SMLTSA. Respondents to the mailed questionnaire indicated that they were willing to assist in presenting courses and lectures in rural areas. The framework suggests that representatives from medical companies should offer accredited CPD activities (Category 5.1.1; Appendix 4.1).

Respondents in rural areas indicated that they would like to start their own CPD activities, but needed guidance in organising talks and journal discussions. Physical support required to start their own CPD activities included journals for journal discussions and overhead projectors that could be supplied by the employer to be used during presentations.

Respondents from rural areas asked for staff replacement when attending CPD activities away from home. This would prevent the closing down of a laboratory while attending CPD activities in another town. A locum should be available to replace those who want to attend CPD activities away from home (Du Boulay, 1999).

Electronic CPD activities would be a solution to many in the rural areas provided they have access to the internet. Participation in internet activities is proposed in the framework (Category 6.1.5; Appendix 4.1). Employees in rural areas should investigate whether internet facilities are available in their local libraries or even obtain access *via* internet cafes

4.5 CPD AND THE FUTURE

Time and financial constraints were the major barriers respondents experienced in participating in CPD activities. A smaller group also experienced travelling to and from venues to attend CPD activities as an obstacle. Participants from rural areas experience

these obstacles to a greater extent. These obstacles are not unique to South Africa, but were also experienced by other health professions in the USA, Canada, the UK and Australia.

Solutions to these obstacles are given in the framework (Category 6; Appendix 4.1). Local activities, preferably those that could be practised during working hours should receive high priority. Participating in internet activities is a solution to many, especially those from rural areas. Medical technologists and technicians should consider improving their qualifications. When the opportunity presents itself medical technologists must get involved in research and lecturing. If all the role players as mentioned in the framework make their contribution a successful CPD programme could be established.

Participating in CPD activities such as workshops is more effective for achieving outcomes than mere attendance of CPD activities (Category 7; Appendix 4.1). The way in which an activity is offered and the impact it makes on the individual will decide whether or not it will have the desired lifelong effect. Leggate and Russell (2002) stated that “hands-on” activities were preferred by primary care dentists in the UK.

The concept CPD framework was drafted taking in consideration the obstacles role players were confronted with in establishing a CPD programme. The framework should serve as a guideline by which the individual, the profession of medical technology and the workplace will benefit by participating in CPD. This framework will be tested by a panel of experts using the Delphi technique and thereby getting inputs from a number of specialists in medical technology in the compilation of a CPD framework.

4.6 REVIEW

With the compulsory CPD programme, all role players in medical technology should contribute to making CPD activities accessible to medical technologists and technicians employed in urban and rural areas. A concept CPD framework was compiled stating the contribution the different role players can make in establishing a usable CPD programme. The framework was also constructed to bridge the main obstacles identified in taking part in CPD activities, namely lack of time and financial constraints.

The CPD programme was initiated by the HPCSA in close association with the professional boards for the different health professions. The HPCSA is therefore held responsible for the distribution of information concerning CPD, responding to queries and administering the CPD programme. The SMLTSA administer CPD on behalf of the HPCSA. Measuring CPD only by allocating CPD points is not sufficient; the outcomes of CPD in the workplace and the profession should be measured.

Participating in local CPD activities is cost effective. The main provider of local CPD activities would be the employers *via* the managers and supervisors in laboratories. The top managers are therefore not only responsible for creating and offering CPD activities, but should also motivate all medical technologists and technicians to develop a positive attitude towards CPD. To offer CPD activities during working hours has boundaries, depending on the workload and therefore the time available. It is a debatable question whether employers should contribute financially to making CPD activities more accessible. The SMLTSA, with or without the association of medical companies, is the main provider of both local and national CPD activities. All medical technologists and technicians should be motivated to become members of the Society and not only to attend but to get involved in presenting CPD activities

offered by the SMLTSA. It is advisable that medical technologists and technicians should also attend CPD activities offered by other health professionals.

The main responsibility to participate in CPD activities remains with the individual. In addition to the activities offered by employers and the SMLTSA, medical technologists and technicians should consider further formal qualifications and attempt to get involved in research projects. This could also lead to publishing articles in accredited journals.

The broader concept of CPD will never reach its goal if medical technologists and technicians only participate in CPD activities to accumulate the required number of credits. It is therefore critical that the outcomes of CPD must reflect in the workplace and the profession and this must be measured. The HPCSA in association with the employers should get a system in place to measure the short-term as well as long-term impact of CPD on medical technology.

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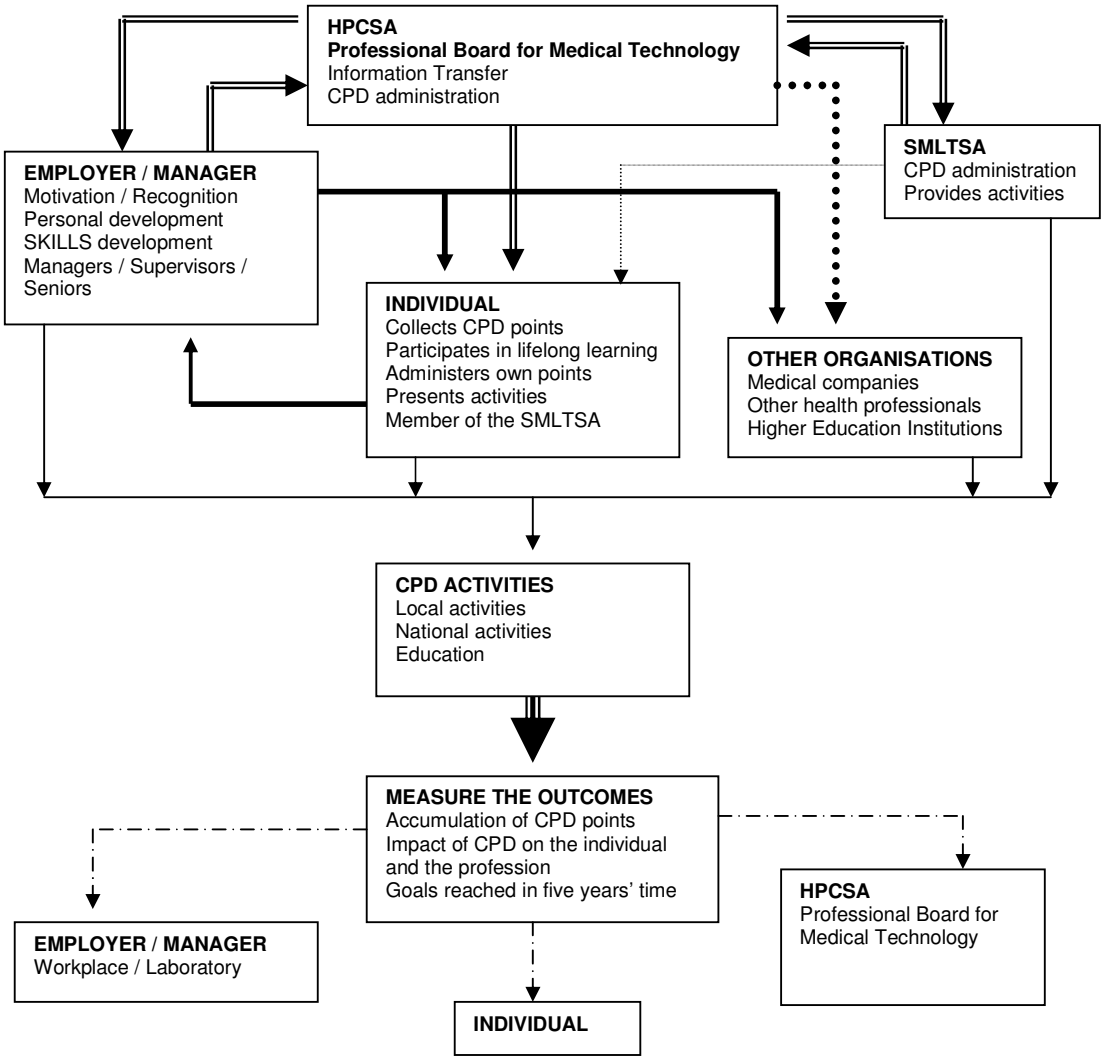
Appendix 4.1: Concept CPD Framework

SCHEMATIC DESIGN OF THE PRELIMINARY CPD FRAMEWORK

Diagram 1: Interaction between the different role players



1. HPCSA	Acknowledges and monitors laboratory registration and accreditation Delegates CPD administration to the SMLTSA Controls individual registration Interacts with other organisations
2. Employer / Manager	Laboratories comply with standards set by the HPCSA Should participate in SKILLS development (lifelong learning) Provides and creates access to CPD activities
3. SMLTSA	Administers CPD activities on behalf of the HPCSA Provides CPD activities Encourages SMLTSA membership to obtain CPD points
4. Individual	Registration with the HPCSA in order to be able to practice Responsible for collecting the required number of CPD points
5. Other organisations	Involved in providing activities that could be accredited for CPD Sources of lifelong learning Provide educational development to the individual
6. CPD activities	Provide by the SMLTSA, employers, individuals themselves and other organisations
7. Measure the outcomes	CPD outcomes should be reflected in the individual, the employer (work environment) and recognised by the HPCSA

Abbreviations used:

CPD	Continuing Professional Development
HPCSA	Health Professions Council of South Africa
MTSA	Medical Technology South Africa
NHLS	National Health Laboratory Services
SANBS	South African National Blood Services
SMLTSA	Society of Medical Laboratory Technologists of South Africa

Draw an x to indicate the most appropriate statement:
1 = Essential statement 2 = Useful statement 3 = Unnecessary statement

Category 1
The role of the Health Professions Council of South Africa (HPCSA) / The Professional Board for Medical Technology:

1.1	**The HPCSA distributes guidelines on CPD**	1	2	3
1.1.1	The HPCSA should distribute CPD guidelines to all registered members			
1.1.2	The HPCSA should have a control system in place to confirm that all registered members receive the guidelines for CPD			
1.2	**The HPCSA is responsible for the final administration of CPD, although it has delegated the administration of CPD activities to the SMLTSA**	1	2	3
1.2.1	A contact person, e-mail address, telephone number must be available for any queries			
1.2.2	The HPCSA must receive CPD point allocation from the SMLTSA			
1.2.3	The HPCSA must have a system in place to measure the outcomes of CPD (not only the points) and thereby guarantee that CPD is beneficial to the profession			

Draw an x to indicate the most appropriate statement:
1 = Essential statement 2 = Useful statement 3 = Unnecessary statement

Category 2
The role of the employer (NHLS, Private Pathologists and SANBS) / manager / supervisor:

2.1	**The commitment of the employer to CPD**	1	2	3
2.1.1	The employer must motivate employees to participate in CPD activities			
2.1.2	Employers must inform their employees about CPD			
2.1.3	Employers must contribute towards creating a positive attitude to CPD			
2.1.4	Employers must create access to accredited activities			
2.1.5	Employers should provide CPD activities to employees on the internet			
2.1.6	The employer should assist in providing transport to attend CPD activities			
2.1.7	The employer should assist in covering costs of attending CPD activities			
2.2	**Personal development (SKILLS)**	1	2	3
2.2.1	SKILLS development – every big organisation must invest a small percentage of its' turnover in staff development which must include CPD activities			
2.2.2	The employer should accredit all developmental activities in the organisation / SKILLS activities for CPD points			
2.3	**Managers / supervisors / seniors:**	1	2	3
2.3.1	The managers / supervisors / seniors have a responsibility to ensure that everybody in the department / section has access to CPD activities			
2.3.2	The managers / supervisors / seniors must organise CPD activities			
2.3.3	The managers / supervisors / seniors should accredit a journal club			
2.3.4	The managers / supervisors / seniors must accredit case studies			
2.3.5	The managers / supervisors / seniors should accredit laboratory–hospital unit interaction discussions			
2.3.6	The managers / supervisors visiting laboratories in rural areas must offer CPD activities			
2.4	**Measure the outcomes of CPD**	1	2	3
2.4.1	Employers should develop a system to measure staff development as an outcome of CPD participation			
2.4.2	A measuring system should be developed to evaluate whether staff development is reflected in the standard of results leaving the laboratory			

Draw an x to indicate the most appropriate statement:

1 = Essential statement 2 = Useful statement 3 = Unnecessary statement

Category 3
The role of the Society of Medical Laboratory Technologists of South Africa (SMLTSA):

3.1	**The SMLTSA main office**	1	2	3
3.1.1	The SMLTSA must administer CPD activities on behalf of the HPCSA			
3.1.2	The CPD accreditor (subcommittee) must approve CPD activities by giving point values and reference numbers			
3.1.3	The CPD accreditor should respond when individuals disagree with point allocation			
3.1.4	Notice of accredited CPD activities should be forwarded to all SMLTSA branches			
3.1.5	Notice of accredited CPD activities should be available on the SMLTSA website			
3.1.6	The SMLTSA must organise the national congress every second year via a specific branch			
3.2	**SMLTA-branches**	1	2	3
3.2.1	SMLTSA-branches should be responsible for providing CPD activities			
3.2.2	SMLTSA-branches should regularly organise academic events with knowledgeable speakers to offer presentations			
3.2.3	SMLTSA-branches should inform all members timeously of CPD activities			
3.2.4	SMLTSA-branches (congress committee) must organise the national congresses			
3.2.5	SMLTSA-branches (congress committee) must organise workshops			
3.2.6	SMLTSA-branches should organise mini-congresses			
3.2.7	SMLTSA-branches should organise road shows			
3.2.8	SMLTSA-branches should have videos made of interesting CPD activities			
3.2.8.1	These videos should be available to those who could not attend the specific activity			
3.2.8.2	A measurement system (e.g. questionnaire) should be in place to validate whether the video was viewed			
3.2.9	SMLTSA-branches should keep video banks			

Draw an x to indicate the most appropriate statement:

1 = Essential statement 2 = Useful statement 3 = Unnecessary statement

Category 4
The role of the individual (Medical Technologist / Technician):

4.1	**The individual must remain registered with the HPCSA in order to practice**	1	2	3
4.1.1	It is the individual's own responsibility to collect the required CPD points to remain on the register			
4.1.2	The individual should be prepared to present CPD activities			
4.1.3	Workers in isolated areas should become members of the SMLTSA in order to be informed of CPD activities			
4.2	**The individual and lifelong learning**	1	2	3
4.2.1	The individual should participate in lifelong learning			
4.2.2	The individual should participate in lifelong learning through participation in developmental training in the workplace			
4.2.3	The individual should keep up with the latest technology			
4.2.4	Lifelong learning should reflect in the profession of medical technology			

Draw an x to indicate the most appropriate statement:

1 = Essential statement 2 = Useful statement 3 = Unnecessary statement

Category 5
Other organisations involved in CPD:

5.1	**Medical companies involved in pathology laboratories present the latest technology and products on the market**	1	2	3
5.1.1	Companies should accredit presentations offered for CPD			
5.1.2	The companies should accredit workshops offered for CPD			
5.2	**CPD activities offered by other health professionals**	1	2	3
5.2.1	Accredited CPD activities offered by other health professionals should be accessible to medical technologists and technicians			
5.3	**Higher education institutions**	1	2	3
5.3.1	Individuals should consider further qualifications at higher education institutions that offer courses in biomedical technology, management and information technology			

Draw an x to indicate the most appropriate statement:

1 = Essential statement 2 = Useful statement 3 = Unnecessary statement

Category 6
Proposed CPD activities:

6.1	**Local activities**	1	2	3
6.1.1	Technologists / technicians should attend and present journal discussions			
6.1.2	Technologists / technicians should attend and present case studies			
6.1.3	Technologists / technicians should attend and present workshops			
6.1.4	Regular discussions between a unit in the hospital and the laboratory should be accredited			
6.1.5	Technologists and technicians should participate in internet CPD activities, available from Medmall at www.medmall.co.za			
6.1.6	Technologists and technicians should participate in other health professional CPD activities e.g. ward rounds			
6.1.7	Organised SKILLS training activities (techniques, computer or management) offered in the organisation, should be accredited and everybody should attend the activities			
6.2	**National activities**	1	2	3
6.2.1	Technologists and technicians should compile interesting case studies (with or without glass or colour slides) with a questionnaire for national distribution			
6.2.2	Case studies and research outcomes should be published in the MTSA			
6.2.3	Individuals should attend national congresses			
6.2.4	Individuals should participate in national congresses by either presenting a poster or giving an oral presentation			
6.3	**Education**	1	2	3
6.3.1	Individuals should obtain further qualifications in biomedical technology, management or computer technology			
6.3.2	Individuals should use appropriate research (not for qualification) to upgrade the standard of laboratory results			
6.3.3	Individuals should use appropriate research (not for qualification) e.g. to implement new techniques in order to keep up with the latest technology			
6.3.4	Individuals should be available for part time formal lecturing in higher education institutions			

6.3.5	Individuals should be available as professional board examiners for the medical technologist examination			
6.3.6	Individuals should be available as professional board moderators for the medical technologist examination			
6.3.7	Individuals should supervise graduate research projects where applicable			

Draw an x to indicate the most appropriate statement:

1 = Essential statement 2 = Useful statement 3 = Unnecessary statement

Category 7
Measure the outcomes CPD brings about in the individual, quality of work delivered and the profession:

7.1	**Accumulation of CPD points by an individual**	1	2	3
7.1.1	Those who attend CPD presentations must participate in the activities to earn points. Mere attendance does not contribute to lifelong learning			
7.1.2	The presenter of CPD activities will benefit more in lifelong learning than the participant			
7.1.3	Measurement of CPD activities must be revised			
7.1.4	Administration of CPD points must be faultless			
	Questions			
7.2	How could one measure the **impact** of CPD on the individual and the profession, with emphasis on the outcomes and outputs?			
7.3	What positive goals could be reached through CPD activities over a five year period?			

I appreciate your co-operation. Your feedback will be incorporated into the next round.

Yours sincerely

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CHAPTER 5

USING THE DELPHI TECHNIQUE TO EVALUATE A CONCEPT CPD FRAMEWORK FOR MEDICAL TECHNOLOGISTS AND MEDICAL TECHNICIANS

5.1 INTRODUCTION

All health professionals registered with the Health Professions Council of South Africa (HPCSA) must participate in a compulsory continuing professional development (CPD) programme in order to maintain HPCSA registration. The compulsory CPD programme for medical technologists and medical technicians was implemented in April 2002 (HPCSA, 2002). According to the CPD guideline, medical technologists and technicians must accumulated the prescribed CPD points annually (HPCSA, 2002) by attending CPD activities.

The major barriers internationally, to attending CPD activities were lack of time to attend and lack of money to cover costs as experienced by medical technologists (Falcone, 1999), by nursing staff (Govier, 1999) and paediatricians (Sectish, Floriani, Badat, Perelman and Bernstein, 2002). People working in rural areas find CPD activities less accessible as described by Lannin and Longland (2003) with references to occupational therapists in rural Australia and by Williams, Keim and Johnson (2004) who referred to American registered dieticians and dietetic technicians.

In South Africa the situation was the same with lack of time and financial implications identified as the major obstacles among medical technologists and technicians to attending CPD activites. Medical technologists and technicians employed in rural areas experienced CPD activites to be less accessible as they are presented mainly in metropolitan areas.

In order to establish a usable CPD programme, a concept CPD framework for medical technologists and medical technicians was compiled. The main responsibility for accumulating CPD credits rests with the individual. However, with the collaboration of the HPCSA, employers and managers, the Society of Medical Laboratory Technoloigsts of South Africa (SMLTSA), medical companies, other health professionals and higher education institutions, medical technologists and technicians would find CPD activites more accessible. The framework also suggested possible ways of creating CPD activities. Emphasis was placed on the fact that CPD should not only be measured by accumulating CPD points, but the HPCSA *via* the Professional Board for Medical Technology, as well as employers of medical technologists and medical technicians should create a measuring system for this CPD outcomes. To improve and benchmark this concept CPD framework compiled by the researcher, it was tested by a panel of experts using the Delphi technique.

5.1.1 The Delphi technique

The Delphi technique was developed by the RAND Corporation in the 1950's as a process for technical forecasting (Cline, 2000; Lang, 2003). The origin of the word Delphi dates back to Greek mythology at the time of Apollo (Garavalia and Gredler, 2004). It was believed that the site of the oracle of Apollo in ancient Greece was the one predestined to predict future events (Garavalia and Gredler, 2004).

5.1.1.1 Reasons for using the Delphi technique

The principle use of the Delphi technique was, for several years, to make predictions and forecasts for the future (Garavalia and Gredler, 2004). The Delphi technique is valued for its

ability to structure and organise group communication in gaining consensus among a panel of experts (Keeney, Hasson and McKenna, 2001; Fry and Burr, 2001; Powell, 2003). It is an appropriate method for decision-making in a political and emotional environment, or strong feelings of opposing preferences (Cline, 2000). It has also been proved to be an effective way in identifying strategies for developing staff and team building (Fraser, 1999). This technique is extensively used in the social sciences and described particularly by the nursing profession (Keeney *et al.,* 2001; Brooks and Barrett, 2003). The Delphi technique entails the communication among a group of individuals

It is considered to be an inexpensive, fast, replicable, versatile and easy to understand method (Anand, Pandav and Kapoor, 2002; Windle, 2004). The Delphi technique avoids the conventional committee approach such as time, expense and potential bias in decision making (Broomfield and Humphris, 2001).

Panel members do not interact with each other during the Delphi process (Fry and Burr, 2001; Nehiley, 2003; Marquardt and Burroughs, 2003). This anonymity among the panel members facilitates the expression of true opinions (Broomfield and Humphris, 2001) and excludes the over-dominance of the loudest voice within a group (Cline, 2000; Garavalia and Gredler, 2004). The opportunity for individuals to comment anonymously enables less confident members to express their views and needs without fearing criticism (Fraser, 1999). It gives people who might at times feel isolated from a group the opportunity to have their opinions heard first hand and to know how others react to their views (Fraser, 1999).

The Delphi technique is a qualitative research method (Green, Jones, Hughes and Williams, 1999; Broomfield and Humphris, 2001). According to Stewart (2001) quantitative data is associated with numbers and qualitative data with words. Qualitative research therefore

achieves in depth understanding within the area under investigation (Stewart, 2001). This technique includes the generation of primary data which can be subsequently statistically analysed in order to reach consensus or stability (Broomfield and Humphris, 2001; Lang, 2003). Using the Delphi technique as a qualitative research tool necessitates a monitoring team and / or researcher and a panel of experts (Lang, 2003).

5.1.1.2 Monitoring team

The monitoring team consists of one or more people co-ordinating and evaluating the Delphi survey (Lang, 2003; Cline, 2000). New information obtained during the Delphi process is structured and existing statements modified by the monitoring team (Lang, 2003).

5.1.1.3 Panel of experts

The identification of experts has been a major point of debate in the use of the Delphi process (Keeney *et al.,* 2001). The panellists must have knowledge to analyse the specific problem under investigation (Nehiley, 2003). The selected members should be a sample of broadly representative practitioners (Broomfield and Humphris, 2001) with heterogeneity that assures the validity of the results (Lang, 2003). The sample size is not very important but the quality of the expert panel is critical (Powell, 2003).

The panel members are invited as participants to the Delphi technique by means of a recruitment letter (Nojima, Tomikawa, Makabe and Snyder, 2003). In the letter the purpose and method of the study, ethical issues and benefits of being a participant are explained and information needed from the panellists is requested (Nojima *et al.,* 2003).

5.1.1.4 Procedure

Not all Delphi's are conducted in the same way (Keeney *et al.,* 2001). The Delphi technique is currently often preceded by the word "modified" with different versions, such as classical, policy and decision Delphi in use (Stewart, 2001; Broomfield and Humphris, 2001). The classical or conventional Delphi has two main functions, to determine consensus on forecasting and developments in many areas (Lang, 2003).

The Delphi survey follows a prescribed set of procedures that reflect both the behavioural and statistical processes (Powell, 2003). It is achieved through a series of sequential questionnaires or rounds with feedback to panel members (Keeney *et al.,* 2001; Powell, 2003). Traditionally round one is used to generate ideas through brainstorming and panel members are asked for their responses to or comment on an issue (Fry and Burr, 2001; Keeney *et al.,* 2001; Nehiley, 2003). This round often consists of open-ended questions (Keeney et al., 2001). These open-ended questions are recognized to increase the richness of the data collected (Powell, 2003). Rounds two to four often take the form of structured questions incorporating feedback to each panel member (Keeney *et al.,* 2001). During these rounds the panellists are asked to rank, to edit, to modify and to add to the initial set of responses (Nehiley, 2003). Boendermaker, Conradi, Schuling, Meyboom-de Jongh, Zwierstra and Metz (2003) described a modified Delphi procedure where during the first round, participants were asked to indicate whether certain statements should be modified and whether or not statements were missing.

The purpose of iterate rounds is to rethink the original ratings and to provide opportunity for alternatives to the data with the key objective being to reach consensus (Fry and Burr, 2001;

Garavalia and Gredler, 2004). The time schedule is determined by the period between each round (Nehiley, 2003).

The most common rating of the statements is often according to a 5 point Likert scale (Anand *et al.,* 2002; Marquardt and Burroughs, 2003; Fraser, 1999). Consensus to a statement is usually reached on prescribed statistical analyses (Boendermaker *et al.,* 2003; Nojima *et al.,* 2003). In the past consensus to statements was reached when from 55% to 100% of the panellists agreed to a statement (Anand *et al.,* 2002; Boendermaker *et al.,* 2003; Powell, 2003).

5.1.1.5 Advantages and disadvantages of the Delphi technique

After 50 years of evolution the Delphi technique is still considered an objective, inexpensive and non-threatening method to assess members' needs (Windle, 2004). It is particularly useful in soliciting data in a given area of uncertainty or lack of empirical evidence such as shaping communication and seeking agreement with diverse groups (Fraser, 1999; Powell, 2003; Garavalia and Gredler, 2004). The commitment of participants in responding to the rounds is related to their interest and involvement with the question or issue being addressed (Keeney *et al.,* 2001).

The technique consists of the collection of data generated by participants with minimal leading by researchers and it also identifies problems that would otherwise not have been identified (Garavalia and Gredler, 2004).

When using e-mail to perform the Delphi technique, the turnaround time is much faster and the process is more cost effective (Snyder-Halpern, Thompson and Schaffer, 2000). It could

be that panel members experience technological problems when not familiar with e-mail capabilities or when confronted with outdated programmes (Snyder-Halpern *et al.,* 2000).

Fry and Burr (2001) stated that consensus levels in the Delphi studies are often vague and therefore heavily criticised for failure. The different interpretations of the Delphi suggest methodological weaknesses and there is a need for careful and explicit decision-making in its application (Powell, 2003). When a statement has reached consensus it does not mean that the correct answer has been found (Keeney *et al.,* 2001). Furthermore the researcher cannot be sure whether the participants completed the Delphi themselves (Keeney *et al.,* 2001). The Delphi technique has been criticised as a method which forces in instances where the participants were phoned (Keeney *et al.,* 2001). Few Delphi researchers report on undertaking pilot tests before implementation of the survey (Keeney *et al.,* 2001). According to Stuter (2003) the Delphi technique is an unethical method of achieving consensus and oneness of mind does not occur. There is only the illusion of oneness of mind (Stuter, 1996).

Powell (2003) stated that although the technique should be used with caution, it appears to be an established method of harnessing the opinions of a frequently diverse group of experts on practice related problems.

A preliminary CPD framework was compiled in assisting South African medical technologists and technicians in participating in CPD activites. This framework needed to be evaluated by experts in the field of medical technology as well as those knowledgeable about CPD. The Delphi technique was therefore an ideal method in obtaining valuable inputs from these people.

5.2 METHODOLOGY

The Delphi technique was used for the survey. The first round distributed consisted of a concept CPD framework compiled in statements (Appendix 4.1). This framework was analysed by panellists with a common interest in the CPD programme for medical technologists and medical technicians. The process was aided by two facilitators.

5.2.1 Sample

The prerequisite was to select a minimum of 10 panel members widely distributed throughout South Africa who were knowledgeable about the CPD programme for medical technologists and medical technicians. It was required that they should be qualified in a variety of disciplines, appointed in more senior positions with 10 or more years work experience.

5.2.1.1 Subjects

Facilitators

The researcher and one promoter acted as facilitators in the Delphi procedures.

Panel of experts

Inclusive criteria for the panellists were medical technologists and technicians registered with the HPCSA employed in pathology laboratories and the South African National Blood Services (SANBS), representative of urban and rural areas. One representative (not registered as a medical technologist) employed by the CPD registration section, HPCSA, was included in the panel. Fourteen panellists were homogeneous in relation to their occupation, but diverse with reference to their employers and regional environments. Two reasons for

this selection was that some employers are more supportive of CPD and geographically people from urban areas find CPD activities easily accessible. The panellists had to be knowledgeable about the CPD programme for medical technologists and technicians as prescribed by the HPCSA.

5.2.1.2 Concept framework

By using a mailed questionnaire medical technologists and technicians throughout South Africa indicated their general perception of CPD as well as obstacles to and possible solutions foreseen in obtaining CPD credits. Results obtained from this questionnaire led to the compilation of a structured interview questionnaire. Structured interviews were conducted with 50 medical technologists and technicians covering urban, suburban and rural areas throughout South Africa. Information obtained from these two questionnaires, plus information obtained from the literature led to the compilation of a concept CPD framework.

The concept framework included the involvement of listed role players in the CPD programme, CPD activities and suggestions for measuring the outcomes of CPD:

- The role of the Health Professions Council of South Africa (Professional Board for Medical Technology)
- The role of the employers [National Health Laboratory Service (NHLS), provincial laboratories, private pathologists and SANBS], managers and supervisors
- The role of the Society of Medical Laboratory Technologists of South Africa
- The role of the individual (medical technologists and technicians)
- The role of other organisations (medical companies, other health professions and higher education institutions) involved
- Proposed CPD activities

- Requests for measuring the outcomes of CPD brings about quality of work delivered by the individual and the profession

5.2.2 Method

It was decided that this survey would be conducted over three Delphi rounds as only two open-ended questions were included in the first round, the rest of the framework were compiled in draft statements. The panel members replied to a three point Likert scale in order to keep the answers as straight forward and simply as possible. Once a statement reached consensus, that statement was included with results obtained and therefore not presented for re-evaluation in the following round.

5.2.2.1 Role of the facilitators

The facilitators confirmed consensus to statements when 80% or more of the panellists agreed to the rating of a statement (see p. 178; 5.2.2.5 for clarification of ratings). When panellists suggested changes to the statements it was the responsibility of the facilitators to rephrase and / or redesign those statements.

5.2.2.2 Selection and role of the panel of experts

Thirty-four (34) HPCSA registered medical technologists and technicians and one HPCSA employee were invited by means of an invitation letter to participate in the Delphi technique (Appendix 5.1). They were requested to sign an agreement form and to indicate whether they would prefer to interact *via* postal correspondence or e-mail (Appendix 5.1). Those invited to participate were assured of their anonymity and that their names would only be

known to the researcher and the promoters. The function of the panellists was to rank the statements, to edit, to modify and to add additional information to the statements and to return the answer within the scheduled time frame.

5.2.2.3 Delphi rounds

Round 1: The concept framework was drafted in seven categories consisting of structured statements. The last category included two open-ended questions.

Round 2: In response to feedback from the first round, some statements were combined or removed. Statements were rephrased, as suggested by the panellists. Answers to the open-ended questions were rephrased into statements. Percentage agreement on a statement was calculated according to the results obtained and rated as consensus reached or not reached (Appedix 5.4).

Round 3: Statements were rephrased suggested by the panellists. Percentage agreement to statements was calculated on the results obtained from the statements from the second round and rated as consensus reached or not reached (Appendix 5.6). In this round participants were requested to give reasons for their ratings to the statements.

5.2.2.4 Method of distribution, follow-up and feedback

The framework packet contained the concept framework (Appendix 4.1), a cover letter (Appendix 5.2) and a self-addressed postage paid, return envelope. The framework packets were posted to all panellists and sent by e-mail to those panellists with e-mail facilities. Panellists were requested to return their results within 12 days, either by post or e-mail.

Panellists were reminded telephonically four days prior to the deadline if no feedback had yet been received.

The cover letter to the first round informed the panellists of the procedures of the Delphi technique and the time schedule. The cover letters to the second and third rounds gave feedback on statements that reached consensus and thanked the panellists for their co-operation in participating in the Delphi technique (Appendixes 5.3 and 5.5).

5.2.2.5 Rating of statements

Panellists ranked the statements as essential, useful or unnecessary. If 80% or more of the panellists agreed to a statement in a specific round, consensus on that statement was reached. Statements that did not reach consensus at the end of round three were calculated as follows: the ratings for essential and useful were combined and when the combination reached ≥ 80%, the statements reached consensus as essential-useful and when the combination was ≤ 79%, the statements were rated unnecessary. The calculation used for this study was based on that of Boendermaker *et al,* (2003) who combined the ratings important and very important because of the small difference between the two ratings. The difference between important and very important is based on a personal perception in adding value to a rating. Analyses were calculated using a SHARP scientific calculator, EL-531LH.

5.3 RESULTS

The panellists were representative of a wide range of laboratories thoughout South Africa. They gave their full co-operation in giving immediate and spontaneous feedback.

5.3.1 The panellists selected

Eighteen of those invited to participate signed and returned the agreement forms. Only 15 panellists responded to the first round, with a 100% response throughout the remaining rounds. Fourteen were medical technologists and one panellist was an employee of the HPCSA. Seven medical technologists were employed by the NHLS, three by PathCare, one by AmPath, one by the SANBS and two by provincial laboratories (Figure 5.1).

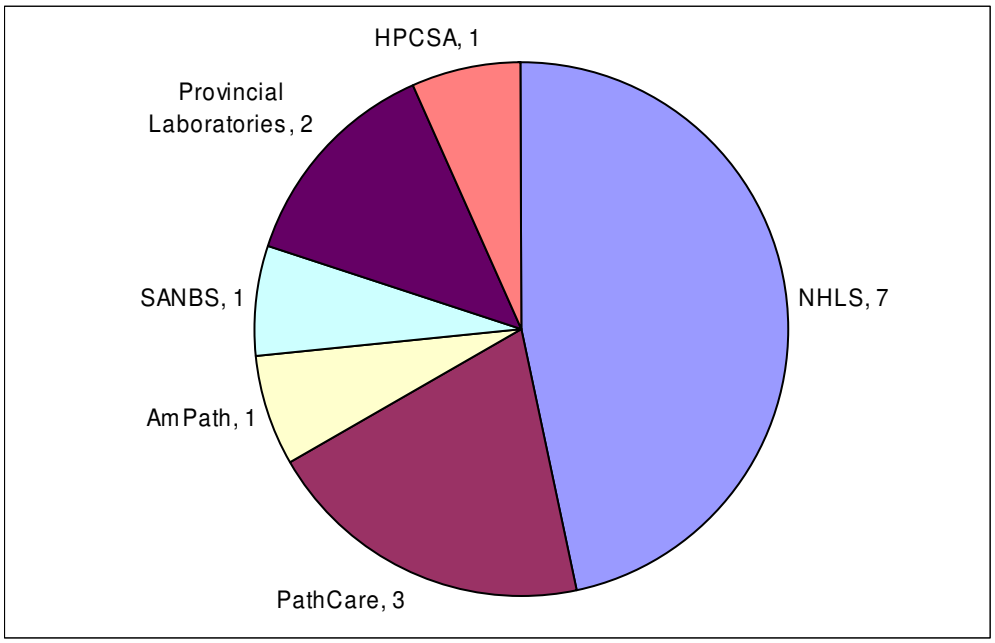

Figure 5.1: Employers represented by the Delphi panel

The panellists represented eight provinces, nine cities and / or towns throughout South Africa (Figure 5.2). The composition of the panellists was therefore geographically very diverse. Neither a representative from the Eastern Cape nor a medical technician responded to the invitation. Fourteen members of the panel were medical technologists therefore homogeneous in occupation, though employed by five of the main employers of medical technologists in South Africa. One panellist was a representative of the HPCSA. One former

member of the Professional Board for Medical Technology and one current member served on the Delphi panel of experts.

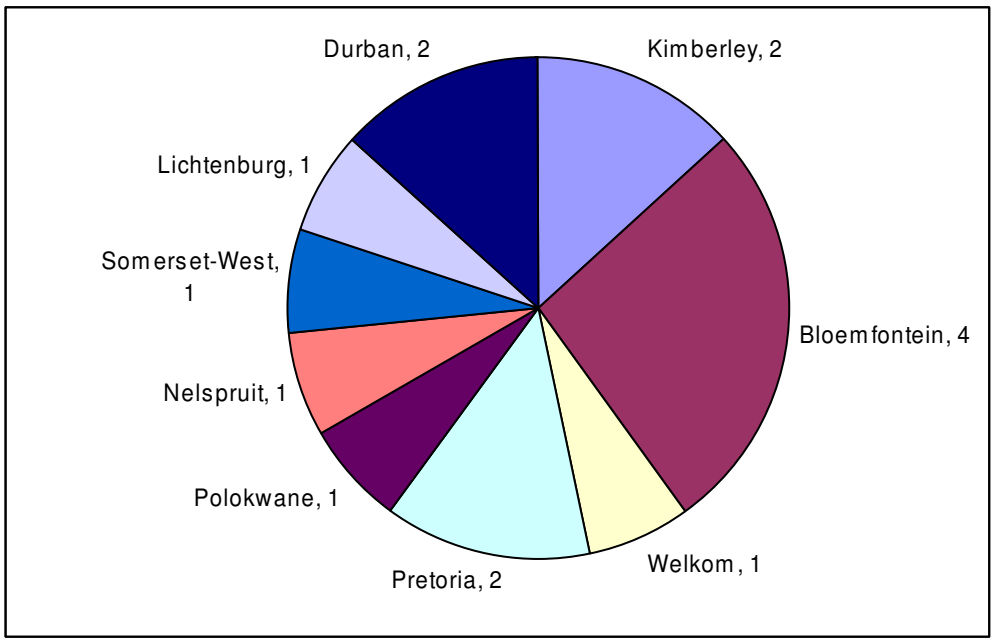

Figure 5.2: Cities and towns represented by the Delphi panel

An attempt was made to include participants from different regions to obtain wide representation, as suggested by Anand *et al.* (2002) and Nojima *et al.* (2003). The regional diversity meant that the panellists would have experienced CPD differently and therefore have diverse attitudes to the concept. As stated by Keeney *et al.* (2001) and Lang (2003) the more heterogeneous the panel experts the wider the spectrum of opinions and therefore the less biased the inputs to the final product.

5.3.2 Modification of the statements

In response to feedback after round one, 28 of the statements were modified and / or rephrased as suggested by the panellists (Appendix 5.4). Answers to the two open-ended

questions after round one resulted in the drawing up of four (4) statements by which the impact of CPD on the individual, the workplace and the outputs from the laboratory could be measured (Appendix 5.4 statements 7.2.1 – 7.2.4). Another six (6) statements were compiled with reference to the goals that could be reached by individuals and the workplace within the next five years by means of CPD (Appendix 5.1; statements 7.3.1 – 7.3.6). In response to the second (Appendix 5.6) and third rounds the same three (3) statements were rephrased. All the changes made to the concept framework are tabulated and attached as Appendix 5.7. The total number of statements in the framework in the last two rounds was 73.

5.3.3 Consensus

In the first round 21 statements reached consensus with ≥ 80% of the participants agreeing that the statements were essential. In the second round panellists were informed of the statements that reached consensus after the first round. However, they were not informed of the results of the statements where no consensus was reached, to prevent them from being influenced by results from co-panellists.

At the end of round two an additional 12 of the statements reached consensus with ≥ 80% of the panellists who agreed that they were essential. Five statements were from those drafted in response to the open-ended questions. The same procedure was followed in that the panellists were informed of the statements that reached consensus, but they were not informed of the ratings of the remaining statements in order not to influence them in the last round of the remaining statements.

At the end of round three, another 11 statements reached consensus with ≥ 80% of the panellists who rated them as essential. Two of the statements were drafted from the open-ended questions. In the remaining statements ratings essential and useful were combined (refer to p. 179: 5.2.2.5) (Boendermaker *et al.,* 2003). Twenty-eight (28) of these statements reached consensus with ≥ 80% on the combined essential-useful grading. One statement was ranked as unnecessary.

Table 5.1: Ranking the statements and consensus reached

RANKING AND RESULTS OF CONCEPT FRAMEWORK						
	Ranking: 1 = essential, 2 = useful and 3 = unnecessary	Ranking			Round	Consensus reached
		1	2	3		
Category 1						
The role of the Health Professions Council of South Africa (HPCSA) / The Professional Board for Medical Technology:						
1.1	**The HPCSA distributes guidelines on CPD**					
1.1.1	The HPCSA, through the CPD committee, should distribute CPD guidelines to all registered members	14 13	1 2	0 0	1st 2nd	Essential 87%
1.1.2	The HPCSA should have a control system in place to confirm that all registered members receive the guidelines for CPD	10 11 11	5 3 3	0 1 1	1st 2nd 3rd	Essential-useful 93%
1.2	**The HPCSA is responsible for the final administration of CPD, although it has delegated the accreditation and administration of CPD activities to the SMLTSA**					
1.2.1	A contact person, e-mail address and / or telephone	13	2	0	1st	Essential

	number must be available for any queries					87%
1.2.2	The HPCSA must receive CPD point allocation preferably electronically from the SMLTSA	13 8 13	2 7 2	0 0 0	1st 2nd 3rd	Essential 87%
1.2.3	The HPCSA should have a system in place to measure the outcomes of CPD (not only the points) and thereby guarantee that CPD is beneficial to the profession	11 9 9	4 5 5	0 1 1	1st 2nd 3rd	Essential-useful 93%
Category 2						
The role of the employer (NHLS, Private Pathologists and SANBS) / manager / supervisor:						
2.1	**The commitment of the employer to CPD**					
2.1.1	The employer should motivate employees to participate in CPD activities	10 10 13	2 2 1	3 3 1	1st 2nd 3rd	Essential 87%
2.1.2	Employers must inform their employees about CPD	12	2	1	1st	Essential 80%
2.1.3	Employers must contribute towards creating a positive attitude towards CPD	14	1	0	1st	Essential 93%
2.1.4	Employers must create access to accredited activities	12	3	0	1st	Essential 80%
2.1.5	Employers (head office) should provide CPD activities to employees on the internet	8 6 6	6 8 8	1 1 1	1st 2nd 3rd	Essential-usful 93%
2.1.6	The employer should assist in providing transport to employees in rural areas to attend CPD activities	5 5 5	5 6 6	5 4 4	1st 2nd 3rd	Unnecessary 73%

2.1.7	The employer should assist in covering costs to employees in rural areas to attend CPD activities	5 5 5	5 7 7	5 3 3	1st 2nd 3rd	Essential-useful 80%
2.2	**Personal development (SKILLS)**					
2.2.1	SKILLS development – every big organisation must invest a small percentage of its turnover in staff development which should include CPD activities	10 12	5 3	0 0	1st 2nd	Essential 80%
2.2.2	The employer should accredit appropriate developmental activities in the organisation / SKILLS activities for CPD points	11 14	4 1	0 0	1st 2nd	Essential 93%
2.2.3	The employer should encourage appropriate research (not for qualification) as part of routine working conditions and when outstanding accredit it for CPD points	7 7 8	7 7 5	1 1 1	1st 2nd 3rd	Essential-useful 87%
2.3	**Managers / supervisors / seniors:**					
2.3.1	The managers / supervisors / seniors have a responsibility to ensure that everybody in the department / section / one-man laboratory has access to CPD activities	11 10 12	3 5 3	1 0 0	1st 2nd 3rd	Essential 80%
2.3.2	The managers / supervisors / seniors must motivate the staff to organise CPD activities	8 8 12	5 7 2	2 0 1	1st 2nd 3rd	Essential 80%
2.3.3	The managers / supervisors / seniors should accredit a journal club, within the section, between different disciplines or between laboratory staff and other health professionals	9 11 13	5 4 2	1 0 0	1st 2nd 3rd	Essential 87%
2.3.4	The managers / supervisors / seniors should accredit	8	7	0	1st	Essential-

	case studies, within the section, between different disciplines or between laboratory staff and other health professionals	11 11	4 4	0 0	2nd 3rd	useful 100%
2.3.5	The managers / supervisors / seniors should accredit laboratory–hospital unit interaction discussions especially in rural areas	8 5 9	5 10 6	2 0 0	1st 2nd 3rd	Essential- useful 100%
2.3.6	The managers / supervisors visiting laboratories in rural areas must initiate CPD activities	7 8 12	5 6 2	3 1 1	1st 2nd 3rd	Essential 80%
2.4	**Measure the outcomes of CPD**					
2.4.1	Employers should develop a system to measure staff development as an outcome of CPD participation	9 6 9	6 9 5	0 0 1	1st 2nd 3rd	Essential- useful 93%
2.4.2	A measuring system should be developed to evaluate whether staff development is reflected in the standard of results leaving the laboratory	8 8 7	7 6 7	0 1 1	1st 2nd 3rd	Esential- useful 93%
Category 3						
The role of the Society of Medical Laboratory Technologists of South Africa (SMLTSA):						
3.1	**The SMLTSA main office**					
3.1.1	The SMLTSA must administer CPD activities on behalf of the HPCSA	12	2	1	1st	Essential 80%
3.1.2	The CPD accreditor (subcommittee) must approve CPD activities by giving point values and reference numbers	14	1	0	1st	Essential 93%
3.1.3	The CPD accreditor should respond when individuals disagree with point allocation	12	3	0	1st	Essential 80%

3.1.4	The SMLTSA must encourage all its members to attend the SMLTSA accredited national congresses	10 7 10	3 8 5	2 0 0	1st 2nd 3rd	Essential-useful 100%
3.2	**SMLTA branches**					
3.2.1	SMLTSA branches should be responsible for providing CPD activities	12	3	0	1st	Essential 80%
3.2.2	SMLTSA branches should regularly organise academic events with knowledgeable speakers to offer presentations	12	3	0	1st	Essential 80%
3.2.3	SMLTSA branches should inform all members timeously of CPD activities	12	3	0	1st	Essential 80%
3.2.4	Alternative SMLTSA branches (congress committee) organise the national congresses every second year	10 11 11	5 4 4	0 0 0	1st 2nd 3rd	Essential-useful 100%
3.2.5	SMLTSA branches (congress committee) in co-operation with medical related companies should organise workshops	8 10 11	7 5 4	0 0 0	1st 2nd 3rd	Essential-useful 100%
3.2.6	SMLTSA branches in conjunction with medical related companies should organise mini-congresses	10 10 11	5 5 4	0 0 0	1st 2nd 3rd	Essential-useful 100%
3.2.7	SMLTSA branches should organise road shows	6 8 9	9 5 5	0 2 1	1st 2nd 3rd	Essential-useful 93%
3.2.8	SMLTSA branches should have videos made of interesting CPD activities and build up a video library	5 8	8 6	2 1	1st 2nd	Essential-useful 93%

		10	4	1	3rd	
3.2.8.1	These videos should be available to those who could not attend the specific activity as well as people who would like to revisit the topic	7 8 12	7 6 2	1 1 1	1st 2nd 3rd	Essential 80%
3.2.8.2	A measurement system (e.g. questionnaire) should be in place to validate whether the video was viewed	8 8 13	6 6 1	1 1 1	1st 2nd 3rd	Essential 80%
Category 4						
The role of the individual (Medical Technologist / Technician):						
4.1	**The individual must remain registered with the HPCSA in order to practice**					
4.1.1	It is the individual's own responsibility to collect the required CPD points to remain on the register	12	3	0	1st	Essential 80%
4.1.2	The individual should be prepared to present CPD activities	10 7 9	4 8 5	1 0 1	1st 2nd 3rd	Essential-useful 93%
4.1.3	Workers in isolated areas should become members of the SMLTSA in order to be informed of CPD activities	12	2	1	1st	Essential 80%
4.2	**The individual and lifelong learning**					
4.2.1	The individual should participate in lifelong learning	14	1	0	1st	Essential 93%
4.2.2	The individual should participate in lifelong learning through participation in developmental training in the workplace	13	2	0	1st	Essential 87%
4.2.3	The individual should keep up with the latest technology	14	1	0	1st	Essential

						93%
4.2.4	Lifelong learning should reflect in the profession of medical technology	14	1	0	1st	Essential 93%
Category 5						
Other organisations involved in CPD:						
5.1	**Medical companies involved in pathology laboratories present the latest technology and products on the market**					
5.1.1	Companies should submit a programme with details of the presentations to be offered for CPD to SMLTSA for accreditation before offering such activities	9 12 15	5 3 0	1 0 0	1st 2nd 3rd	Essential 100%
5.1.2	The companies should submit details on workshops to be offered for CPD to SMLTSA for accreditation before offering such activities	10 12 15	4 3 0	1 0 0	1st 2nd 3rd	Essential 100%
5.2	**CPD activities offered by other health professionals**					
5.2.1	Accredited CPD activities offered by other health professionals should be accessible to medical technologists and technicians	13	2	0	1st	Essential 87%
5.3	**Higher education institutions**					
5.3.1	Individuals should consider appropriate further qualifications at higher education institutions as a way of lifelong learning	9 6 8	6 9 7	0 0 0	1st 2nd 3rd	Essential-useful 100%
Category 6						
Proposed CPD activities:						
6.1	**Local activities**					

6.1.1	Technologists / technicians should attend and present journal discussions	14	1	0	1st	Essential 93%
6.1.2	Technologists / technicians should attend and present case studies	13	2	0	1st	Essential 87%
6.1.3	Technologists / technicians should attend and present workshops	12	3	0	1st	Essential 80%
6.1.4	Technologists and technicians should participate in internet CPD activities, available from http://myclassroom.ctech.ac.za	6 11 8	6 4 7	3 0 0	1st 2nd 3rd	Essential-useful 100%
6.1.5	Technologists and technicians should participate in other health professional CPD activities e.g. ward rounds	5 4 7	9 10 5	1 1 3	1st 2nd 3rd	Essential-useful 80%
6.2	**National activities**					
6.2.1	Accredited case studies should be available for national use on the SMLTSA website	7 12	8 3	0 0	1st 2nd	Essential 80%
6.2.2	Case studies and research outcomes should be published in the MTSA	11 12	4 3	0 0	1st 2nd	Essential 80%
6.2.3	Individuals should attend accredited national congresses	9 10 11	4 4 3	2 1 1	1st 2nd 3rd	Essential-useful 93%
6.2.4	Individuals should participate in national congresses by either presenting a poster or giving an oral presentation	6 6 9	7 8 4	2 1 2	1st 2nd 3rd	Essential-useful 87%
6.3	**Education**					
6.3.1	Individuals should obtain appropriate further qualifications	5	8	2	1st	Essential-

	through formal education	8 4	7 10	0 1	2nd 3rd	useful 93%
6.3.2	When the opportunity presents itself, individuals should be available as part-time formal lecturers, examiners and / or moderators	6 12	8 3	1 0	1st 2nd	Essential 80%
6.3.3	Individuals should share their expertise and supervise graduate research projects where applicable	7 12	7 3	1 0	1st 2nd	Essential 80%
Category 7						
Measure the outcomes CPD brings about in the individual, quality of work delivered and the profession:						
7.1	**Accumulation of CPD points by an individual**					
7.1.1	Mere attendance instead of participation in CPD presentations does not necessarily contribute to lifelong learning	7 8 10	8 3 3	0 4 2	1st 2nd 3rd	Essential- useful 87%
7.1.2	Measurement of CPD activities must be revised	10 9 11	3 5 4	2 1 0	1st 2nd 3rd	Essential- useful 100%
7.1.3	Administration of CPD points must be faultless	13	2	0	1st	Essential 87%
Questions						
7.2	**How could one measure the impact of CPD on the individual and the profession, with emphasis on the outcomes and outputs?**					
7.2.1	Supervisors should measure in-house performance	8 12	6 3	1 0	2nd 3rd	Essential 80%
7.2.2	Supervisors must set targets and measure the outcomes	8 12	5 2	2 1	2nd 3rd	Essential 80%

7.2.3	The accuracy and efficiency of the standards of laboratory results must be measured by quality control programmes	14	1	0	2nd	Essential 93%
7.2.4	Job satisfaction should be measured by completing questionnaires	10 10	5 5	0 0	2nd 3rd	Essential-useful 100%
7.3	**What positive goals could be reached through CPD activities over a five year period?**					
7.3.1	The individual must compile a personal portfolio and reach the outcomes in the set period	6 10	8 5	1 0	2nd 3rd	Essential-useful 100%
7.3.2	Individuals must be updated on the latest developments in their specialised field	13	2	0	2nd	Essential 87%
7.3.3	Individuals must be confident in work-related issues	12	3	0	2nd	Essential 80%
7.3.4	Individuals should interact with colleagues from other institutions thereby encouraging networking on the latest developments	9 10	6 5	0 0	2nd 3rd	Essential-useful 100%
7.3.5	Individuals should experience work satisfaction in spite of the demands of CPD	13	2	0	2nd	Essential 87%
7.3.6	Committed medical technologists should contribute to research outputs	13	2	0	2nd	Essential 87%
Total	Statements rated as essential = Statements rated as essential-useful = Statements rated as unnecessary =					44 28 1

5.4 DISCUSSION

Only one statement will be excluded from the final CPD framework, being rated as unnecessary according to the rating criteria used.

5.4.1 The role of the HPCSA / Professional Board for Medical Technology (PBMT)

All the statements included in this category will remain in the final framework. Reasons given for including the HPCSA as a role player in the framework were discussed in 4.2.1 of the previous chapter (Chapter 4). One panellist suggested that the HPCSA would prefer to receive the CPD point allocation electronically from the SMLTSA.

As suggested by panellists the HPCSA would find it very difficult to control whether all registered members received their guidelines. People change adresses and do not always inform the HPCSA about these changes. The CPD guideline will, in future, be available on the HPCSA website and newly HPCSA registered members will receive their CPD guidelines accompanied by their registration certificates.

The outcomes of CPD must reflect in the profession of medical technology and in the quality of the results released from laboratories. The HPCSA and employers will have to implement a measuring mechanism whereby the effectiveness of CPD can be measured as suggested in the framework (Categories: 1.2.3, 2.4.1 and 2.4.2). Panellists believed that the HPCSA should be the responsible institution to measure the outcomes of CPD, but were sceptical that it might be impractical. Employers would be in a better position to observe improvements at ground level both in the individual and in the work environment. The question arises: How can these outcomes be measured? The researcher proposes that measuring the outcomes

of CPD is a research project that should be conducted over a period of five years or longer. During this period medical technologists, technicians, the work environment and the quality of results should be evaluated by comparing two groups, one group actively participating in the CPD programme and the other not actively involved in CPD.

5.4.2 The role of the employers, managers and supervisors

The role of the employers, managers and supervisors in the framework was discussed in Chapter 4: 4.2.2. The employers depend on their employees to do laboratory work and employees depend on employers for employment. If medical technologists and technicians do not comply with the compulsory CPD programme they may lose their registration with the HPCSA and will therefore be forbidden to practise medical technology. For this reason employers should assist medical technologists and technicians to participate in CPD activities, especially by organising CPD activities during working hours. This concept is especially important to those working in rural areas. If a medical technologist or technician in a rural laboratory loses his / her employment due to non-registration, it will be very difficult to fill the vacancy, as the person who intends filling the position might be in a similar position in a few years' time.

The panellists rated one statement (Category: 2.1.6) unnecessary, that is, that employers should assist in providing transport to employees in rural areas to attend CPD activities. However, the next statement whereby employers should assist in covering costs to employees in rural areas to attend CPD activities, reached consensus. These ratings contradicted each other and were contrary to what was expected. Seeing that time and financial implications were the major obstacles to attending CPD activities one would have expected that panellists would be in favour of at least transport being provided to those who

find it difficult to accumulate CPD credits. According to Watkins (1999) employees cannot rely on employers to provide training to comply with CPD standards. Occupational therapists in rural Australia (Lannin and Longland, 2003) and four of the five allied health professions in rural California (Roberts and Scott, 1988) covered their own costs when attending educational activites in metropolitan areas. This was in contrast to physicians in the UK who were funded by the Postgraduate Education Allowance System to attend CPD activities (Field, 1998). As discussed in Chapter 4: 4.2.2, the SANBS and some private pathologists in the past assisted by providing transport to their employees to attend CPD activities. It cannot, however, be taken for granted that all employers would be in a position to provide transport. The framework is not in a position to put employers under an obligation to contribute towards transport for which it has not budgeted. There is, however, a possibility that the Skills Development Fund may contribute towards CPD activities, as was suggested in a statement (Category: 2.2.2). Funding may be available within limits, to assist in providing transport.

Two statements were taken from Category 6 and modified into Category: 2.2.3 after the first round, namely in that employers should encourage appropriote research as part of routine working conditions and when outstanding, accredit it for CPD points (Appendix 5.7). This statement reached consensus as essential-useful, though one panellist indicated in the last round, that he / she did not understand the statement. One panellist commented that there was no time for research work during working hours. Research should be encouraged not only in urban, but also in rural laboratories. Medical technologists and technicians in rural areas might not have any experience in research work, although in certain regions in South Africa specific morbidities are more common, such as malaria infected regions, which provides ideal material for research projects.

Statements, Categories: 2.3.3 and 2.3.4, were modified after the first Delphi round to read that a journal club and case study discussions should be accredited as CPD activities (Appendix 5.7) and that they need not only be practised in the department or section where the people were employed, but interaction between more than one laboratory or laboratory and other health disciplines was suggested. This would be especially valuable in rural areas with fewer staff in a section or department and where allied health professions could meet regularly for journal discussions and even case studies. A panellist from a rural laboratory indicated that they were having successful journal discussions, though she did not indicate whether it was only in their laboratory. Organising and accrediting case studies were not so well received by the panellists as this would place extra responsibilities on the shoulders of seniors who already experience time as a problem getting through their routine work. These two statements were also rated differently by the panellilsts as the journal club accreditation was rated essential and the case study accredication rated essential-useful.

To create access to CPD activities is possible, though it depends on the individual's field of interest whether he / she will attend activities or stay away simply because of lack of interest. One suggestion was that senior staff members should motivate staff to organise CPD activities, but panellists were of the opinion that seniors could motivate, but because of the staff shortage, very few medical technologists and technicians were in a position to organise the activities. Laboratory-hospital unit interaction was suggested in the framework as a CPD activity. A laboratory that practised laboratory-unit interaction was very pleased with the outcomes. One panellist believed that laboratory-unit interaction would be feasible with the necessary commitments made by both laboratory and unit staff.

When managers or supervisors visit laboratories in rural areas they must initiate CPD activities. Panellists stated that this concept gives extra responsibilities to seniors who do not

have the time to initiate activities. A comment was that people should not always expect someone else to initiate activities but individuals must start initiating activities themselves. A balance should be maintained between spoon-feeding medical technologists and technicians in rural areas and assisting them to conduct their own CPD activities.

5.4.3 The role of the SMLTSA

The SMLTSA is the main role player in providing CPD activites as was discussed in Chapter 4: 4.2.3. Medical technologists and technicians in the past always asked what the Society was doing for them. Since compulsory CPD was implemented, membership of branches of the Society has increased, with an increase of more than 50% in the Free State branch.

Suggestions were that the SMLTSA should encourage all its members to attend the national congresses. Small laboratories with few staff members cannot afford the absence of staff attending congresses due to the workload. A company such as the NHLS should allow people from smaller laboratories to attend congresses on a rotational basis and during the absence have them replaced by employees from a bigger laboratory. In that way a larger number of employees would be able to attend congresses. The cost involved in attending congresses is a barrier, which means that not everybody can afford to attend. Most employers follow the policy that when medical technologists and technicians represent the company at a congress by a poster or oral presentation, costs involved are covered by the employer. This is a policy that should be encouraged not only by employers but also by medical companies in getting more people involved in actively participating in national congresses.

Activities such as mini-congresses and workshops are offered by SMLTSA branches in co-operation with medical related companies. Not only do medical companies assist in covering the costs of the activities but by exhibiting their products keep attendees informed of the latest products on the market. However, panellists commented that not all branches were actively involved in organising CPD activities.

A proposal in the framework is that the SMLTSA should organise road shows. This was once attempted but resulted in a financial loss and is therefore not cost effective. The concept of building up a video library was described as an excellent manner of providing CPD activities. It was also suggested that not only should the SMLTSA build up a video library, but such libraries could also be established in the workplace.

The statements in this category were all rated as essential or essential-useful with minor modifications made during the Delphi rounds.

5.4.4 The role of the individual

As stated in the framework, each individual is responsible for collecting the required number of CPD points annually. Individuals participate in CPD, a structured form of lifelong learning through participating in developmental training in the workplace in order to keep up with the latest developments in medical technology. Lifelong learning should also reflect in the medical technology profession.

Medical technologists must act as professionals and forget the apathetic attitude as described in the literature, whether medical technology is a profession or a technical occupation as

described in Chapter 2: 2.2.1.5 with reference to Andréasson and Hamrin (1993) and Francis, Hofherr, Peddecord, Karni and Krolak (2001).

According to Category 4 and Category 6 in the framework, individuals should not only attend, but be prepared to present CPD activities. Once journal discussions are accredited for CPD credits everybody in the department or group should present articles on a rotational basis. The SMLTSA national congresses and mini-congresses are ideal opportunities to participate in either poster or paper presentations. The requirements are, however, that activities must be accredited as one panellist commented. People should participate in accredited CPD activities on the internet, when available.

5.4.5 The role of other organisations involved in CPD

As discussed in Category 5.4.3 and in Chapter 4: 4.2.5, medical companies are working in close association with branches of the SMLTSA in sponsoring congresses, mini-congresses and offering workshops. Provided these activities are accredited, they are ideal opportunities for earning CPD credits.

Medical technologists and technicians working in smaller laboratories in rural areas should attend activites offered by other health professionals and when organising activities, offer the activities to other health professionals. This is especially important when working in a primary care environment as discussed in Chapter 4: 4.2.5. Medical technologists and technicians working in private pathology laboratories find it very difficult to attend activities offered by other health professionals because of the workload and in many cases not being part of the hospital set-up.

Although a few panellists realised that further qualifications were the best form of lifelong learning they were of the opinion that it was not necessary for medical technologists and technicians to further their qualifications through formal education. One panellist blamed higher education institutions for not making further qualifications more accessible to medical technologists and technicians who would want to continue their education over a distance. A higher qualification in most of the pathology laboratories in South Africa is no guarantee of a salary increase or promotion therefore there is no motivation by employers to improve their qualifications.

The concept of further qualifications may change as was conveyed at the SMLTSA congress that more emphasis will be placed on the portfolio system once the new CPD programme has been finalised. That will mean that more and higher qualifications obtained would be beneficial for CPD point allocation and would guarantee registration with the HPCSA.

5.4.6 Proposed CPD activities

The statements (Category 6: 6.1.4) on laboratory–hospital unit interaction and (Category 6: 6.1.7) staff development activities under Skills were removed because of their duplication in Category 2. Statements (Categories 6: 6.3.2 and 6.3.3) on research were modified and moved to Category 2 as statement 2.2.3 as discussed in 5.4.2 above (Appendix 5.7).

Statements (Category 6: 6.3.4 – 6.3.7) were combined into two statements (Category 6: 6.3.2 and 6.3.3) according to which medical technologists should be prepared to be available as part-time formal lecturers, examiners and / or moderators. Medical technologists with years of experience should share their expertise and supervise graduate reseach projects where applicable. These opportunities are limited and mainly restricted to medical technologists

employed in urban areas. When biomedical technology is offered to medical technicians in rural areas, higher education institutions could use local medical technologists to assist in lecturing.

Individuals must be motivated to publish research outcomes and case studies in the Medical Technology South Africa (MTSA). Not many medical technologists or technicians would have experience in publishing articles. Those who intend getting involved in research and publications should consider following the graduate course in biomedical technology, in which research methodology, is offered as a subject (CUT, 2005). It is advisable that research methodology should be included in the curriculum of the National Diploma in Biomedical Technology.

All the statements evaluated during the second and third Delphi rounds will be included in the final framework.

5.4.7 Measuring the outcomes of CPD

Mere attendance rather than participation in CPD presentations does not necessarily contribute to lifelong learning as discussed in Chapter 4: 4.5. That is the reason why attending a workshop has a longer lasting effect on the individual. Medical technologists and technicians must actively participate in CPD activities and when possible present such activities.

It was suggested in the framework that the measurement of CPD activites should be revised. A draft document on the revision of the CPD programme and point allocation was released in 2004 (HPCSA, 2004[a]) and at the recent SMLTSA congress held in Cape Town it was

announced that the final CPD programme will be finalised in 2005. Individuals will still have to collect CPD credits and keep a personal portfolio of all the acitvities attended for spot checks by who ever the HPCSA might appoint. Individuals will be encouraged to continue with further qualifications and participate in other health professionals' activities.

A further proposal for the framework was that a questionnaire about job satisfaction should be completed by medical technologists and technicians. According to Hinchliff (1999) CPD increases job satisfaction of nursing staff in the UK. One panellist, however, was sceptical and stated that people are not always honest in answering questions about job satsifaction.

In response to the open-ended questions it was proposed that supervisors should measure the in-house performance of medical technologists and medical technicians and the standard of laboratory work should be measured by quality control programmes. Most laboratories participate in quality control programmes. Supervisors should set targets and measure whether medical technoloigists and medical technicians meet those targets. The question was raised on how these in-house performances could be measured? One panellist warned that managers need to be cautious when measuring in-house performance because of the unions though it is an irrelevant remark when job performance systems are in place. As mentioned in 5.4.1, measuring the outcomes of CPD and in-house measurements of individuals could be a proposed future research project.

What positive goals could be reached in five years' time? It was suggested in the framework that individuals must be updated on the latest developments in their specialised fields and be confident in work related issues. Individuals should experience job satisfaction in spite of demands due to CPD and medical technologists should contribute towards research outputs.

The ideal would be for CPD to be measured by means of a pre-planned personal portfolio under supervision of a mentor. Registered medical technologists and technicians should set targets addressing their personal needs and the limitations experienced in the work environment and these targets should be reached within a set period. By doing it this way, registered members would have a goal to reach and would not participate in CPD activities merely for the sake of participating. Laboratory workers should interact with colleagues from other institutions and thereby encourage networking on the latest developments. One panellist confirmed that the three main pathology laboratories in their town; SANBS, NHLS and PathCare meet every three months accompanied by a representative of a medical company. This getting together is either organised as a formal information sessions or just for the interaction. To them the interaction became a necessity.

5.5 CONCLUSION

The concept CPD framework was evaluated by means of the Delphi technique with a group of panellists who gave a 100% response throughout the three Delphi rounds. Only one statement was rated as unnecessary and will be excluded from the final framework.

According to the current CPD guideline CPD is measured on a point system, but the panellists were in agreement that the outcomes of CPD should be reflected in the workplace, the individual and the profession. The responsibility of measuring CPD outcomes will be that of the HPCSA, the employer as well as the individual him- / herself. The question of how these outcomes will be measured was, however, raised by the panellists?

The current CPD programme is under revision and as was proposed at the SMLTSA Congress in 2005 and confirmed by the final draft document on CPD for health professions

registered with the HPCSA, will still be based on collecting CPD credits, known as continuing educational units (CEUs), but each individual will have to keep his or her personal portfolio of activities attended (HPCSA, 2005). The new CPD programme in collaboration with the the CPD framework designed by the researcher will hopefully change CPD from the current nightmare into a successful lifelong learning event.

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Appendix 5.1: Requesting letter

Central University of Technology, Free State

School of Health Technology

Delphi project participants

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9300

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Regarding: CPD model for Medical Laboratory Technologists and Technicians

I am doing a D.Tech in Biomedical Technology with the following title:

"A continuing professional development model for medical laboratory technologists / technicians in South Africa, with emphasis on the rural areas."

Promotor: Prof L de Jager

Co-promotor: Prof LOK Lategan

Co-promotor: Dr AW van Rijswijk

During the last two years I distributed a questionnaire and interviewed qualified medical technologists and technicians on CPD throughout South Africa. The purpose was to determine the general perception of CPD, the obstacles individuals experience and possible solutions to obtaining the required annual CPD points as required by the Health Professions Council of South Africa (HPCSA).

From the knowledge gained I am compiling a preliminary model that medical technologists and technicians can use as a guideline to obtain not only the required number of CPD points, but to broaden their knowledge in their specialised field and in medical technology in general. In compiling this model I need input from experienced people in the profession. The model will be tested using the Delphi technique. The Delphi technique is based on the principle that experts give feedback on the model twice (2x) and finalise it in a third round. The model will be distributed to 10 people with expertise and experience in the field of medical technology. Feedback after the first round will be integrated into the model. The adapted model will be sent to the same people for a second round of input. The second round of feedback will again be incorporated into the model and will then be distributed to the same panel of people for their final approval.

I would appreciate your participation as an experienced medical technologist / technician in compiling a management and implementation model for CPD for our profession for use throughout South Africa. The preliminary model consists of six pages and will take about one hour to modify. I expect that the follow-up models would be about the same length. Your feedback will be strictly confidential as the names of the Delphi participants will be known only to my promoters and myself. In the thesis and publications you will be thanked as the Delphi-participants.

I intend sending out the preliminary model by the end of May 2004, the second round at the end of July 2004 and the model for finalisation, at the end of September 2004. I would appreciate feedback within one month after the date of distribution.

Please inform me (via e-mail, letter or by phone) not later than 15 May 2004 whether you are willing to participate on the Delphi panel. If you do accept please indicate whether you will use postal mail or electronic mail.

Thank you in anticipation.

Miss CE Brand	Prof L de Jager
Lecturer: School of Health Technology	Head: School of Health Technology
Student: D.Tech: Biomedical Technology	Promotor: D.Tech: Biomedical Tech. Project

DELPHI-RETURN MAIL

I would like to be a participant in the Delphi project ☐

I would not like to participate in the Delphi project ☐

As a participant I would prefer: Electronic mail ☐

Postal mail ☐

Name: _____

Telephone number (work):_____

Telephone number (home or cell):_____

E-mail address:_____

Address (if different to the one used):

_____

_____

_____

_____

10 YEARS OF DEMOCRACY

Sentrale Universiteit vir Tegnologie, Vrystaat * Yunivesithi e Bohareng ya Thekenoloji, Foreistata

Appendix 5.2: First cover letter

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20 August 2004

DEAR PARTICIPANT

A CONTINUING PROFESSIONAL DEVELOPMENT (CPD) FRAMEWORK FOR MEDICAL TECHNOLOGISTS AND TECHNICIANS IN SOUTH AFRICA

To explore the current situation in South Africa with reference to CPD for medical technologists and technicians and to identify problems currently encountered a questionnaire was distributed to 2040 registered technologists and technicians. The questionnaire was followed up by structured interviews with 50 technologists and technicians.

Information from the questionnaire, structured interviews and the literature was utilized to design a framework to facilitate the effective implementation of CPD for medical technologists and technicians. Specific attention was given to those problems identified by means of the questionnaire and structured interviews.

By means of the Delphi technique the author would like to improve and benchmark the proposed framework. The Delphi technique is based on the principle that experts give feedback on the preliminary framework twice (2x) and finalise it during the third round. The framework will be distributed to a small number of people with expertise and experience in the field of medical technology. Feedback after the first round will be integrated into the framework. The adapted framework will be sent to the same number of people for a second round of input. The second round of feedback will again be incorporated in the framework and will then be distributed to the same panel of people for their final approval.

Table 1: Time schedule for the Delphi technique over three rounds

Delphi Technique	Distribution dates	Return dates	Time period for incorporation of feedback results
First round	23 August	3 September	4 – 17 September
Second round	20 September	1 October	2 – 15 October
Third round	18 October	29 October	Final framework
The finalised framework according to the inputs by the Delphi participants will be published in an appropriate journal			

Attached please find the relevant statements in seven categories that feed into the framework, as well as the proposed framework. Your assessment of each statement will assist the author in ensuring the appropriateness of the final framework. Shortcomings and recommendations will be addressed in the following two rounds.

Your feedback will be strictly confidential.

Thank you in anticipation.

_____

Marina Brand

Appendix 5.3: Second cover letter

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17 September 2004

DEAR PARTICIPANT

A CONTINUING PROFESSIONAL DEVELOPMENT (CPD) FRAMEWORK FOR MEDICAL TECHNOLOGISTS AND TECHNICIANS IN SOUTH AFRICA

Thank you very much for responding to the first round of the Delphi technique. The total number of respondents is 15, covering seven of the provinces of South Africa.

- The points allocated: essential, useful and unnecessary statements are marked in red totalling 15 (where consensus was reached).
- Consensus was reached on those statements with an 80% or higher agreement on a specific grade e.g. essential and those statements are shaded in grey.
- Some statements were rephrased or combined for the second round.
- Response to the last two questions, 7.2 and 7.3 must also be graded as essential, useful or unnecessary statements.

Table 1: Time schedule for the Delphi technique over three rounds

Delphi Technique	Distribution dates	Return dates	Time period for incorporation of feedback results
First round	23 August	3 September	4 – 17 September
Second round	20 September	1 October	2 - 15 October
Third round	18 October	29 October	Final framework
The finalised framework according to the inputs by the Delphi participants will be published in an appropriate journal			

Attached please find the second round of the Delphi technique. It is essential that your response reached me by the 1st of October.

Once again, thank you very much for your co-operation.

_____

Marina Brand

Appendix 5.4: Feedback on first round

Category 1
The role of the Health Professions Council of South Africa (HPCSA) / The Professional Board for Medical Technology:

1.1	**The HPCSA distributes guidelines on CPD**	1	2	3	
1.1.1	The HPCSA through the CPD committee should distribute CPD guidelines to all registered members				
1.1.2	The HPCSA should have a control system in place to confirm that all registered members receive the guidelines for CPD				
1.2	**The HPCSA is responsible for the final administration of CPD, although it has delegated the accreditation and administration of CPD activities to the SMLTSA**	1	2	3	
1.2.1	A contact person, e-mail address, telephone number must be available for any queries	13	2	0	Consensus
1.2.2	The HPCSA must receive CPD point allocation preferably electronically from the SMLTSA				
1.2.3	The HPCSA should have a system in place to measure the outcomes of CPD (not only the points) and thereby guarantee that CPD is beneficial to the profession				

Category 2
The role of the employer (NHLS, Private Pathologists and SANBS) / manager / supervisor:

2.1	**The commitment of the employer to CPD**	1	2	3	
2.1.1	The employer should motivate employees to participate in CPD activities				
2.1.2	Employers must inform their employees about CPD	12	2	1	Consensus
2.1.3	Employers must contribute towards creating a positive attitude towards CPD	14	1	0	Consensus
2.1.4	Employers must create access to accredited activities	12	3	0	Consensus
2.1.5	Employers (head office) should provide CPD activities to employees on the internet				
2.1.6	The employer should assist in providing transport to employees in rural areas to attend CPD activities				

2.1.7	The employer should assist in covering costs to employees in rural areas to attend CPD activities				
2.2	**Personal development (SKILLS)**	1	2	3	
2.2.1	SKILLS development – every big organisation must invest a small percentage of its turnover in staff development which should include CPD activities				
2.2.2	The employer should accredit appropriate developmental activities in the organisation / SKILLS activities for CPD points				
2.2.3	The employer should encourage appropriate research (not for qualification) e.g. to implement new techniques in order to keep up with the latest technology and accredit it for CPD points				
2.3	**Managers / supervisors / seniors:**	1	2	3	
2.3.1	The managers / supervisors / seniors have a responsibility to ensure that everybody in the department / section / one-man laboratory has access to CPD activities				
2.3.2	The managers / supervisors / seniors must motivate the staff to organise CPD activities				
2.3.3	The managers / supervisors / seniors should accredit a journal club, within the section, between different disciplines or between laboratory staff and other health professionals				
2.3.4	The managers / supervisors / seniors must accredit case studies, within the section, between different disciplines or between laboratory staff and other health professionals				
2.3.5	The managers / supervisors / seniors should accredit laboratory–hospital unit interaction discussions especially in rural areas				
2.3.6	The managers / supervisors visiting laboratories in rural areas must initiate CPD activities				

2.4	**Measure the outcomes of CPD**	1	2	3	
2.4.1	Employers should develop a system to measure staff development as an outcome of CPD participation				
2.4.2	A measuring system should be developed to evaluate whether staff development is reflected in the standard of results leaving the laboratory				

Category 3
The role of the Society of Medical Laboratory Technologists of South Africa (SMLTSA):

3.1	**The SMLTSA main office**	1	2	3	
3.1.1	The SMLTSA must administer CPD activities on behalf of the HPCSA	12	2	1	Consensus
3.1.2	The CPD accreditor (subcommittee) must approve CPD activities by giving point values and reference numbers	14	1	0	Consensus
3.1.3	The CPD accreditor should respond when individuals disagree with point allocation	12	3	0	Consensus
3.1.4	The SMLTSA must encourage all its members to attend the SMLTSA national congresses				
3.2	**SMLTA-branches**	1	2	3	
3.2.1	SMLTSA-branches should be responsible for providing CPD activities	12	3	0	Consensus
3.2.2	SMLTSA-branches should regularly organise academic events with knowledgeable speakers to offer presentations	12	3	0	Consensus
3.2.3	SMLTSA-branches should inform all members timeously of CPD activities	12	3	0	Consensus
3.2.4	Alternative SMLTSA-branches (congress committee) should organise the national congresses every second year				
3.2.5	SMLTSA-branches (congress committee) in co-operation with medical related companies should organise workshops				
3.2.6	SMLTSA-branches in conjunction with medical related				

	companies should organise mini-congresses				
3.2.7	SMLTSA-branches should organise road shows				
3.2.8	SMLTSA-branches should have videos made of interesting CPD activities and build up a video library				
3.2.8.1	These videos should be available to those who could not attend the specific activity as well as people who would like to revisit the topic				
3.2.8.2	A measurement system (e.g. questionnaire) should be in place to validate whether the video was viewed				

Category 4
The role of the individual (Medical Technologist / Technician):

4.1	**The individual must remain registered with the HPCSA in order to practise**	1	2	3	
4.1.1	It is the individual's own responsibility to collect the required CPD points to remain on the register	12	3	0	Consensus
4.1.2	The individual should be prepared to present CPD activities				
4.1.3	Workers in isolated areas should become members of the SMLTSA in order to be informed of CPD activities	12	2	1	Consensus
4.2	**The individual and lifelong learning**	1	2	3	
4.2.1	The individual should participate in lifelong learning	14	1	0	Consensus
4.2.2	The individual should participate in lifelong learning through participation in developmental training in the workplace	13	2	0	Consensus
4.2.3	The individual should keep up with the latest technology	14	1	0	Consensus
4.2.4	Lifelong learning should reflect in the profession of medical technology	14	1	0	Consensus

Category 5
Other organisations involved in CPD:

5.1	**Medical companies involved in pathology laboratories present the latest technology and products on the market**	1	2	3	

5.1.1	Companies should accredit presentations offered for CPD				
5.1.2	The companies should accredit workshops offered for CPD				
5.2	**CPD activities offered by other health professionals**	1	2	3	
5.2.1	Accredited CPD activities offered by other health professionals should be accessible to medical technologists and technicians	13	2	0	Consensus
5.3	**Higher education institutions**	1	2	3	
5.3.1	Individuals should consider appropriate further qualifications at higher education institutions as a way of lifelong learning				

Category 6
Proposed CPD activities:

6.1	**Local activities**	1	2	3	
6.1.1	Technologists / technicians should attend and present journal discussions	14	1	0	Consensus
6.1.2	Technologists / technicians should attend and present case studies	13	2	0	Consensus
6.1.3	Technologists / technicians should attend and present workshops	12	3	0	Consensus
6.1.4	Technologists and technicians should participate in internet CPD activities, available from http://myclassroom.ctech.ac.za				
6.1.5	Technologists and technicians should participate in other health professional CPD activities e.g. ward rounds				
6.2	**National activities**	1	2	3	
6.2.1	Accredited case studies should be available for national use on the SMLTSA website				
6.2.2	Case studies and research outcomes should be published in the MTSA				
6.2.3	Individuals should attend national congresses				

6.2.4	Individuals should participate in national congresses by either presenting a poster or giving an oral presentation				
6.3	**Education**	1	2	3	
6.3.1	Individuals should obtain appropriate further qualifications through formal education				
6.3.2	When the opportunity presents itself, individuals should be available as part-time formal lecturers, examiners and / or moderators				
6.3.3	Individuals should share their expertise and supervise graduate research projects where applicable				

Category 7
Measure the outcomes CPD brings about in the individual, quality of work delivered and the profession:

7.1	**Accumulation of CPD points by an individual**	1	2	3	
7.1.1	Mere attendance rather than participation in CPD presentations does not necessarily contribute to lifelong learning				
7.1.2	Future measurement of CPD activities must be revised				
7.1.3	Administration of CPD points must be faultless	13	2	0	Consensus
	Questions				
7.2	**How could one measure the impact of CPD on the individual and the profession, with emphasis on the outcomes and outputs?**	1	2	3	
7.2.1	Supervisors should measure in-house performance				
7.2.2	Supervisors must set targets and measure the outcomes				
7.2.3	The accuracy and efficiency of the standards of laboratory results must be measured by quality control programmes				
7.2.4	Job satisfaction should be measured by completing questionnaires				
7.3	**What positive goals could be reached through CPD**	**1**	**2**	**3**	

	activities over a five year period?				
7.3.1	The individual must compile a personal portfolio and reach the outcomes in the set period				
7.3.2	Individuals must be updated on the latest developments in their specialised field				
7.3.3	Individuals must be confident in work related issues				
7.3.4	Individuals should interact with colleagues from other institutions and thereby encourage networking on the latest developments				
7.3.5	Individuals should experience work satisfaction in spite of the demands of CPD				
7.3.6	Committed medical technologists should contribute towards research outputs				

Appendix 5.5: Third cover letter

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18 October 2004

DEAR PARTICIPANT

A CONTINUING PROFESSIONAL DEVELOPMENT (CPD) FRAMEWORK FOR MEDICAL TECHNOLOGISTS AND TECHNICIANS IN SOUTH AFRICA

Thank you very much for responding to the second round of the Delphi technique. Point allocation to certain statements varied between the first and second rounds from remarkably different to exactly the same. This could be attributed to some of the questions being rephrased. The other possibility is that some of the participants interpreted the statements differently in the first round.

- Consensus was reached on those statements with an 80% or higher agreement to a grading and the statements are shaded in grey with the point allocation in red.
- Some statements were rephrased for the third round.

One participant expressed the desire to give reasons for her choice. That would be appreciated. I will leave an open row at the end of each section for participants who want to comment on their grading choice.

Table 1: Time schedule for the Delphi technique over three rounds

Delphi Technique	Distribution dates	Return dates	Time period for incorporation of feedback results
First round	23 August	3 September	4 – 17 September
Second round	20 September	1 October	2 - 15 October
Third round	18 October	**29 October**	Final framework
The finalised framework according to the inputs by the Delphi participants will be published in an appropriate journal			

Attached please find the second round of the Delphi technique. It is essential that your response reach me by **29 October 2004**.

Once again, thank you very much for your co-operation.

_____

Marina Brand

Appendix 5.6: Feedback on second round

Category 1
The role of the Health Professions Council of South Africa (HPCSA) / The Professional Board for Medical Technology:

1.1	**The HPCSA distributes guidelines on CPD**	1	2	3	
1.1.1	The HPCSA through the CPD committee should distribute CPD guidelines to all registered members	13	2	0	Consensus
1.1.2	The HPCSA should have a control system in place to confirm that all registered members receive the guidelines for CPD	11 10	3 5	1 0	
1.2	**The HPCSA is responsible for the final administration of CPD, although it has delegated the accreditation and administration of CPD activities to the SMLTSA**	1	2	3	
1.2.1	A contact person, e-mail address, telephone number must be available for any queries	13	2	0	Consensus
1.2.2	The HPCSA must receive CPD point allocation preferably electronically from the SMLTSA	8 13	7 2	0 0	
1.2.3	The HPCSA should have a system in place to measure the outcomes of CPD (not only the points) and thereby guarantee that CPD is beneficial to the profession	9 11	5 4	1 0	

Category 2
The role of the employer (NHLS, Private Pathologists and SANBS) / manager / supervisor:

2.1	**The commitment of the employer to CPD**	1	2	3	
2.1.1	The employer should motivate employees to participate in CPD activities	10 10	4 4	1 1	
2.1.2	Employers must inform their employees about CPD	12	2	1	Consensus
2.1.3	Employers must contribute towards creating a positive attitude towards CPD	14	1	0	Consensus
2.1.4	Employers must create access to accredited activities	12	3	0	Consensus
2.1.5	Employers (head office) should provide CPD activities to employees on the internet	6 8	8 6	1 1	
2.1.6	The employer should assist in providing transport to	5	6	4	

	employees in rural areas to attend CPD activities	5 5	5 5	5 5	
2.1.7	The employer should assist in covering costs to employees in rural areas to attend CPD activities	5 5	7 5	3 5	
2.2	**Personal development (SKILLS)**	1	2	3	
2.2.1	SKILLS development – every big organisation must invest a small percentage of its turnover in staff development which should include CPD activities	12	3	0	Consensus
2.2.2	The employer should accredit appropriate developmental activities in the organisation / SKILLS activities for CPD points	14	1	0	Consensus
2.2.3	The employer should encourage appropriate research (not for qualification) as part of routine working conditions and when outstanding accredit it for CPD points	7 7	7 7	1 1	
2.3	**Managers / supervisors / seniors:**	1	2	3	
2.3.1	The managers / supervisors / seniors have a responsibility to ensure that everybody in the department / section / one-man laboratory has access to CPD activities	10 11	5 3	0 1	
2.3.2	The managers / supervisors / seniors must motivate the staff to organise CPD activities	8 8	7 5	0 2	
2.3.3	The managers / supervisors / seniors should accredit a journal club within the section, between different disciplines or between laboratory staff and other health professionals	11 9	4 5	0 1	
2.3.4	The managers / supervisors / seniors must accredit case studies within the section, between different disciplines or between laboratory staff and other health professionals	11 8	4 7	0 0	
2.3.5	The managers / supervisors / seniors should accredit laboratory–hospital unit interaction discussions especially in rural areas	5 8	10 5	0 2	
2.3.6	The managers / supervisors visiting laboratories in rural areas must initiate CPD activities	8 7	6 5	1 3	

2.4	**Measure the outcomes of CPD**	1	2	3	
2.4.1	Employers should develop a system to measure staff development as an outcome of CPD participation	6 9	9 6	0 0	
2.4.2	A measuring system should be developed to evaluate whether staff development is reflected in the st andard of results leaving the laboratory	8 8	6 7	1 0	

Category 3
The role of the Society of Medical Laboratory Technologists of South Africa (SMLTSA):

3.1	**The SMLTSA main office**	1	2	3	
3.1.1	The SMLTSA must administer CPD activities on behalf of the HPCSA	12	2	1	Consensus
3.1.2	The CPD accreditor (subcommittee) must approve CPD activities by giving point values and reference numbers	14	1	0	Consensus
3.1.3	The CPD accreditor should respond when individuals disagree with point allocation	12	3	0	Consensus
3.1.4	The SMLTSA must encourage all its members to attend the SMLTSA national congresses if accredited	7 10	8 3	0 2	
3.2	**SMLTA-branches**	1	2	3	
3.2.1	SMLTSA-branches should be responsible for providing CPD activities	12	3	0	Consensus
3.2.2	SMLTSA-branches should regularly organise academic events with knowledgeable speakers to offer presentations	12	3	0	Consensus
3.2.3	SMLTSA-branches should inform all members timeously of CPD activities	12	3	0	Consensus
3.2.4	Alternative SMLTSA-branches (congress committee) should organise the national congresses every second year	11 10	4 5	0 0	
3.2.5	SMLTSA-branches (congress committee) in co-operation with medical related companies should organise workshops	10 8	5 7	0 0	
3.2.6	SMLTSA-branches in conjunction with medical related companies should organise mini-congresses	10 10	5 5	0 0	

3.2.7	SMLTSA-branches should organise road shows	8 6	5 9	2 0	
3.2.8	SMLTSA-branches should have videos made of interesting CPD activities and build up a video library	8 5	6 8	1 2	
3.2.8.1	These videos should be available to those who could not attend the specific activity as well as people who would like to revisit the topic	8 7	6 7	1 1	
3.2.8.2	A measurement system (e.g. questionnaire) should be in place to validate whether the video was viewed	8 8	6 6	1 1	

Category 4
The role of the individual (Medical Technologist / Technician):

4.1	**The individual must remain registered with the HPCSA in order to practice**	1	2	3	
4.1.1	It is the individual's own responsibility to collect the required CPD points to remain on the register	12	3	0	Consensus
4.1.2	The individual should be prepared to present CPD activities	7 10	8 4	0 1	
4.1.3	Workers in isolated areas should become members of the SMLTSA in order to be informed of CPD activities	12	2	1	Consensus
4.2	**The individual and lifelong learning**	1	2	3	
4.2.1	The individual should participate in lifelong learning	14	1	0	Consensus
4.2.2	The individual should participate in lifelong learning through participation in developmental training in the workplace	13	2	0	Consensus
4.2.3	The individual should keep up with the latest technology	14	1	0	Consensus
4.2.4	Lifelong learning should reflect in the profession of medical technology	14	1	0	Consensus

Category 5
Other organisations involved in CPD:

5.1	**Medical companies involved in pathology laboratories present the latest technology and products on the market**	1	2	3	
5.1.1	Companies should submit presentations offered for CPD to SMLTSA for accreditation before offering the activity	12 9	3 5	0 1	
5.1.2	The companies should submit workshops offered for CPD to SMLTSA for accreditation before offering the activity	13 10	2 4	0 1	
5.2	**CPD activities offered by other health professionals**	1	2	3	
5.2.1	Accredited CPD activities offered by other health professionals should be accessible to medical technologists and technicians	13	2	0	Consensus
5.3	**Higher education institutions**	1	2	3	
5.3.1	Individuals should consider appropriate further qualifications at higher education institutions as a way of lifelong learning	7 8	8 7	0 0	

Category 6
Proposed CPD activities:

6.1	**Local activities**	1	2	3	
6.1.1	Technologists / technicians should attend and present journal discussions	14	1	0	Consensus
6.1.2	Technologists / technicians should attend and present case studies	13	2	0	Consensus
6.1.3	Technologists / technicians should attend and present workshops	12	3	0	Consensus
6.1.4	Technologists and technicians should participate in internet CPD activities, available from http://myclassroom.ctech.ac.za	11 6	4 6	0 3	
6.1.5	Technologists and technicians should participate in other health professional CPD activities e.g. ward rounds	4 5	10 9	1 1	
6.2	**National activities**	1	2	3	
6.2.1	Accredited case studies should be available for national use on the SMLTSA website	12	3	0	Consensus

6.2.2	Case studies and research outcomes should be published in the MTSA	12	3	0	Consensus
6.2.3	Individuals should attend accredited national congresses	10 9	4 4	1 2	
6.2.4	Individuals should participate in national congresses by either presenting a poster or giving an oral presentation	6 6	8 7	1 2	
6.3	**Education**	1	2	3	
6.3.1	Individuals should obtain appropriate further qualifications through formal education	8 5	7 8	0 2	
6.3.2	When the opportunity presents itself, individuals should be available as part-time formal lecturers, examiners and / or moderators	12	3	0	Consensus
6.3.3	Individuals should share their expertise and supervise graduate research projects where applicable	12	3	0	Consensus

Category 7
Measure the outcomes CPD brings about in the individual, quality of work delivered and the profession:

7.1	**Accumulation of CPD points by an individual**	1	2	3	
7.1.1	Mere attendance rather than of participation in CPD presentations does not necessarily contribute to lifelong learning	8 7	3 8	4 0	
7.1.2	Future measurement of CPD activities must be revised	9 10	5 3	1 2	
7.1.3	Administration of CPD points must be faultless	13	2	0	Consensus
	Questions				
7.2	**How could one measure the impact of CPD on the individual and the profession, with emphasis on the outcomes and outputs?**	1	2	3	
7.2.1	Supervisors should measure in-house performance	8	6	1	
7.2.2	Supervisors must set targets and measure the outcomes	8	5	2	
7.2.3	The accuracy and efficiency of the standards of laboratory results must be measured by quality control	14	1	0	Consensus

	programmes				
7.2.4	Job satisfaction should be measured by completing questionnaires	10	5	0	
7.3	**What positive goals could be reached through CPD activities over a five year period?**	**1**	**2**	**3**	
7.3.1	The individual must compile a personal portfolio and reach the outcomes in the set period	6	8	1	
7.3.2	Individuals must be updated on the latest developments in their specialised field	13	2	0	Consensus
7.3.3	Individuals must be confident in work related issues	12	3	0	Consensus
7.3.4	Individuals should interact with colleagues from other institutions and thereby encourage networking on the latest developments	9	6	0	
7.3.5	Individuals should experience work satisfaction in spite of the demands of CPD	13	2	0	Consensus
7.3.6	Committed medical technologists should contribute towards research outputs	13	2	0	Consensus

Appendix 5.7: Rephrasing and modifying statements, converting answers to open-ended questions into statements

Category 1	
The role of the Health Professions Council of South Africa (HPCSA) / The Professional Board for Medical Technology:	
1.1	**The HPCSA distributes guidelines on CPD**
1.1.1	The HPCSA, through the CPD committee, should distribute CPD guidelines to all registered members
1.2	**The HPCSA is responsible for the final administration of CPD, although it has delegated the administration of CPD activities to the SMLTSA**
1.2.2	The HPCSA must receive CPD points allocation preferably electronically from the SMLTSA
Category 2	
The role of the employer (NHLS, Private Pathologists and SANBS) / manager / supervisor:	
2.1	**The commitment of the employer to CPD**
2.1.5	Employers (head office) should provide CPD activities to employees on the internet
2.2	**Personal development (SKILLS)**
2.2.2	The employer should accredit appropriate developmental activities in the organisation / SKILLS activities for CPD points
2.2.3	The employer should encourage appropriate research (not for qualification) e.g. implement new techniques in order to keep up with the latest technology and accredit them for CPD points
2.2.3*	The employer should encourage appropriate research (not for qualification) as part of routine working conditions and when outstanding, accredit it for CPD points
2.3	**Managers / supervisors / seniors:**
2.3.2	The managers / supervisors / seniors must motivate the staff to organise CPD activities
2.3.3	The managers / supervisors / seniors should accredit a journal club within the section, between different disciplines or between laboratory staff and other health professionals
2.3.4	The managers / supervisors / seniors must accredit case studies within the section, between different disciplines or between laboratory staff and other health professionals

2.3.5	The managers / supervisors / seniors should accredit laboratory–hospital unit interaction discussions especially in rural areas
2.3.6	The managers / supervisors visiting laboratories in rural areas must initiate CPD activities
Category 3	
The role of the Society of Medical Laboratory Technologists of South Africa (SMLTSA):	
3.1	**The SMLTSA main office**
3.1.4	The SMLTSA must encourage all its members to attend the SMLTSA national congresses
3.2	**SMLTA-branches**
3.2.4	Alternative SMLTSA-branches (congress committee) should organise the national congresses every second year
3.2.5	SMLTSA-branches (congress committee) in co-operation with medical related companies should organise workshops
3.2.6	SMLTSA-branches in conjunction with medical related companies should organise mini-congresses
3.2.7	SMLTSA-branches should organise road shows
3.2.8	SMLTSA-branches should have videos made of interesting CPD activities and build up a video library
3.2.8.1	These videos should be available to those who could not attend the specific activity as well as those who want to revisit the topic
3.2.8.2	A measurement system (e.g. questionnaire) should be in place to validate whether the video was viewed
Category 5	
Other organisations involved in CPD:	
5.1	**Medical companies involved in pathology laboratories present the latest technology and products on the market**
5.1.1*	Companies should submit presentations offered for CPD to SMLTSA for accreditation before presenting the activity
5.1.1**	Companies should submit a programme with details of the presentations to be offered for CPD to the SMLTSA for accreditation before offering the activity
5.1.2*	The companies should submit workshops offered for CPD to SMLTSA for accreditation before offering the activity
5.1.2**	The companies should submit details of workshops to be offered for CPD to

	SMLTSA for accreditation before offering the activity
5.3	**Higher education institutions**
5.3.1	Individuals should consider appropriate further qualifications at higher education institutions as a way of lifelong learning
Category 6	
Proposed CPD activities:	
6.1	**Local activities**
6.1.4	Technologists and technicians should participate in internet CPD activities, available from http://myclassroom.ctech.ac.za
6.1.5	Technologists and technicians should participate in other health professional CPD activities e.g. ward rounds
6.1.5**	Technologists and technicians should participate in other health professional CPD activities e.g. ward rounds where applicable
6.2	**National activities**
6.2.1	Accredited case studies should be available for national use on the SMLTSA website
6.3	**Education**
6.3.1	Individuals should obtain appropriate further qualifications through formal education
6.3.2	When the opportunity presents itself, individuals should be available as part time formal lecturers, examiners and / or moderators
6.3.3	Individuals should share their expertise and supervise graduate research projects where applicable
Category 7	
Measure the outcomes CPD brings about in the individual, quality of work delivered and the profession:	
7.1	**Accumulation of CPD points by an individual**
7.1.1	Mere attendance rather than participation in CPD presentations does not necessarily contribute to lifelong learning
7.1.2	Measurement of CPD activities must be revised
	Questions
7.2	**How could one measure the impact of CPD on the individual and the profession, with emphasis on the outcomes and outputs?**
7.2.1	Supervisors should measure in-house performance
7.2.2	Supervisors must set targets and measure the outcomes

7.2.3	The accuracy and efficiency of the standard of laboratory results must be measured by quality control programmes
7.2.4	Job satisfaction should be measured by completing questionnaires
7.3	**What positive goals could be reached through CPD activities over a five year period?**
7.3.1	The individual must compile a personal portfolio and reach the outcomes in the set period
7.3.2	Individuals must be updated on the latest developments in their specialised field
7.3.3	Individuals must be confident in work related issues
7.3.4	Individuals should interact with colleagues from other institutions and thereby encourage networking on the latest developments
7.3.5	Individuals should experience work satisfaction in spite of the demands of CPD
7.3.6	Committed medical technologists should contribute toward research outputs

*Rephrasing after the second round

**Rephrasing after the third round

CHAPTER 6

A CONTINUING PROFESSIONAL DEVELOPMENT FRAMEWORK FOR SOUTH AFRICAN MEDICAL TECHNOLOGISTS AND MEDICAL TECHNICIANS

6.1 INTRODUCTION

Health professionals throughout the world currently practise continuing professional development (CPD). CPD is described particularly by health professionals e.g. occupational therapists in Australia, (Lannin and Longland, 2003); physicians in Europe, Canada, United States of America (USA), Australia and New Zealand (Peck, McCall, McLaren and Rotem, 2000); dental practitioners in Scotland (Leggate and Russell, 2002); dietetics in the USA (Keim, Johnson and Gates, 2001); radiographers in the United Kingdom (UK) (Kerr and Vinjamuri, 2001); nurses in the UK (Govier, 1999) and by medical technologists in the USA (Falcone, 1999).

The Health Professions Council of South Africa (HPCSA) introduced a system of continuing professional development (CPD) for health practitioners in January 2000 (HPCSA, 2005[a]). Since 2002 medical technologists and technicians have been obliged to participate in this compulsory CPD programme (HPCSA, 2002).

Professional societies and professional control bodies are, however, continuously in the process of redesigning and implementing new CPD programmes addressing the shortcomings identified in the previously implemented programmes (Mathers, Challis, Howe and Field, 1999; McKay, 2000; Van Rijswijk, 2004). Fox (2000) reported that, in the last decade researchers in continuing medical education (CME) found that health professionals

have been more effective in gaining new knowledge but less effective in applying this knowledge. Furthermore, in this regard, Collier, Crowe, Stinson, Chu and Houlden (2001) reported that the Canadian Society of Clinical Chemists (CSCC) and the Canadian Academy of Clinical Biochemistry (CACB) recently implemented a new professional development programme. The goal of the new programme was to evaluate and recognise professional development based on self-determined needs, interests and learning preferences (Collier *et al,* 2001). The Royal College of Pathologists in the UK, adapted their CPD programme and introduced a portfolio learning record in April 1999 to assist pathologists in keeping record of their CPD activities (Du Boulay, 1999). Subsequently, the Royal College of Physicians in the UK changed from the point system to a personal portfolio system (McKay, 2000). Mathers *et al.* (1999) indicated that the portfolio-based learning scheme could meet the professional practice needs of UK general practitioners. It gives physicians control over how, what and when they learn. It encourages active and peer-supported learning and builds personal and professional confidence (Mathers *et al.,* 1999).

The shortcomings of the CPD (CME) programme of physicians in the USA identified at a CME congress, was a lack of continuous improvement based on research about effective learning processes and outcomes that should become an essential construct of the CME culture (Leist and Green, 2000). Bennett, Davis, Easterling, Friedmann, Green, Koeppen, Mazmanian and Waxman (2000) stated that collaboration among appropriate academic groups, professional associations, and health care institutions with leadership from the Association of American Medical Colleges (AAMC) was essential to create the best learning systems for the professional development of physicians.

Various models and frameworks in a number of countries were designed to assist participants in CPD activities. A CPD model was constructed by Fink and Kolmos (2004) for European

engineers practising CPD with close association between the Aarlborg University and the professional organisation in reaching CPD outcomes. The CPD model described by Rodrigues, Marks and Steel (2003) was aimed at encouraging Scotland primary school teachers to acquire skills in using information and communication technology and at the same time refreshing their understanding of science concepts and teaching and learning strategies. Cervero (1985) described a continuing professional education (CPE) framework for nursing staff in the USA, which focused on the changes in behaviour while increasing knowledge, improving skills and changing attitude to meet the appropriate outcomes. A reflective cycle model of CPD was implemented by Brigley, Young, Littlejohns and McEwen (1997) based on a diary-keeping exercise for health practitioners in the UK which included personal development planning, recording and commenting on specific activities and self-evaluation. Curran (2000) implemented a model for evaluating the effectiveness of computer mediated CME courseware for rural and remote physicians in the USA. The main goal of this programme was to introduce these family physicians to common dermatological office procedures (Curran, 2000).

The HPCSA (Professional Board for Medical Technology) informed registered medical technologists and technicians of the compulsory CPD programme (HPCSA, 2002). Guidelines for CPD activities with point allocation to the different activities were published in the Medical Technology News (MTN) (Van Rijswijk, 2002). Some branches of the Society of Medical Laboratory Technologists of South Africa (SMLTSA) held information sessions in the urban and rural areas to inform medical technologists and technicians about CPD. Even though all registered medical technologists and technicians were supposed to have been informed about CPD, this did not happen everywhere. In addition, limitations to getting CPD off the ground, was a problem especially to those in rural areas.

The concept of compiling a CPD framework to assist in establishing a usable CPD programme was postulated in the present research project. Prior to compiling a concept CPD framework, information concerning the implementation of CPD for medical technologists and technicians in South Africa was gathered by means of a mailed questionnaire succeeded by structured interviews conducted with medical technologists and technicians throughout South Africa and information available from the literature. The information gathered concerned the general attitude towards CPD, identifying obstacles in collecting CPD points, ways of overcoming these obstacles and contributions by employers and the SMLTSA in organising and presenting CPD activities. Information was obtained on the individuals' aptitude in active participation in the CPD programme by organising and presenting CPD activities, formal education, getting involved in research and publications in journal articles. A concept CPD framework was thus compiled based on the information obtained from the questionnaires and the literature and evaluated using the Delphi technique. The concept framework was adapted to accommodate the information and the final CPD framework is presented in this section of the thesis (pp. 219-226).

Once finalised the proposed CPD framework will be presented to the HPCSA (Professional Board for Medical Technology) for implementation in pathology laboratories to assist in establishing a usable CPD programme throughout South Africa.

At the same time the final HPCSA draft CPD document was presented by the CPD Committee of the HPCSA to the Executive Committee (EXCO) of the HPCSA in December 2004, and this was subsequently approved by the HPCSA at their first meeting in 2005. Professional Boards for Optometry and Dispensing Opticians and Medical Technology were asked to pilot the proposed new CPD programme. This pilot started in July 2005 and will end in January 2006. Each of the two profession boards should then submit a report which

includes information on service providers / accreditors to the HPCSA CPD Committee. It will then be decided if the other professional boards, registered with the HPCSA, must follow the same programme.

6.2 THE CPD FRAMEWORK

The framework was compiled with the aim of leading all role players to address problems experienced in collecting CPD points and to successfully reach the predicted outcomes of CPD. The framework addresses the required close collaboration among the HPCSA, the SMLTSA, employers and managers, medical companies, other health professionals and higher education institutions with medical technologists and technicians that needs to be in place for a successful CPD programme. The contribution made by the different organisations and groups is highlighted in the framework (Categories 1–5: pp. 221-224). Their contribution is of value in assisting medical technologists and technicians in participating in CPD activities as suggested by Bennett *et al.* (2000) and Nolan, Owen, Curran and Venables (2000). In addition, the framework also looks into proposed CPD activities and ways of measuring the outcomes of CPD (Categories 6–7: pp. 225-226).

The concept CPD framework presented in the previous chapter was evaluated by 15 panellists using the Delphi technique over three rounds and subsequently finalised with input from the panel. Consensus was reached on 72 of the 73 statements in the concept framework. The statement suggesting that employers should assist in providing transport to employees in rural areas to attend CPD activities was rated unnecessary and excluded from the final framework. Even though it would have been ideal it could be that most employers are not financially in a position in providing transport to all their employees in especially rural areas when attending CPD activities. Another statement excluded from the framework,

although it reached consensus, was the suggestion that the SMLTSA should organise road shows. This activity was once attempted, but was not economically feasible. It can thus be concluded that even though the panellists reached consensus on this statement the SMLTSA cannot offer activities at a financial lost.

Time and money were identified as the major obstacles to participate in CPD activities in South Africa and were therefore addressed in the framework. Similar barriers, namely lack of time and money were experienced in other countries for instance by nursing staff in the UK (Govier, 1999) and paediatricians in the USA (Sectish, Floriani, Badat, Perelman and Bernstein, 2002) thereby preventing them from taking part in CPD activities. Medical technologists and technicians practicing in rural areas experienced travelling as an obstacle to attending CPD activities in metropolitan areas. Travelling as an obstacle is not unique to South Africa as occupational therapists in rural Australia (Lannin and Longland, 2003) also experienced it as a barrier. Costs and travelling as obstacles are minimised when attending CPD activities offered locally. To promote more local CPD activities could be addressed when more sub-branches of the SMLTSA are founded which could present academic activities and even consider offering workshops and mini-congresses. Chambers, Ferguson and Prescott (2000) indicated that local CPD activities practised by anaesthetists in Scotland were more cost effective than attending external meetings where travelling was involved. Time will always be a problem, to medical technologists and technicians who are working day and night shifts. In addressing time and money as the major obstacles will be accounted for when employers provide access to accredited CPD activities on internet. This though could lead to medical technologists and technicians using the internet for personal gain or negligence in finishing the days work in rather spending time on the internet.

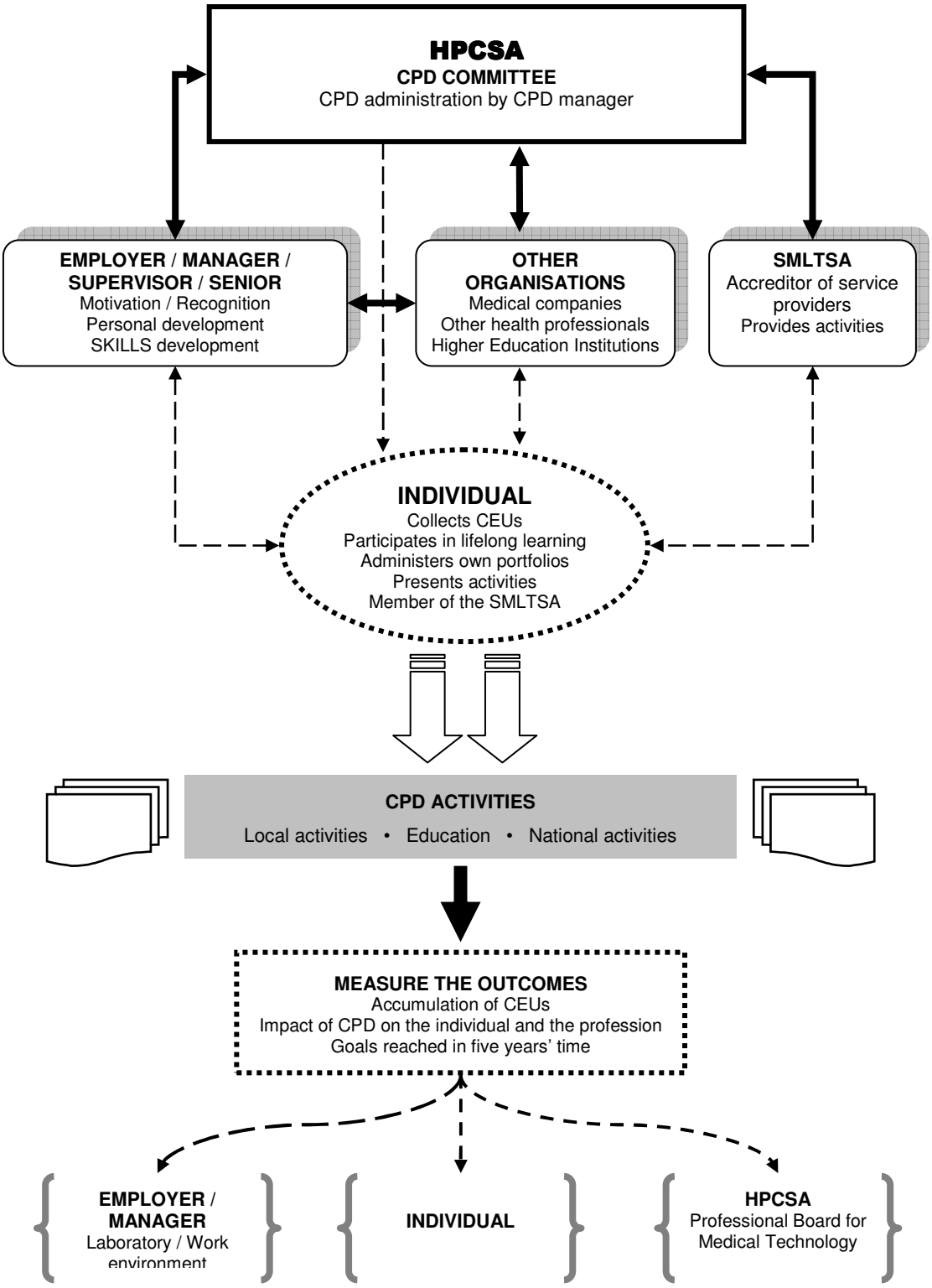
The CPD framework should assist in getting the employers, managers and supervisors as well as the rest of the bench working medical technologists and technicians involved in creating CPD activities during working hours. CPD will only be successful when all role players involved in medical technology contribute towards active participation in CPD activities. A positive attitude to CPD is essential. The SMLTSA, medical companies and higher education institutions are the main organisers of CPD activities after working hours.

THE CPD FRAMEWORK IN ITS FINAL FORMAT WITH MODIFICATIONS MADE AS REQUESTED BY THE PANEL OF EXPERTS FOLLOWS:

In this framework the concept continuing education units (CEUs) is used instead of CPD points and credits to align the framework with the Final CPD Draft Document for Health Professions from the HPCSA that was published in May 2005.

SCHEMATIC DESIGN OF THE CPD FRAMEWORK

Diagram 1: ***Interaction between the different role players***



1. HPCSA	The CPD committee approves accreditation of CPD service providers
	CPD manager administer CPD
	Controls individual registration
2. Employer / Manager	Laboratories comply with standards set by the HPCSA
	Should participate in SKILLS Development Fund activities (lifelong learning)
	Provides and creates access to CPD activities
3. SMLTSA	Acts as accreditor of service provider
	Provides CPD activities
	Encourages SMLTSA membership to obtain CEUs
4. Individual	Registration with the HPCSA in order to be able to practice
	Responsible for collecting the required number of CEUs
5. Other organisations	Involved in providing activities that could be accredited for CPD
	Sources of lifelong learning
	Provide educational development to the individual
6. CPD activities	Provide by the SMLTSA, employers, individuals themselves and other organisations
7. Measure the outcomes	CPD outcomes should be reflected in the individual, the employer (work environment)
	and recognised by the HPCSA

Abbreviations used:

CEUs	Continuing Education Units
CPD	Continuing Professional Development
HPCSA	Health Professions Council of South Africa
MTSA	Medical Technology South Africa
NHLS	National Health Laboratory Services
SANBS	South African National Blood Services
SMLTSA	Society of Medical Laboratory Technologists of South Africa

A CONTINUING PROFESSIONAL DEVELOPMENT FRAMEWORK FOR SOUTH AFRICAN MEDICAL TECHNOLOGISTS AND MEDICAL TECHNICIANS

Category 1	
The role of the Health Professions Council of South Africa (HPCSA) / The Professional Board for Medical Technology:	
1.1	**The HPCSA distributes guidelines on CPD**
1.1.1	The HPCSA through the CPD committee should distribute CPD guidelines to all registered members
1.1.2	The HPCSA should have a control system in place to confirm that all registered members receive the guidelines for CPD
1.2	**The HPCSA is responsible for the administration of CPD that is done by the CPD manager**
1.2.1	A contact person, e-mail address, telephone number must be available for any queries
1.2.2	The HPCSA must receive CEUs allocation preferably electronically from the service provider
1.2.3	The HPCSA should have a system in place to measure the outcomes of CPD (not only the CEUs) and thereby guarantee that CPD is beneficial to the profession
Category 2	
The role of the employer (NHLS, Private Pathologists and SANBS) / manager / supervisor:	
2.1	**The commitment of the employer to CPD**
2.1.1	The employer should motivate employees to participate in CPD activities
2.1.2	Employers must inform their employees about CPD
2.1.3	Employers must contribute towards creating a positive attitude towards CPD
2.1.4	Employers must create access to accredited activities
2.1.5	Employers (head office) should provide CPD activities to employees on the internet
2.1.6	The employer should assist in covering costs to employees in rural areas to attend CPD activities

2.2	**Personal development (Skills Development Fund)**
2.2.1	Skills development – every big organisation must invest a small percentage of its turnover in staff development which should include CPD activities
2.2.2	The employer should accredit appropriate developmental activities in the organisation / Skills activities for CEUs
2.2.3	The employer should encourage appropriate research (not for qualification) as part of routine working conditions and when outstanding accredit it for CEUs
2.3	**Managers / supervisors / seniors:**
2.3.1	The managers / supervisors / seniors have a responsibility to ensure that everybody in the department / section / one-man laboratory has access to CPD activities
2.3.2	The managers / supervisors / seniors must motivate the staff to organise CPD activities
2.3.3	The managers / supervisors / seniors should accredit a journal club within the section, between different disciplines or between laboratory staff and other health professionals
2.3..4	The managers / supervisors visiting laboratories in rural areas must initiate CPD activities
2.3.5	The managers / supervisors / seniors must accredit case studies within the section, between different disciplines or between laboratory staff and other health professionals
2.3.6	The managers / supervisors / seniors should accredit laboratory–hospital unit interaction discussions especially in rural areas
2.4	**Measure the outcomes of CPD**
2.4.1	Employers should develop a system to measure staff development as an outcome of CPD participation
2.4.2	A measuring system should be developed to evaluate whether staff development is reflected in the standard of results leaving the laboratory

Category 3	
The role of the Society of Medical Laboratory Technologists of South Africa (SMLTSA):	
3.1	**The SMLTSA main office**
3.1.1	The SMLTSA acts as the accreditor of service provider
3.1.2	The approved CPD service provider accredites CPD activities
3.1.3	The CPD accreditor was expected to respond when individuals disagreed with CEUs allocation (up to 2004)
3.1.4	The SMLTSA must encourage all its members to attend the SMLTSA national congresses if accredited
3.2	**SMLTSA branches**
3.2.1	SMLTSA branches should be responsible for providing CPD activities
3.2.2	SMLTSA branches should regularly organise academic events with knowledgeable speakers to offer presentations
3.2.3	SMLTSA branches should inform all members timeously of CPD activities
3.2.4	Alternative SMLTSA branches (congress committee) organise the national congresses every second year
3.2.5	SMLTSA branches (congress committee) in co-operation with medical related companies should organise workshops
3.2.6	SMLTSA branches in conjunction with medical related companies should organise mini-congresses
3.2.8	SMLTSA branches should have videos made of interesting CPD activities and build up a video library
3.2.8.1	These videos should be available to those who could not attend the specific activity as well as people who would like to revisit the topic
3.2.8.2	A measurement system (e.g. questionnaire) should be in place to validate whether the video was viewed

Category 4	
The role of the individual (Medical Technologist / Technician):	
4.1	**The individual must remain registered with the HPCSA in order to practise**
4.1.1	It is the individual's own responsibility to earn the required CEUs and keep record of their personal CPD profile
4.1.2	Workers in rural areas should become members of the SMLTSA in order to be informed of CPD activities
4.1.3	The individual should be prepared to present CPD activities
4.2	**The individual and lifelong learning**
4.2.1	The individual should participate in lifelong learning
4.2.2	The individual should participate in lifelong learning through participation in developmental training in the workplace
4.2.3	The individual should keep up with the latest technology
4.2.4	Lifelong learning should reflect in the profession of medical technology
Category 5	
Other organisations involved in CPD:	
5.1	**Medical companies involved in pathology laboratories present the latest technology and products on the market**
5.1.1	Companies should submit presentations offered for CPD to service provider for accreditation before offering the activities
5.1.2	The companies should submit workshops offered for CPD to service provider for accreditation before offering the activities
5.2	**CPD activities offered by other health professionals**
5.2.1	Accredited CPD activities offered by other health professionals should be accessible to medical technologists and technicians

5.3	**Higher education institutions**
5.3.1	Individuals should consider appropriate further qualifications at higher education institutions as a way of lifelong learning
Category 6	
Proposed CPD activities:	
6.1	**Local activities**
6.1.1	Technologists / technicians should attend and present journal discussions
6.1.2	Technologists / technicians should attend and present case studies
6.1.3	Technologists / technicians should attend and present workshops
6.1.4	Technologists and technicians should participate in internet CPD activities, available from http://myclassroom.cput.ac.za
6.1.5	Technologists and technicians should participate in other health professional CPD activities e.g. ward rounds
6.2	**National activities**
6.2.1	Accredited case studies should be available for national use on the SMLTSA website
6.2.2	Case studies and research outcomes should be published in the MTSA
6.2.3	Individuals should attend accredited national congresses
6.2.4	Individuals should participate in national congresses by either a poster or an oral presentation
6.3	**Education**
6.3.1	Individuals should obtain appropriate further qualifications through formal education
6.3.2	When the opportunity presents itself individuals should be available as part time formal lecturers, examiners and / or moderators
6.3.3	Individuals should share their expertise and supervise graduate research projects where applicable

Category 7	
Measure the outcomes CPD brings about in the individual, quality of work delivered and the profession:	
7.1	**Accumulation of CEUs by an individual**
7.1.1	Administration of CEUs must be faultless
7.1.2	Mere attendance rather than participation in CPD presentations does not necessarily contribute to lifelong learning
7.1.3	Future measurement of CPD activities must be revised
Questions	
7.2	**How could one measure the impact of CPD on the individual and the profession, with emphasis on the outcomes and outputs?**
7.2.1	Supervisors should measure in-house performance
7.2.2	Supervisors must set targets and measure the outcomes
7.2.3	The accuracy and efficiency of the standards of laboratory results must be measured by quality control programmes
7.2.4	Job satisfaction should be measured by completing questionnaires
7.3	**What positive goals could be reached through CPD activities over a five year period?**
7.3.1	Individuals must be updated on the latest developments in their specialised field
7.3.2	Individuals must be confident in work related issues
7.3.3	Individuals should experience work satisfaction in spite of the demands of CPD
7.3.4	Committed medical technologists should contribute to research outputs
7.3.5	The individuals must compile a personal portfolio that addresses his / her professional needs as well as the needs of the workplace where employed and reach the outcomes in the set period
7.3.6	The individuals should interact with colleagues from other institutions and thereby encourage networking on the latest developments

6.2.1 The role of the Health Professions Council of South Africa / The Professional Board for Medical Technology (CPD Framework: Category 1)

The HPCSA is the control body that looks after the professional standards of most health professions in South Africa. CPD programmes for health professions have been compulsory since 2000. The HPCSA *via* the professional boards is responsible for supplying guidelines for the CPD programmes and controlling the final CPD administration.

The Professional Board for Medical Technology informed all registered medical technologists and technicians *via* postal mail of the compulsory CPD programme (HPCSA, 2002). Unfortunately the mail did not reach all registered members. With regard to the framework, the HPCSA must therefore have a control system in place whereby the reception of CPD documentation is confirmed.

The SMLTSA administers the CPD programme until 2004, after which the administration was taken over by the CPD portfolio of the HPCSA. It is of critical importance that the administration of CPD should be flawless. Eraut (2001) agreed that the administration of CPD must be effective to ensure a successful CPD programme for professionals. The framework requires a contact person to be available at the HPCSA for any queries regarding CPD. At the end of the first CPD cycle it was clear that the SMLTSA could not handle the CPD administration which resulted in a great disappointment to those who accumulated the required number of CPD points and were not accredited accordingly. CPD was unfortunately implemented at the stage when many medical technologists and technicians experienced job dissatisfaction because of the amalgamation of different laboratories. CPD was perceived as a burden and any further disappointments concerning CPD contributed to more job

dissatisfaction. The administration process was subsequently revised and individual CPD point allocation was available on the SMLTSA website up to 2004.

6.2.2 The role of employers, managers, supervisors and seniors (CPD Framework: Category 2)

The employer, managers and others in control positions in the laboratory must reflect a positive attitude to CPD which will result in a positive atmosphere, in this regard, in the work environment. However, it is no easy task to motivate unwilling staff members to participate in activities in which they are not interested or in which they have no wish to participate. Employers and top management motivated with a positive attitude to CPD, would therefore make it much easier for managers and supervisors, to create a positive atmosphere regarding CPD at work.

One way to establish a positive environment regarding CPD is for employers *via* their top management to contribute to CPD by creating CPD activities during working hours and by encouraging medical technologists and technicians to participate actively in these activities. CPD activities offered during working hours may vary from journal discussions, case study discussions and internet activities. If one hour per week could be set aside for CPD activities, the majority of medical technologists and technicians, who work day and night shifts, will be in a position to accumulate a fair number of points annually. Participating in internet accredited CPD activities during working hours must be allowed within limits. Internet activities will be more accessible specifically for those working night shifts and in rural areas. According to Bacon (1999) participation in internet CPD activities is a cost effective manner of providing for the needs of physicians in the UK. The Royal College of Surgeons in the UK was constantly creating new internet CPD activities for their members' benefit (Murfitt and Peyton, 2000).

Employees who conduct staff education courses funded by the Skills Development Fund must consider accrediting some of those courses as CPD activities, as suggested in the framework. This will cover the costs of some activities conducted during working hours. Courses on managerial and computer skills will be beneficial to medical technologists and technicians in addition to further qualifications in medical technology.

It remains a debatable question whether employers are obliged to grant special leave and fund CPD activities when offered away from work to cover travelling, accommodation and registration costs. Most employers act on the understanding that costs will be covered provided the employee represents the laboratory by presenting an activity. According to Watkins (1999) it is no longer the responsibility of the employer to provide the training necessary for professionals to continue performing the job efficiently. Physicians in the UK were sponsored by the Post Graduate Education Allowance (PGEA) to participate in CPD activities (Mathers *et al.,* 1999), whereas occupational therapists in rural Australia had to pay their own expenses when attending CPD activities in urban areas (Lannin and Longland, 2003). One concept that must be kept in mind is that employers and employees are dependent on one-another. Thus when employees loose their registration with the HPCSA and are not allowed to practise medical technology it would directly effect the employer of those employees. For that reason employers are obliged to make CPD activities more accessible especially to those in rural areas.

Measuring the outcomes of CPD will, to a great extent, be the responsibility of the HPCSA, but also that of the senior staff members in the laboratory, though the senior staff must also be evaluated. Suggestions for measuring the outcomes of CPD will be discussed in 6.2.7.

6.2.3 The role of the Society of Medical Laboratory Technologists of South Africa (CPD Framework: Category 3)

The SMLTSA used to be responsible for administering the point (since 2005 CEU) allocation of the CPD programme as discussed in 6.2.1. Prior to the presentation of a CPD activity it must be accredited and points allocated by the CPD subcommittee at the SMLTSA head office, depending on the level and duration of the activity. All SMLTSA members must be informed timeously of CPD activities.

The SMLTSA has a major responsibility in creating a positive attitude to CPD. An active SMLTSA branch that organises constructive CPD activities will automatically motivate medical technologists and technicians to become members of the Society. The SMLTSA must encourage all its members to attend activities offered by the Society especially the SMLTSA national congresses (SMLTSA, 2004). Active participation in CPD activities not only enhances companionship, which is good for the morale but is educational and informative about the latest developments in medical technology and research projects conducted locally and nationally. Falcone (1999), a former laboratory supervisor in the USA, stated that taking part in the continuing educational (CE) programme should not simply be to fulfil an obligation, but medical technologists have so much to gain both personally and professionally by enthusiastically taking part in CE activities.

SMLTSA branches, often in close association with medical companies, organise local activities such as academic evenings, workshops and mini-congresses. The national SMLTSA-congress is presented every second year in different locations throughout South Africa (SMLTSA, 2004).

Individuals selected to present at academic evenings are experts on relevant topics such as medical technologists involved in research projects, pathologists in charge of pathology laboratories and representatives from medical companies informing on the latest developments in their specific specialised field. Some of the SMLTSA branches have successfully made videos of these academic presentations, which can be borrowed from the local branch and after watching the video, a questionnaire is completed whereby the participant earns CPD credits.

Workshops are often presented by medical companies to demonstrate new techniques or a new apparatus but they could also be presented by a department or individual. One day mini-congresses offered by local branches of the Society on a Saturday, have become popular as these activities are affordable to most, are accessible to local medical technologists and technicians and to those working in the geographic area of the specific SMLTSA branch. National congresses are more time-consuming with the individual absent from work for three to four days and are also more expensive. Even so, medical technologists and technicians must be encouraged to attend national congresses and it is suggested that in future branches of the SMLTSA should consider organising busses to transport members to national congresses and obtain sponsorship from medical companies to assist in covering expenditure to national congresses.

Members of the Society as well as non-members may attend CPD activities offered by the SMLTSA branches. It is however, more cost-effective for members to attend these activities which are usually free or have lower entrance fees than for non-members.

6.2.4 The role of the individual (medical technologist and technician) (CPD Framework: Category 4)

A survey by Kushnir, Cohen and Kitai (2000) on physicians in Israel indicated that CME relieved job stress and increased job satisfaction. South African medical technologists and technicians should therefore participate in CPD activities, as they experience internal but not external job satisfaction similar to medical technologists in the USA (Matteson and Ivancevich, 1982). They enjoy working in a laboratory but factors such as awkward working hours, staff shortages, salaries and not being recognised as a profession are causes of job dissatisfaction, similar to those experienced by medical technologists in the USA (Monahan, 2001) and the UK (Pitt and Sands, 2002). Nurses in the UK benefited by CPD because it kept them informed of the latest developments and allowed them to be more creative and to improve the care they offered to patients (Hinchliff, 1999).

Whether CPD activities are offered during working hours or after hours for instance by the SMLTSA, it remains the individual's responsibility to participate and accumulate CPD credits. Medical technologists and technicians working in urban areas in larger laboratories and in the vicinity of a SMLTSA branch experience minor problems in collecting the required CPD points annually. Medical technologists and technicians working in rural areas however, experience the accumulation of CPD points as a major obstacle. Those employed in rural areas need to be motivated by their employers to attend CPD activities and must appeal for fringe benefits, such as paid leave to attend CPD activities, as discussed in 6.2.2.

As stated in the framework medical technologists and technicians must participate in lifelong learning. This is possible if they attend educational activities offered during working hours,

and activities offered by the SMLTSA branches which updated them on the latest developments in the profession of medical technology.

6.2.5 Other organisations involved (CPD Framework: Category 5)

Pathology laboratories purchase reagents, disposable products and appliances used in the laboratories from medical companies *via* their representatives or salespersons. These people are usually knowledgeable about the latest products and appliances on the market (with reference to 6.2.3). A close relationship exists between the companies and pathology laboratories and also between the companies and the SMLTSA. Representatives of medical companies are in a position to offer presentations on their products or to demonstrate appliances either in the form of a presentation or a workshop. These presentations must be accredited for CPD points, though according to the final draft CPD document, these activities will not qualify for CEUs (HPCSA, 2005[b]). When accredited these activities could either be offered during an academic evening, a mini-congress or a national congress organised by the SMLTSA. When representatives visit laboratories in rural areas they are requested to present accredited CPD activities to those medical technologists and technicians who otherwise do not have the opportunity to attend CPD activities.

Medical technologists and technicians should be encouraged to participate in CPD activities organised by other health professionals. Societies of health professionals, registered with the HPCSA, must interact and make activities known to all HPCSA registered members within an area or small town. This is especially valuable in smaller towns with, for example, one medical technologist, one radiographer and one physician attending accredited CPD activities jointly. In this regard, Acquilla, O'Brien and Kernohan (1998) indicated that continuing

educational activities should be multidisciplinary to accommodate the need of public health physicians in the UK.

The framework proposes that medical technologists and technicians consider formal education. Higher education institutions should offer courses in biomedical technology, management and information technology after hours and also have the courses available on e-learning for medical technologists and technicians employed full-time. According to Randell (2001), an instructor at a higher education institution in the USA, e-learning proved especially helpful to people working in small towns or rural areas. There are currently universities of technology in South Africa that offer the National Diploma in Biomedical Technology on a part-time basis to medical technicians.

6.2.6 Proposed CPD activities (CPD Framework: Category 6)

Health professions in rural areas prefer to attend local CPD activities even though the quality is not necessarily of a high standard. Du Boulay (1999) stated that CPD programmes are best managed locally to meet the needs of the local service and individual consultants. Mathers *et al.* (1999) reported that physicians in the UK attended local activities because constraints such as time, energy and finances were eliminated in this way. Roberts and Scott (1988) conducted a comparative study on allied health professionals in rural California, one group of which was medical technologists, and these allied health professionals requested that activities should preferably be presented locally. Most local CPD activities are those offered during working hours as discussed in section 6.2.2 and academic evenings, mini-congresses and workshops offered by the SMLTSA as discussed in section 6.2.3.

6.2.7 Active participation in CPD activities and measuring the outcomes of CPD (CPD Framework: Category 7)

The framework states that mere attendance at CPD activities does not necessarily contribute to lifelong learning. Medical technologists must therefore be prepared not only to attend, but also to present activities and when not available to create CPD activities. With reference to active participation Du Boulay (1999) reported that the Royal College of Pathologists in the UK developed ways to allocate more credits for active participation and achievements rather than just passive attendance at meetings. One proposal is that medical technologists should start off by presenting journal discussions in a small group within the department. They should also get involved in research projects and if no research is conducted in the department or section the medical technologist should identify case studies or other interesting routine cases to be presented at mini-congresses or national congresses. The information on research and case studies can also be published in the MTSA or related international journals. When the opportunity presents itself medical technologists can lecture part-time at a higher education institution or serve on the scientific advisory committee that makes inputs in examinations conducted by the Professional Board for Medical Technology.

The CPD framework (Categories: 7.2.1 and 7.2.2) proposes that supervisors in laboratories should set targets for medical technologists and technicians and measure whether these targets were reached. Supervisors should also implement an in-house measuring mechanism to determine whether CPD has had any effect on routine laboratory work. The question arises on who will be the responsible corporate body for measuring the outcomes to CPD activities? The HPCSA, as well as employers of medical technologists and technicians, should have a system in place whereby the outcomes of CPD can be measured.

The HPCSA draft CPD document states that in future the CPD department of the HPCSA in conjunction with the CPD committee should investigate a way of validating the effectiveness of CPD (HPCSA, 2004). Cornford (2001) conducted a survey to determine the effectiveness of various CPD activities on 16 published papers in which the outcomes of patient care, practitioners' knowledge or practitioners' behaviour / performance were discussed in terms of the results of the survey. There was a need for much greater emphasis on a connection between learning activities and actual doctors' performance (Cornford, 2001). A similar survey was conducted by Davis, Thomson, Oxman and Haynes (1992) who concluded that of the 18 published studies on health care outcomes, eight demonstrated positive changes in patients' health care outcomes.

The expected outcomes would be medical technologists and technicians who are knowledgeable about the latest developments in their own specialised categories and informed on developments in other medical technology disciplines. Similarly, cytotechnologists in the USA participated in CPD activities to keep abreast of new developments in their field (Balachandran and Branch, 2001). The CPD framework must assist all role players in medical technology to establish a CPD programme. This programme must prescribe accessible CPD activities to those in urban and to those in rural areas of South Africa. The ultimate aim is that the medical technology profession as well as the service offered by the profession must benefit by CPD.

6.3 CONCLUSION

The CPD framework was designed with information gathered from a mailed questionnaire, an interviewed questionnaire and information obtained from the literature. The framework was

evaluated using the Delphi technique. The purpose of the framework is to assist in pointing out what is expected of all role players, needed by medical technologists and technicians to successfully practise CPD. The CPD framework emphasises the contributions expected from organisations in authoritative positions to the profession of medical technology, such as the HPCSA, employers, higher education institutions and the SMLTSA. The framework also stresses the supporting contribution that could be made by organisations on an equal level with the medical technology profession, such as other health professionals and medical companies.

It is apparent from the research that one of the major factors that play a role in a successful CPD programme is motivation. Medical technologists and technicians in South Africa must be motivated, not only to attend, but also to present and thereby to play an active role in CPD activities. To facilitate medical technologists and technicians to be positive about CPD places a heavy burden on the employer and top management in medical technology to encourage their employees to participate in the CPD programme. The SMLTSA is responsible for motivating medical technologists and technicians to become members of the Society and to motivate the existing members to participate in CPD activities. It is therefore the responsibility of employers and the SMLTSA to provide CPD activities accessible to as many as possible medical technologists and technicians. Other institutions that could assist in motivating and providing CPD activities are medical companies, other health professionals and higher education institutions. The main responsibility, however, rests with individuals being motivated to participate in as many as possible accredited CPD activities.

The outcomes of CPD must be reflected in the work environment, the individual and the medical technology profession. It is currently a deficiency that no official measurement

system is in place to measure the effectiveness of CPD outcomes. It is foreseen that once the framework is implemented it will be positively reflected in CPD.

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CHAPTER 7

CONCLUSIONS, RECOMMENDATIONS AND THE WAY FORWARD

7.1 INTRODUCTION

Continuing professional development (CPD) is the process by which health professionals keep updated on the needs of patients, the health service and professional development (Peck, McCall, McLaren and Rotem, 2000). Since 2000 health professionals registered with the Health Professions Council of South Africa (HPCSA) have been participating in CPD programmes and as from April 2002 it has been compulsory for medical technologists and technicians to participate in CPD activities (HPCSA, 2002; HPCSA, 2005[a]).

A study was undertaken to determine the general attitude to the CPD programme as it was foreseen that CPD might not be equally accessible to medical technologists and medical technicians in urban and rural areas. The survey was performed in different phases with results obtained from one phase contributing to the following phase. The methods used were a mailed questionnaire, followed by structured interviews that led to compiling a concept CPD framework which was evaluated by means of the Delphi technique. The main concern was to identify obstacles that could prevent medical technologists and technicians, especially those in rural areas, from participating in CPD activities. It was important to identify ways in which medical technologists and technicians could participate in CPD activities offered during working hours, activities offered by the Society for Medical Laboratory Technologists of South Africa (SMLTSA) and those activities that could be initiated by individuals themselves.

7.2 RESEARCH OBJECTIVES OF THIS STUDY

A mailed questionnaire was compiled to gather information on the current situation of medical technologists and technicians in South Africa, membership of the SMLTSA, attitude towards CPD and accessibility to CPD activities in rural and urban areas and obstacles to the accumulation of CPD points. Information obtained from the mailed questionnaire led to the compilation of an interviewed questionnaire. During the interviews qualitative information was gathered about job satisfaction, attitude to CPD, confirmation of identified obstacles, bridging obstacles to collecting CPD points and searching for new ways of conducting CPD activities.

Information obtained from the mailed and interviewed questionnaires and information gathered from the literature made it possible to compile a concept CPD framework that could inform and guide all role players about their responsibilities in the CPD programme. The concept framework was evaluated by a panel of experts in medical technology knowledgeable about CPD, using the Delphi technique after which the framework was finalised. The framework contains suggestions for CPD activities and looks into the future for ways in which the outcomes of CPD may be measured.

The framework will be presented to the HPCSA (Professional Board for Medical Technology) to be implemented in pathology laboratories throughout South Africa.

7.3 CONCLUSIONS AND RECOMMENDATIONS FROM THE LITERATURE REVIEW

CPD has been practised throughout the world by a variety of professions. It is described particularly in the health professions such as physicians (Fox, 2000), dentists (Leggate and Russell, 2002), nursing staff (Govier, 1999), radiographers (Kerr and Vinjamuri. 2001),

dietitics (Keim, Johnson and Gates, 2001), occupational therapists (Lannin and Longland, 2003), clinical chemists and biochemists (Collier, Crowe, Stinson, Chu and Houlden, 2001) and medical technologists (Balachandran and Branch, 2001).

CPD is not necessarily compulsory for all health professionals as described by Roberts and Scott (1988) who conducted a comparative study of allied health professions in the United States of America (USA). Reasons given by anaesthetists in Scotland for participating in CPD activities were: to be updated on the latest developments to comply with clinical and lecturing requirements, because they enjoyed it, to accumulate continuing medical education (CME) credits, because it was expected of them or they were encouraged by their employers and with the prospects of a change of clinical duties (Chambers, Ferguson and Prescott, 2000). Cytotechnologists in the USA took part in the continuing professional education (CPE) programme to keep abreast of the latest developments in their professional field (Balanchandran and Branch, 2001).

Available time and costs involved in attending CPD activities were the major but not the only obstacles people experienced to attending CPD activities. Nursing staff in the United Kingdom (UK) gave lack of funding, lack of study leave, staff shortages and inability to access courses as their main obstacles (Govier, 1999). Chambers *et al.* (2000) differentiated between attending local and external activities. When attending local activities routine clinical commitments were their main barrier and when attending external activities, distance to travel and funding were the major obstacles (Chambers *et al.,* 2000). Occupational therapists in rural Australia gave travelling, costs involved in travelling, and accommodation and lack of postgraduate university opportunities in rural Australia as their major barriers and the reason why therapists leave the rural areas.

The most cost-effective CPD activities are those conducted in a department or section, but in very small departments these meetings are impractical (Chambers *et al.,* 2000). It is therefore advisable that individuals from smaller departments should spend time with colleagues in other centres or departments or share activities (Chambers *et al.,* 2000). The Royal Statistical Society in the UK formed a CPD working party that organises and presents CPD activities for statisticians who are members of their Society (Curnow, 2000). The SMLTSA offers both local and national accredited CPD activities *via* its different branches (SMLTSA, 2004). Use of the internet as a source of continuing educational activities is a solution to many and also cost-effective (Bacon, 1999). E-learning proved especially helpful to people working in small towns or in rural areas (Randell, 2001). The most common form of CPD for nursing staff in the UK is self-directed formal education (Govier, 1999).

7.4 CONCLUSIONS FROM THE QUESTIONNAIRES

In South Africa, medical technology is still in demand as a career with a steep increase of respondents who qualified as medical technologists and medical technicians since the beginning of 1990. This is in contrast to what is happening in the USA where they experience a shortage of qualified medical technologists (Schmidt-Hoffmann and Radius, 1995). Young people in the USA are no longer interested in qualifying as medical technologists because of the awkward working hours, low salaries and the risks factor due to the human immunodeficiency virus (HIV) (Monahan, 2001).

More than half of the respondents were members of the SMLTSA. Reasons given for non-membership were transport problems, the time factor and the absence of a branch of the Society in their vicinity. Participation in CPD activities organised by SMLTSA branches is a way to collect CPD credits although a very small percentage of respondents regularly

attended CPD activities organised by the Society. Participants requested that the Society should not only offer CPD activities in urban, but also in rural areas. It was also suggested that the SMLTSA should establish video and journal libraries. SMLTSA members could borrow these videos or journals, complete a questionnaire accompanying the video or journal and on return earn CPD credits.

According to the responses from the questionnaire, participation in individual, small group and organisational CPD activities as proposed in the CPD guideline has its limitations (HPCSA, 2002). Respondents were not really involved in research projects and were therefore not in a position to publish research articles, though some respondents indicated that they would want to publish, but lack knowledge of research methodology and lack experience in research. Not many respondents were busy with further formal qualifications but a slightly larger number considered enrolling for further qualifications, unfortunately not all in medical technology. Even though a small percentage of the respondents indicated that they assisted as part-time lecturers, nearly 50% were prepared to help in rural areas in presenting workshops, offering courses or lecturing relevant cases. Fairly large numbers of respondents were participating in journal discussions, departmental discussions, workshops and were in a position to attend short courses. In laboratories where CPD activities were lacking, respondents indicated that they were prepared to initiate such activities. Just over half of the respondents attended seminars, national congresses and conferences, with very few presenting either papers or posters. Most employers follow the policy that laboratory staff may attend national congresses provided that they give presentations.

Lack of time and financial implications were identified as the major obstacles to participation in CPD activities. Travelling was a problem to those who attended CPD activities away from home, especially those from rural areas. Shortage of staff, professional workload and lack of

motivation by seniors were also listed as barriers. Available time, financial implications and travelling as barriers were confirmed by the majority of participants during the structured interviews.

Suggestions for CPD during working hours were activities such as journal discussions and case study discussions. Respondents agreed that medical technologists and technicians in smaller laboratories in rural areas should join for journal and case study discussions. Respondents were also in agreement that visiting representatives and area supervisors, when visiting their laboratories, should present CPD activities. The suggestion that a well established academic laboratory consider adopting a foster laboratory was well received.

In response to open-ended questions in the mailed questionnaire it became clear that some respondents experienced job dissatisfaction. Job dissatisfaction was confirmed by the participants in the interviews as the majority of medical technologists and technicians experienced internal but not external job satisfaction. Factors that contributed to job dissatisfaction of more than 50% of the respondents were salaries, working hours, staff shortages and stress levels at work. Not many of the respondents would have chosen the same career were they given the opportunity. However, a fair number would recommend the career to young people.

Participants in the interviewed questionnaire were under the impression that employers had a positive attitude to CPD and a fair number of those in managerial positions were also in favour of CPD. The general impression at work was however, that medical technologists and technicians did not really have a positive attitude to CPD. In response to the section in the interviewed questionnaire conducted with participants in managerial positions it became clear that many managers and seniors were not involved in organising or presenting CPD

activities. More than half of the managers, however, managed to organise special leave for their staff members to attend workshops and congresses. They were of the opinion that because of their positive attitude to CPD they managed to motivate the rest of the staff members to participate in CPD activities.

When employers and top managers as well as the SMLTSA contribute to creating CPD activities and individuals are motivated to participate in accredited CPD activities and formal education, CPD will become acceptable to the majority of medical technologists and technicians. A concept CPD framework was compiled involving all role players contributing to the CPD programme who could be of assistance in establishing a usable CPD programme. This framework consists of statements based on information from the literature and preceding investigations.

7.5 THE PROCESS OF EVALUATING THE CONCEPT FRAMEWORK

The concept CPD framework was evaluated by 14 medical technologists and one representative of the HPCSA registration office, using the Delphi technique (Powell, 2003). The evaluation was conducted over three rounds using postal mail in combination with e-mail. Panellists were requested to modify and rate the proposed statements and to make suggestions for evaluating the outcomes reached by CPD. It was necessary to make a few phone calls to determine whether panellists received their mail and requesting them to return the feedback in time. Telephonic contact was made in a good spirit and bonded the interaction between the panellists and the researcher. The panellists gave 100% cooperation.

After each round panellists were informed of those statements that reached consensus, but they were not informed of the ratings of those statements that needed to be re-evaluated. This was to prevent panellists being influenced by the ratings of co-panellists. The framework was finalised by the facilitators.

7.6 THE CPD FRAMEWORK

In order to establish a workable CPD programme all the organisations and individuals involved in the medical technology profession must contribute and meet certain expectations in creating and offering CPD activities. Bennett, Davis, Easterling, Friedmann, Green, Koeppen, Mazamanian and Waxman (2000) emphasised the concept that there should be collaboration among the appropriate academic groups, professional associations and health care institutions to create the best learning systems for the professional development of physicians in the USA.

The framework was compiled to state the expectations of CPD of all the role players involved in medical technology. CPD was implemented by the HPCSA and their main responsibility would be to confirm that all their members received the CPD instructions and that CPD is administered faultlessly. The main organisations offering CPD activities are employers of medical technologists and technicians and the SMLTSA, often in association with medical companies. Higher education institutions should make further education accessible to full-time medical technologists and technicians either by offering courses in the evenings or *via* e-learning. It is also possible to take part in CPD activities offered by other health professionals. The main responsibility in participating in CPD activities rests with the individual. The framework expects employers, top management in the laboratory and the

SMLTSA to create a positive attitude to CPD in the workplace and among members of the Society.

The framework states possible CPD activities that could be presented locally and nationally. A system must be in place to measure the outcomes of CPD that is also reflected in the workplace, the quality of work and the profession.

7.7 REFLECTION ON THE WORK DONE

As a qualified medical technologist with many years laboratory experience in different specialised fields, in different sized laboratories and currently employed as a full-time lecturer, the researcher experienced that the survey enriched her concept of the profession of medical technology not only in South Africa but also in the rest of the world. On the positive side it was astonishing to realise how widespread medical technologists and technicians were employed throughout South Africa and therefore their contribution to the South African health professions. It was, however, a disappointment to realise that in general medical technologists and technicians do not experience job satisfaction and that there is so much negativism to the CPD programme.

Limitations in the project were identified during the course of the survey. Some of these limitations to the scope of the project were influenced by factors such as deadlines with which participants had to comply as well as available time and costs involved in travelling long distances.

The survey was conducted among medical technologists and medical technicians registered with the HPCSA. Both medical technologists and technicians work in pathology laboratories

and both groups are graded under the HPCSA (Professional Board for Medical Technology). However, the differences between their qualifications, their responsibilities and the prospects of promotion classify them in two distinct categories. Two separate surveys or a survey whereby the specific needs of each of the two groups were addressed would have been more appropriate in giving value to the individual groups' needs and expectations to CPD.

The response rate to the mailed questionnaire was very low and not all responses were usable therefore only 338 (16.6%) questionnaires, out of the 2040 distributed, were included in the survey. Even though the response rate was low a total of more than 300 respondents representing 70 geographical locations, covering rural and urban areas, throughout all nine provinces of South Africa, were represented. Sufficient information on medical technologists and technicians, their work environment, the SMLTSA and CPD was gathered.

It would have been ideal to interview a larger number of medical technologists and technicians but because of the long distances that needed to be travelled, the time and costs involved in visiting all the participants, it was decided to interview 50 senior and junior medical technologists and medical technicians. The prerequisite was, however, to include representatives from all nine provinces covering urban and rural areas throughout South Africa which was achieved. One participant was not physically visited but completed the questionnaire on e-mail after a telephone personal consultation.

The concept framework was evaluated by means of the Delphi technique, by 15 panellists who gave 100% co-operation. It was, however, disappointing that no medical technicians agreed to participate in the panel of experts and one of the nine provinces was not represented, even though invited. This would impact negatively on the study since inputs from medical technicians could have added valuable information that might not have been

experienced by medical technologists. The same could also have applied for the province that was not represented. Powell (2003) stated that it is not so much the panel size that is important but the quality of the panellists. Minor postal problems were experienced during the Delphi process. As a result of the evaluation of the framework by the Delphi panel, minor changes were made to some of the statements and additional statements were added in response to the open-ended questions requesting methods for measuring CPD outcomes. The Delphi technique is recommended by the researcher if information or conformation of viewpoints is required from a group of people widely distributed over large areas or large countries such as South Africa.

While the research project was being conducted HPCSA registered medical technologists and technicians were informed *via* the MTN (Van Rijswijk, 2004), the MediTech News (HPCSA, 2004[b]) and at the SMLTSA National Congress held in May 2005, that the CPD programme was under revision to be updated. The final draft document on CPD for health professions registered with the HPCSA was released in July 2005 and will be tested by giving a trial run on the medical technology and optometry professions for the second half of 2005 before being implemented by all HPCSA health professions (HPCSA, 2005[b]). Once the updated CPD programme is implemented it could mean that CPD activities, by which medical technologists and technicians could earn CEUs, as was stressed during this survey, may no longer apply.

It is expected that the outcomes of this research project will make a positive contribution to establishing a workable CPD programme for medical technologists and technicians. The aim of the framework is to guide all the role players in medical technology in the contribution they can make in creating CPD activities and making them accessible to all those who must participate in the CPD programme. If all the role players actively participate and positively

contribute towards the CPD programme the outcomes must reflect in the workplace, the quality and standard of results released from the laboratories contributing to patient care and the medical technology profession. Future medical technologists and technicians should be respected as professionals by all other health professionals and the general public.

The researcher was in a position to observe the satisfaction and needs of those employed in a variety of laboratories. Some laboratories visited were well equipped and organised with a healthy attitude to the medical technology profession and towards CPD. In contrast, some of the laboratories visited were badly neglected with not even a proper chair to sit on. During the period that the interviews were conducted the researcher interacted with opposing groups of people. There were those who were positive towards medical technology, those completely against medical technology and the neutral group who could not express their feelings for various reasons or because they were near retirement. Some medical technologists and technicians demanded the presentation of CPD activities and others were willing to initiate CPD activities themselves. A great deal needs to be done to change medical technologists' and technicians' attitude to the profession and to CPD.

The huge impact that employers have in creating a positive attitude to the profession by supplying external needs to promote job satisfaction was never previously realised. The SMLTSA is not appreciated for what branches of the Society are doing for the profession and for CPD. The HPCSA must also work towards being more accessible in solving problems concerning registration and CPD.

7.8 CPD AND THE FUTURE

In a report to a CME congress held in the USA, Leist and Green (2000) stated that CME should close the bridge between knowledge available as a result of research done and the physicians' learner needs. Fox (2000) believed however, that theory and research should shape the practise of CPD. The latest developments in medical technology are available and CPD should be used as a tool to bring this knowledge to medical technologists and medical technicians. The process whereby CPD is measured must be acceptable to all those who participate in the CPD programme.

In the past CPD was measured by inputs, such as number of hours spent on CPD or points accumulated over a period. This should change where the measurement of CPD is based on outputs reached (Watkins, 1999). The trend among physicians in the UK is to move away from measuring CPD according to a point system towards a process of appraisal that will lead to revalidation, called a personal portfolio system (McKay 2000). Mathers, Challis, Howe and Field (1999) defined portfolio as a collection of evidence maintained and presented for a specific purpose. The nursing profession used the portfolio to plan and implement their CPD by keeping records of learning activities and developing critical and reflective practice (Mathers *et el.,* 1999). The portfolio approach to CPD assists individuals in taking charge of their own careers and personal development planning (Watkins, 1999). To build up a portfolio is a process of self-evaluation and reflection which is invaluable in career planning (Watkins, 1999). The individual keeps an updated register of CPD achievements reached (Watkins, 1999).

At the SMLTSA national congress held in Cape Town in May 2005, however, it was mentioned that according to the revised CPD programme individuals would have to keep their

personal portfolio of all activities attended. This was now confirmed by the final draft CPD document (HPCSA, 2005[b]). More credit allocation is allowed for attending activities organised by other health professions and formal further qualifications are emphasised.

Mathers *et al.* (1999) conducted a comparative study on voluntary general practitioners (GPs) in the UK who were divided into two groups. The one group followed the traditional postgraduate educational accreditation (PGEA) based on a point system and the other group followed a portfolio–based learning route (Mathers *et al.,* 1999). The comparison was conducted over six months supported by three CME tutors (Mathers *et al.,* 1999). Mathers *et al.* (1999) concluded that the portfolio-based learning scheme met the needs of the physicians in that they had control over how, what and when they learn and encouraged active and peer-supported learning, although they believed that learning outcomes could also be reliably assessed by the PGEA within an individually created learning plan.

As experienced during this survey, measuring CPD solely according to a point system was not acceptable to all the participants. It would therefore be advisable, in future, that individuals should set their individual goals addressing the needs in their specific work environment and reach those targets within a specific period. A personal portfolio system conducted under the supervision of mentors would be more reliable but administering the process would not be so easy. Credits could still be allocated to evaluate the portfolio system but the knowledge and skills gained due to CPD participation would comply with the needs of each individual.

7.8.1 Measuring the outcomes of CPD

The effectiveness of CPD needs to be validated. According to the literature the effectiveness of CPD was evaluated in reviewing articles published on CPD and judging the effect CPD had in the workplace and on patient care. The ideal would be for the HPCSA, employers or the SMLTSA to undertake the responsibility and implement a measuring system whereby the impact of CPD could be evaluated.

7.8.2 Future research

The researcher suggests that a follow-up study to investigate the impact of CPD in the workplace, on the individual and on the profession be conducted to measure the effectiveness and outcomes of CPD over a five year period. During this period realistic goals must be set and all registered medical technologists and medical technicians as well as individual laboratories should be measured to ascertain whether they have reached the pre-set goals.

Another research project proposal would be to determine the qualitative reasons for job dissatisfaction and identify solutions to rectify the attitude to and perception of the medical technology profession.

7.9 RECOMMENDATIONS

On the basis of the results obtained from the preceding investigations the following factors need attention in order to implement a successful CPD programme:

- Attitude – employers and those in managerial positions in the workplace, the SMLTSA as well as individuals need to create a positive attitude to CPD
- Motivation – all role players involved in medical technology should motivate those opposing CPD and non-practising members to take part in CPD activities
- Responsibilities – employers *via* the managers and supervisors should allow the performance of CPD activities (within limits) during working hours; the SMLTSA should organise CPD activities; higher educational institutions should make further qualifications for medical technologists and technicians accessible
- Sympathy – extra fringe benefits should be granted to those working in rural areas for attending CPD activities; the SMLTSA should present CPD activities in isolated areas
- Responsibilities and sacrifices – the main responsibility remains with the individual to participate in CPD activities and if not available, identify and create CPD activities.

7.10 CONCLUSION

CPD forms an integral part of the medical technology profession and must be practised by all medical technologists and medical technicians in order to maintain their registration with the HPCSA. The main obstacles identified to optimum participation in CPD activities were lack of time followed by financial implications. Travelling was a barrier to those in rural areas and to medical technologists and technicians to attending activities away from home.

The variety of CPD activities whereby individuals could earn CPD credits are prescribed in the CPD guideline. The easiest accessible and most cost-effective CPD activities are those offered during working hours. CPD activities offered by the SMLTSA-branches, often in association with medical companies, are accessible to the majority of medical technologists and technicians in urban areas, but not necessarily to those in rural areas. Participation in

accredited activities offered on the internet by other health professionals, by medical companies and formal further qualifications are available. It remains the responsibility of each individual to participate in available CPD activities and when not available, to create such activities.

The CPD framework was compiled in order to assist all role players in the profession of medical technology in establishing a usable CPD programme to be implemented by pathology laboratories and other institutions involved in medical technology throughout South-Africa. It is proposed that the CPD framework be implemented and that the outcomes of CPD be measured over a period of time to determine the effectiveness of the CPD framework and programme. May the profession of medical technology, the work environment, the quality of work delivered in the workplace and patient care be a reflection of positive participation in a usable CPD programme, based on guidance of the CPD framework.

7.11 REFERENCES

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