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Professional communication practices of radiotherapists in the workplace and classroom in higher education in the Western Cape, South Africa

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**PROFESSIONAL COMMUNICATION PRACTICES OF RADIOTHERAPISTS IN
THE WORKPLACE AND CLASSROOM IN HIGHER EDUCATION IN THE
WESTERN CAPE, SOUTH AFRICA.**

By

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Thesis submitted in fulfilment of the requirements for the degree

Master of Technology: Radiography

in the Faculty of Health and Wellness Sciences

at the Cape Peninsula University of Technology

Supervisor:	Professor Penelope Engel-Hills	M Sc (Med Phys) D Tech (Radiography)
Co-supervisor:	Professor Cecilia Jacobs	M Tech (Education) PhD (Education)

Groote Schuur Campus: December 2008

DECLARATION

I, Bridget Diana WYRLEY-BIRCH, declare that the contents of this thesis represents my own work, and that the thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

Signed

Date

ABSTRACT

The focus of this study is the professional communication practices of radiotherapists as clinical practitioners and as teachers of student/novice radiotherapists. The study was undertaken at a higher education institution and a radiation oncology department in South Africa and addressed the research question; what are the communication practices of radiotherapists in their professional practice and as higher education teachers. This work on professional communication was based on practice and discourse theory as relating to a local context of professional practice and education. Professional communication, seen in this sense, is a social practice which needs to be understood as operating within educational, work and social discursive practices of radiation therapy.

A case study approach was chosen as the most appropriate research strategy for capturing the authentic communication practices of radiotherapists in clinical and educational practice. The professional communication practices of ten student and five qualified radiotherapists were investigated through typical teaching and learning interactions in a work integrated learning curriculum. The learning interactions were observed and video-taped in the classroom, tutorial, and demonstration room. Communication interactions were observed and audio taped in the clinical workplace. The research participants, using the video footage as part of their reflections, were interviewed about their communication practices. All interviews were audio taped and transcribed. Analysis of the data was by means of thematic analysis where the data was coded and categorised by means of pattern matching.

The findings from the study showed that the communication practices of radiotherapists include: an 'academic language', through which academic content knowledge is expressed; a 'professional language' for negotiating the complex professional relationships within the clinical environment; and a language for patient care. Their students (novice radiotherapists) are required to master this professional language within their own 'language of learning' practice which includes the multilingual component of the workplace. A multilayered model of professional communication evolved and was developed within the analysis process. This model identifies three genres of professional communication: intra-, inter- and extraprofessional communication. Each of these genres was shown to have both formal and informal registers. Technical communication was further identified as a subset of intra- and interprofessional communication. These were further contextualised within the clinical radiotherapy workplace and the classroom (pedagogic) communication practice. The findings also identified multilingualism as a discursive practice within the professional communication of the radiotherapy classroom and workplace. In conclusion, it is argued that the professional communication of radiotherapists comprises a continuum of communication practices that has significance for both professional and pedagogic radiotherapy practice, and it is shown that communication practices play an important role in the establishment of professional identity and expertise and enable the novice radiotherapist to find their 'professional voice'.

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DEDICATION

**To my parents, John and Cherry Wyrley-Birch, my family and all the friends and
colleagues who have patiently supported me throughout this endeavour on the good days
and the bad days!
THANK YOU**

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GLOSSARY – definition/explanation of terms, acronyms and abbreviations

Academic literacy:	Refers to the academic skills, such as reading, writing, analysing and engaging with the academic knowledge base and texts of the health care discipline and specifically, radiotherapy.
Case study:	Refers to an in-depth, qualitative study of a group within a specific context. (Babbie & Mouton, 2001: Yin, 2003)
Clinical educators:	Refers to qualified staff who supervise and teach students within the clinical environment
Clinical practice:	Refers to radiotherapy practice taken place within the radiation oncology department, therefore the clinical department.
Communication:	The communication practice and interactions, both verbal and non-verbal, of professionals and students in the classroom and workplace
Discipline:	Refers to both subject disciplines such as, Mathematics, Anatomy etc and also professional health care disciplines, for example, medicine, nursing, radiography and radiotherapy
Discourse:	Discourse of the discipline – refers to the ways in which particular disciplines use language.
Field of practice:	Refers to professional practices of health care such as radiotherapy, medicine , nursing etc
Formal technical language:	Refers to technical terminology that is accepted and published in established texts of the discipline, radiation oncology.
Informal technical language:	Refers to the jargon that is context- specific (radiotherapy-specific) and is used in the workplace as a short hand ‘language’. Some jargon is published in specific contextual materials.
Jargon:	Context-specific terminology. Only used in specific workplace circumstances and is usually used intraprofessionally, radiotherapist-to-radiotherapist. See note on informal technical language.
Language:	Refers to the spoken and written language of participants , both home and language and health care-specific language. It also refers to the medium of instruction.
Medium of instruction (MOI):	The language used in instruction in the academy and in this study it is primarily English.
Pedagogic communication:	Refers to the communication practices of teaching in all teaching interactions in the formal classroom or the informal classroom, the workplace.
Profession:	Refers to the healthcare professions, such as medicine, radiography, radiotherapy, nursing etc.

Professional communication:	Refers to the communication practices of in all professional practice, in this case radiotherapy practice in the formal and the informal workplace.
Qualified Staff:	In this study refers to staff with the Nat. Dipl. Rad. (T) within the clinical work place.
Radiotherapy practitioners:	This term as used in this study refers to the radiography practitioners who are known locally (in South Africa) as: therapy radiographers, radiotherapists, radiation therapists or radiotherapy radiographers (RTT's). Internationally, terms commonly used are for example: therapeutic radiographers (United Kingdom), radiation therapist in Ireland and a further term, radiation technologist is usual North American usage.
Radiotherapy:	Refers to the use of ionizing radiation in the treatment of patients who have the diagnosis of cancer. It is also known as radiation oncology.
Technical communication:	In this study, technical communication refers to all the communication practices using technical language (formal and informal) in the classroom and the workplace. Technical communication is a feature of intra- and inter-professional communication practices.
Work integrated learning:	Student learning for a qualification (e.g. National Diploma Radiography –Therapy) that is designed in such a way that the practical clinical practice component of the programme takes place within the workplace. In this context the term work integrated learning is used.

CHAPTER ONE

INTRODUCTION: PROFESSIONAL COMMUNICATION IN RADIOTHERAPY

For anyone who has worked in the [radiation oncology] department they will know exactly what I meant but for anyone else its a complete mystery. P4, 22/06/2006, D2

Mostly from absorbing from the in-service training and as you get more experience... A) it makes more sense and B)...you just get more used to using it [the language]. P4, 22/06/2006, D2

1.1 Focus of this research

The focus of this study is the professional communication practices of radiotherapists as clinical practitioners and as teachers of radiotherapy students. This study was undertaken at a higher education institution and academic teaching hospital in South Africa. It researches the communication practices of radiotherapists and their students in a series of typical interactions. The study observes the interactions of radiotherapists with their patients, other health professionals, and each other in the clinical environment. It illuminates the daily communication practices of the participants in classroom interactions, lectures, tutorials, practical demonstrations and the clinical radiation oncology department.

This thesis argues that the professional communication of radiotherapists comprises a continuum of communication practices that has significance for both professional and pedagogic radiotherapy practice, and shows how communication practices play an important role in the establishment of professional identity and expertise.

1.1.1 Research questions

The research question of this study therefore is: “What are the communication practices of radiotherapists in their professional practice and as higher education teachers?” This research question can be broken down into four sub-questions, as follows:

1. What constitutes communication in clinical radiotherapy practice?

2. What constitutes communication in radiotherapy educational practice?
3. How do practitioners use communication strategies to induct student/novice radiotherapists into professional practice?
4. What is the relationship between professional communication and professional expertise in radiotherapy clinical and educational practice?

1.1.2 Research objective

The overall aim of this study is to understand the communication practices of radiotherapy practitioners and educators in both the academic and clinical teaching environments, who have the role of inducting students into the communication practices of their chosen profession, in this case, radiotherapy. An understanding of the professional communication practices of radiotherapists could lead to educational interventions that enable wider participation, improve teaching and learning, and ultimately, contribute to the development of radiotherapy as a professional and academic practice.

1.1.3. Delimitations of the research

The site of this study is a higher education institution and the radiation oncology department of a teaching hospital that have the joint responsibility for the training of radiotherapists. These institutions are situated in Cape Town, South Africa. The study is delimited to the teaching and induction of senior, third year students (therefore, the final year of three-year diploma).

1.1.4 Definition: professional communication practices

This study uses the terms “communication practices” or “professional communication practices”. Communication “skills” describe generic “good” communication practices, such as speaking fluently, achieving audience reach, listening accurately, or writing coherently and using an appropriate style. Communication “practices” describe the actual communication events of a specific group – in this case clinical and academic radiotherapists. In some research, communication practices are described in terms of

“discourse” (Gee, 2000/2001); “discourse”, however, is a broad term that includes non-language based practices, such as “communities of practice” (Wenger, 1998). In the technical professions, the term “technical communication” is also used to describe the communication practices of engineers, architects, technical, business, or health professionals. It is claimed that professionals spend a considerable amount of their time communicating (Huckin & Olsen, 1991). These communication practices have also been referred to as “nonacademic”. This term was first used by Odell and Goswami (1985) to describe “writing that gets something done, as opposed to writing that serves an aesthetic, cognitive, or affective function” (Cooper, 1996: x). More recently there has been a shift to “professional communication” as the preferred term to describe those who communicate as professional accountants, architects, doctors, engineers, and so on (Huckin & Olsen, 1991; Lipson & Day, 2005; Leydens, 2008). Faber (2002) suggests four distinguishing features of professional communication: 1) contextuality, 2) specificity of audience, 3) visual or diagrammatic components, and 4) ties to a base profession or disciplinary field – such as engineering, computer science, nursing, etc.

1.2 Rationale

Radiotherapy educators have long had the role of inducting radiotherapy students into the language practices of their chosen discipline. Helping students to understand the ‘language’ of radiotherapists is one way of enabling students to access the content cognitive knowledge that comprises the undergraduate radiotherapy programme.

1.2.1 Access to content knowledge

Crandall (1998), in her discussion of the need for teaching content to be integrated with academic language, in order that students can learn the academic discourse of their discipline, argues that:

Students cannot develop academic knowledge and skills without access to the language in which that knowledge is embedded, discussed, constructed, or evaluated. Nor can they acquire academic language skills in a context devoid of content (Crandall, 1994: 256).

Crandall (1998) focuses on the need for academic English to be incorporated into the content learning of specific disciplines and for students to be allowed to contextualise their learning of academic language within a specific discipline. This study in researching the communication practices of radiotherapists and their students looks at how the required professional discourse is learnt and internalised by the participants in the medium of instruction, English.

1.2.2 Communication in a multilingual context

The process of academic language acquisition is complicated by various factors, such as when the medium of instruction is officially English, yet many radiotherapy students speak English as a second or third language (Wyrley-Birch, 2006). In such cases, students primarily experience English in the classroom and in the clinical workplace. This linguistic reality therefore contributes to the specific ‘language of learning’ that students experience. This ‘language of learning’ is influenced by a multiplicity of factors such as: the multilingual learning environment, the medium of instruction (MOI) and the required academic discourse of the discipline (Wyrley-Birch, 2006). Other regional languages such as Afrikaans and Xhosa can, however, also be used in both teaching and professional practice. For example, in the classroom the students use their home languages, such as Xhosa or Afrikaans in explanation and discussion with each other and then switch to English in feedback and general discussion. In the clinical teaching environment the students may use both Xhosa and Afrikaans in communicating with their patients, along with the supervising member of staff (Wyrley-Birch, 2006). This is reflective of language practice in other South African contexts where English is largely used as the convenient and dominant medium of instruction and communication among the role-players in the workplace (Alexander, 2003; Crawford, 1999). The language and cultural diversity within the student body and within this clinical workplace is rich and varied and, as such, offers the radiotherapy educator a challenge in both the communication and learning dynamic in the educative relationship with the students.

1.2.3 Communication in the curriculum

The Constitution of South Africa has driven transformation in education policy. Its goals are to embed educational philosophies and strategies in mainstream education so that redress and access to higher education may be achieved by students who were previously disadvantaged by the past inequitable education system (NACWC, 2001). The ability to communicate effectively within the clinical team and with the patient, in the learning and work environment, is seen as a fundamental clinical competence in the radiotherapy outcomes and therefore essential to prepare for work experience. The South African Qualifications Authority (SAQA) expresses communication as a “critical cross-field outcome” (SAQA, 2000). The Health Professions Council of South Africa’s (HPCSA, 2000a; HPCSA, 2000b) scope of practice and The College of Radiographer’s statements for professional conduct (Sept, 2004) do not express communication explicitly as part of the scope of practice. However it is implicit that in order to perform the required procedures and conduct, effective communication skills are required. The Health Professions Council (HPC) of the United Kingdom in Radiographers’ Standards of Proficiency (July 2003) and those of the Canadian Association of Medical Radiation Technologists (CAMRT, 2007) explicitly express the need for effective communication skills for the student.

Thus, communication skills are increasingly seen as an integral part of the radiotherapy scope of practice as they allow professional communication practices to be assimilated and used appropriately and competently as required.

1.3 Background: radiotherapy in South Africa

This section begins with a brief overview of the history of radiotherapy training in South Africa, including the processes for the qualification of radiotherapists

1.3.1 History of radiotherapy in South Africa

The treatment of cancer involves a multidisciplinary team. According to a report from the Royal College of Radiologists Clinical Oncology Faculty Board working group, this multidisciplinary team consists of surgeons, radiation oncologists, radiologists,

pathologists, physicists, radiographers and other health professions allied to medicine (Royal College of Radiologists, 2002). In South Africa, radiotherapists have studied and qualified in the practice of radiotherapy within the integrated multidisciplinary treatment team. The professional practice of radiotherapy from the radiographer's aspect involves the planning, treatment and patient care of the cancer patient in accordance with the treatment prescribed by the radiation oncologist (HPCSA, 2000a).

Radiotherapy and diagnostic radiography

The profession of radiotherapist emerged in South Africa in the 1960s, when the category of radiotherapy separated from diagnostic radiography. The development in technology and equipment meant that more advanced techniques were available for the treatment of cancer and consequently a need arose for more specifically trained personnel. Initially radiotherapy was part of diagnostic x-ray departments in academic institutions and slowly with more treatment methods becoming available, its sophistication as a field of practice became more distinct, and separate clinical departments were formed with specialist radiation oncologists. The multidisciplinary team, as described above, began to take shape and radiotherapists became members of a specific, discrete profession.

Qualified diagnostic radiographers undertook further training in order to specialise in this new discipline. This further training was of a fairly short duration at first, only six months to a year was required, but by the 1970s, this was extended to 18 months. The South African Medical and Dental Council (SAMDC) regulated that this further training be registered as a separate category within the radiography qualification. By 1974, the profession decided to develop a separate qualification for registration with the SAMDC and this resulted in a three year diploma specific to radiotherapy.

Towards a Baccalaureate in radiotherapy

In South Africa a matriculant could therefore choose radiotherapy as a distinct profession without having to qualify in the profession of diagnostic radiography first. This decision followed world wide trends. Dunn (1994: 117), in the Varian Award lecture at the 1993

ASRT Radiation therapy conference, noted the emergence of radiation therapy as a recognised discipline in the mid-1960's in the U.S.A and not as a discipline that was considered part of radiology departments. She also noted that radiation therapists had evolved from "radiation therapy technicians to radiation therapists" and had "gone from on-the job training to baccalaureate degree programs" while still maintaining "the very special relationship that exists between the patient and the radiation therapist". Leaver and Norris (2000: 81-82) noted that in the U.S.A "in 1970s, most radiologic technologists were trained in hospitals, often through informal programs". They go on to discuss how the growth in technology and the health care environment impacted on radiation therapy, and this created a need for further competencies for radiation therapists. In the U.S.A. this led to the one- and two-year programs of the 1970s, becoming a four-year baccalaureate degree programme, legislated in 1993 to become mandatory after 2000 (Dunn, 1994; Leaver & Norris, 2000). This trend towards the baccalaureate degree in radiography (or radiologic sciences), inclusive of radiation therapy, is wide spread and a number of countries including Canada, the United Kingdom and Ireland have decided to make degree programmes mandatory, and have started phasing out the three year diploma programmes (Leaver & Norris, 2000). Ghana with the support of the IAEA "Programme of action for cancer therapy" (IAEA, 2004) which advocates the training of radiation therapists (RTT's) has recently also established a degree programme (Coffey et al., 2006).

At present South Africa is also moving towards the legislation of an entry level four-year degree programme. Educational institutions in South Africa are legislated by SAQA and the HPCSA to offer undergraduate three-year diploma programmes with post-graduate baccalaureate degree programmes (B Tech) in radiation therapy. However the South African educational experience in radiotherapy of the last few decades mirrors that of the U.S.A, Canada and the United Kingdom.

It is mandatory for all students and qualified, practicing professionals (for example, radiotherapists) in South Africa to be registered with the appropriate statutory bodies, such as the HPCSA in the case of radiotherapists. This includes all students registered to

study radiotherapy at the approved educational institutions. Qualified radiotherapists, whether practicing in the clinical or educational environment, are required to renew their registration to practice annually. The South African Medical and Dental Council (SAMDC) was the statutory body of pre-1994 and it was reformed to the more inclusive Health Professions Council of South Africa (HPCSA) as part of the transformation of health services in the post-1994 newly democratic government of South Africa by means of the Medical, Dental and Supplementary Health Service Professions Amendment Act 35 of 1997. The Act provided for the establishment of the HPCSA in order “to exercise control over the training, registration and practices of health professionals” (Baldwin-Regaven, de Gruchy & London, 1999: 143-144).

Further education for radiotherapists is also possible in post-graduate masters (M Tech) and doctoral (D Tech) programmes. However all of these programmes are currently undergoing revision in the light of the recently promulgated Higher Education Qualifications Framework (HEQF).

Radiotherapy qualifications in South Africa

At present, in South Africa, there is the option to enter radiotherapy directly or as a second qualification after the initial completion of the diagnostic, nuclear medicine or ultrasound radiography qualification. Options registered as formal educational qualifications in radiotherapy are shown in Table 1.1:

Table 1.1: Radiotherapy qualifications in South Africa

FIRST QUALIFICATION IN RADIO THERAPY	SECOND QUALIFICATION IN RADIO THERAPY	POSTGRADUATE QUALIFICATIONS
National Diploma in Radiography (T) Undergraduate 3-year programme. Programme followed by registering with HPCSA and after one year of community service registration, independent practice: radiotherapy radiographer.	National Diploma in Radiography (Diagnostic/Nuclear Medicine/ Ultrasound) Undergraduate 3-year Programme + Further two years of clinical experiential training with the necessary clinical outcomes and relevant theory. Students can either register for a second diploma or the B Tech(T) – see below	B Tech (Radiotherapy) Postgraduate programme - part-time or fulltime study – no further experiential training or clinical outcomes are necessary. M Tech (Radiography) D Tech (Radiography)

1.3.2. The nomenclature of radiotherapist.

The nomenclature of radiotherapy radiographers varies from country to country (Raymond, O’Brien, Laplander, & Harris, 2005). In South Africa, radiotherapist, radiation therapist and therapy radiographer are commonly used within the clinical environment and the profession. Across the African continent, radiation therapist, radiotherapy radiographer and radiation therapy technologist (RTT) are used.

The terms radiotherapy radiographers and therapy radiographers are still used by many to avoid confusion as radiotherapist was previously used to refer to the now designated radiation oncologists, namely the specialist doctors. The HPCSA document (2000a), which in accordance with the terms of section 33(1) of the Medical, Dental and Supplementary Health Service Professions Act 56 of 1974 itemises the regulations defining the scope of the profession of radiography, names the profession as radiography – therapeutic. This confuses the South African nomenclature of the profession further.

In the UK, the term therapeutic radiographer is designated for official use by the Health Professions Council (2003). In Canada, the Canadian Association of Medical Radiation Technologists (CAMRT) uses the term medical radiation technologists (MRT) in official

documents (CAMRT, 2007). Nomenclature in the USA goes further as it is used to distinguish separate job descriptions, that of, radiation therapist and medical dosimetrist. Radiation therapists are involved exclusively in the care and treatment of cancer patients whereas medical dosimetrists are responsible for the planning of that treatment to which end they complete further studies to achieve the required expertise. Both complete their respective tasks to the prescription required by the radiation oncologists. They receive separate qualifications and are registered as separate professions. In contrast, in the UK, Canada, Ireland and South Africa, therapy radiographers and radiotherapists respectively, are required to gain professional expertise in the care, planning and treatment of the cancer patient to the required radiation treatment prescription of the radiation oncologist. Africa with the IAEA plan for RTT training aims to have similar standards (IAEA, 2004; Coffey et al., 2006).

Nomenclature in Africa has varied in the past (e.g., therapy radiographers, radiation technologists, radiotherapy radiographers). The International Atomic Energy Agency (IAEA), which is extensively involved in radiotherapy training and supportive of radiation oncology facilities in member countries, has recently designated the term, radiation therapy technologists (Coffey *et al.*, 2006).

For the purposes of this thesis, I use the term radiotherapist or “practitioner” in order to define a practicing radiotherapist who, in the context of a teaching hospital, is also involved in supervising and teaching students in the clinical and tutorial environment. I use the term “academic radiotherapist” or higher education practitioner to refer to a qualified radiotherapist, with educational qualifications, who works in a formal academic environment, teaching students.

1.3.3. Scope of the profession

The scope of the profession of therapeutic radiography is regulated and defined by the Health Professions Council of South Africa and “is a broad description of the purpose and intent of the profession” (HPCSA, 2000a). It is used to prevent unregistered and

unqualified persons from illegally practising within the scope of the profession. Thus it is used when prosecuting illegal practitioners. The scope of professional practice of the radiotherapist involves the planning, treatment and patient care of the cancer patient in accordance with the treatment prescribed by the radiation oncologist (HPCSA, 2000b). The scope of practice refers to the individual practitioner and defines what the radiotherapist actually does in the course of his or her duties. These duties must be within the scope of the profession and appropriate to the practitioners' training and experience (HPCSA, 2000a). The professional scope of the radiotherapist is divided into nine major areas and the whole is underpinned with optimal patient care and communication:

1. Administration of treatment
2. Care of patients
3. Localisation of tumours and treatment planning
4. Therapeutic radioisotopes
5. Radiation protection
6. Equipment
7. Keeping of patient's records
8. Other uses of ionising radiation
9. Quality assurance (HPCSA, 2000a).

In South Africa, the newly qualified radiotherapist is required to perform one year of community service in a state hospital. At entry level, the 'new' radiotherapist's job description would entail basic competencies; a certain amount of supervision by more experienced radiotherapists would be usual as the new radiotherapist gains experience and learns to apply further competencies. Part of the higher level skills gained with experience is the ability to facilitate, supervise and teach both junior colleagues and students. In South Africa, academic institutions have traditionally been aligned with the state academic hospitals in order to provide suitable clinical teaching environments for the health care professions, such as radiotherapy. The academic hospitals concerned are inspected by the HPCSA and accredited as suitable clinical teaching sites. Lately certain

radiation oncology private practices have successfully applied for registration as teaching sites, and there are students who receive their clinical experiential training in the private sector.

The field of radiotherapy is constantly changing; with advances in technology and radiation treatment techniques, “advanced practices” (Bolderston et al, 2005) are emerging. Suggested advanced practices include “radiographers prescribing” skin care medication with regard to the side effects of radiation treatment (Francis & Hogg, 2005) and involvement with the informed consent process (Colyer,2007). Snaith and Hardy (2007) suggest criteria for the achievement of advanced practitioner status. In the light of new developments, continuous professional development (CPD) is increasingly important in radiography and radiotherapy internationally (Martino & Odle, 2007; Marshall, Punys, & Sykes, 2008).

1.4 Context of the research

1.4.1 The historic socio-political context

In the past political context (the apartheid years 1948-1994) White South Africans dominated the healthcare profession; and radiotherapy was no exception to this norm. Applicants designated by the apartheid regime to be of Black, Coloured or Asian¹ ethnicity were not accepted into the training programmes (Baldwin-Regaven, de Gruchy & London, 1999). Thus the profession, although serving the population as a whole, was not representative of the race, ethnicity, culture or language of that population. This aspect of the healthcare services was addressed by the Truth and Reconciliation Commission (TRC) Health Sector hearings. The hearings addressed the failure of the health services of the apartheid regime to address the most basic human rights of the South African patient and population generally in ethical terms and the right to human dignity (Baldwin-Regaven, de Gruchy & London, 1999). The health professions of this era claimed to follow professional standards and international codes of ethics, “while

¹ Uppercase has been used when discussing Black, Asian, Coloured and White to indicate that these classifications were specific to the apartheid regime political context.

ignoring the glaring disparities in the distribution of resources, in population health indicators, in the provision of trained personnel and, eventually, in the treatment of those in custodial care” (Baldwin-Regaven, de Gruchy & London, 1999: 10-11).

In preparation for the TRC hearings certain training institutions undertook self-study of their medical training programmes and concluded that training was “racially structured and consequently virtually separate and certainly not equal at both undergraduate and post-graduate levels” (Baldwin-Regaven, de Gruchy & London, 1999: 181). A similar statement could be made regarding the training of radiotherapists in the 1960’s and 1970’s where the opportunity to train in the profession was virtually denied to any applicants other than those classified White by the government of the time. Small numbers of radiotherapy radiographers of that time, if classified Coloured or Asian, received their training locally and others went overseas to the UK at their own expense. At the research site, the first two Coloured/Asian diagnostic radiographers were accepted as radiotherapy students in 1976 to complete radiotherapy as a second qualification. Black (as classified by the government) radiotherapy radiographers were virtually not present, at this time, in the profession at all.

This study takes place in present day South Africa which is in transition and the above conditions are transforming. At the research site this process of transformation started in the 1980’s and more fully from the 1990’s. The historic socio-political context, as described, is important to the present day educational context.

1.4.2 The higher education context

By the early 1980’s the undergraduate training of the profession was more representative of ethnic demographics but the larger portion was still White. At the research site, students were required to register their qualifications at the separate, racially divided institutions of Higher Education despite receiving lectures and clinical training together. The training, being in-service at academic state hospitals, was salaried but the students were not necessarily all under the same conditions of service. Matters improved in this

regard by 1984 and by the end of the 1980's the first stream of Black radiotherapists were entering the profession on a more equitable basis.

Among the TRC recommendations put forward for the Health Sector for training, was:

Health science faculties establish programmes aimed at increasing the number of black under- and postgraduate students. This may require bridging programmes, financial assistance, tutors, mentoring, etc (Baldwin-Regaven, de Gruchy & London, 1999: 215).

The early 1990's saw a change in the political dispensation of South Africa as, with the unbanning of political struggle organisations such as the African National Congress (ANC) and freeing of political prisoners, the apartheid government moved to negotiate a new order with all role-players. This saw the beginning of a change in mindset towards equity in healthcare professions training, such as radiography, and before the first democratic government came into power in 1994, students representative of all ethnicities were successfully applying and being accepted into radiotherapy training.

Since 1994 the composition of radiotherapy students at the site of this study has consistently moved towards the goal of achieving equity and representation of the community as recommended by the TRC Report in 1998. This improved composition in the student body has resulted in a more diverse group of students than in the pre-1994 years, to the benefit of the profession and the communities they serve. Today patients increasingly benefit from being able to converse with their care-givers, the radiotherapist, in their home language and the multilingual working environment helps to make their treatment more comprehensible and bearable. In the education environment, this multilingual environment has presented challenges in learning with the medium of instruction (MOI) as well as providing benefits for the diverse student body.

Communication challenges in respect of the MOI are in part overcome by students being able to discuss their academic work and learning situations with fellow students by using

their home language. Other learning challenges are apparent as students come from varied educational experiences. These varied experiences are a legacy of the previous apartheid educational policies (Baldwin-Regaven, de Gruchy & London, 1999; Alexander, Badenhorst & Gibbs, 2005).

1.4.3. The clinical context

The radiation oncology department at which this study was done, consists of professionals from many disciplines who together comprise a multidisciplinary treatment team for the purpose of successfully treating cancer patients and offering the best standard of care possible. At this research site the multidisciplinary treatment team consists of surgeons, radiation oncologists, radiologists, pathologists, medical physicists, radiographers (radiotherapists) and other professions such as nurses, dieticians, occupational therapists, physiotherapists and social workers. This team forms the integrated radiation oncology treatment team.

The table (Table 1.2) gives a brief overview of the all the role players in the integrated treatment team that would be involved in the treatment of the cancer patient. The table shows the probable journey of a patient through the radiation oncology department and the points at which the radiotherapist will be part of the multidisciplinary team. At a site such as the 'combined' multidisciplinary clinic, the radiotherapist may be present in a liaison function where the emphasis would be on reassurance, ensuring the patient's appointment in the next stage of the radiotherapy treatment journey and confirming the radiation oncologist's requirements. The radiotherapist would not be involved in the diagnosis and collective treatment decision. This liaison role in the clinical setting is not necessarily standard to the radiation oncology department and is dependent on the individual department's practice and the radiation oncologist's requirements.

Table 1.2 Roleplayers in clinical practice

SITE AND PURPOSE	ROLE-PLAYERS
Multidisciplinary clinic – the patient’s first contact in the radiation oncology department.	Radiation oncologist Registrar – consultant in training Further medical specialists appropriate to patient’s diagnosis and treatment e.g. specialist ENT surgeon, medical oncologist, dental surgeon <u>Referrals as appropriate for the following:</u> Social worker for counseling and social cares Dietician to advise on nutrition Oncology nursing sister Speech therapist – if voice therapy needed Radiotherapist in liaison role
Radiation laboratory – the making of necessary treatment immobilization device.	Radiation oncologist Radiotherapist - to position patient and assist or make the device. Radiotherapy laboratory technologists – makes device
Radiotherapy Planning – the treatment preparation which includes : localization of the treatment area, target definition and graphic planning of treatment	Radiation oncologist – localizes and defines target area Radiotherapist – positions patient, operates imaging equipment required to localize target area and on receiving defined target area, plans treatment using graphic planning software. Completes treatment record with all radiotherapy details for treatment Note: Graphic planning and treatment record may take several days.
Medical Physics – Dosimetry and Quality assurance	Medical physicists perform necessary assurance protocols on plan and equipment. Radiotherapist – involved with the above where required and appropriate to do so. Note: Patient will not usually meet the medical physicist
Radiotherapy Treatment Unit – Daily treatment as per treatment prescription by radiation oncologist.	Radiotherapists – minimum two are responsible for the accurate rendition of treatment as per treatment record and for patient’s daily care.
Associated departments	Radiotherapist may need to liaise with other professionals such as nurses, dieticians, social workers, psychologists, and in-patient wards, dependent on the patient’s needs.

NOTE: The highlighted areas refer to the Radiotherapists’ roles.

The procedure for the preparation and treatment of the cancer patient has many stages and involves a multidisciplinary team of professionals. In this process the role of the

radiotherapist changes according to the required functions as a member of the team involved in the treatment of the patient. Student radiotherapists, in addition to lectures and classroom-based training, will gain experience in the clinical environment by working under supervision in the integrated treatment team. A large part of the students' learning is experiential and takes place in the clinical environment where radiotherapists and others in the integrated treatment team are involved in their training. The student is likely to be supervised by multiple practitioners. Specific outcomes are included in the curriculum to guide the students' clinical experience. However, their experience will be dependent on the circumstances of the clinical department, such as equipment available, pathologies, work load and staff shortages, and thus could prove to be a positive or a negative experience for the student and practitioners concerned (Chapman & Oultram, 2007).

This chapter introduces the radiotherapy clinical and educational context of the participants of this research. The history of radiotherapy in South Africa, the nomenclature and scope of the profession of radiotherapists is discussed. These are contextualised in both the historic socio-political and the current higher education socio-political context. The chapter is concluded with a description of the expected clinical context of the radiotherapist in the workplace.

1.5 Overview of thesis

A brief outline of each of the chapters of this thesis is give below.

1.5.1 Chapter 2 - Review of the literature.

In the next chapter the literature on communication in the health sciences is overviewed. This includes the research literature on communication in the clinical environment, communication in the Health Science classroom, the role of communication in inducting novices into the health science professions and the role of communication in professional expertise. Chapter 2 is concluded with a theoretical framework, developed from the literature, for understanding communication practices in radiotherapy.

1.5.2 Chapter 3 - A research methodology for studying communication practice in radiotherapy.

Chapter 3 presents the research design for this study. A case study approach has been used and its applicability to this research study is explained, together with the details of the research design such as the selection criteria applied for the selection of events, sites and participants. The data collection methods and data analysis are described and issues such as the validity and reliability of the data are discussed. Other issues, such as ethical considerations and the positionality of the researcher are also addressed.

1.5.3 Chapter 4 - The findings on professional communication in radiotherapy practice.

This chapter presents the findings from the analysis of the data collected in the radiotherapy workplace. It describes different forms of professional communication practice and concludes with a model describing radiotherapy communication practices in the clinical environment.

1.5.4 Chapter 5 - The findings on pedagogical communication in radiotherapy.

In chapter 5 the findings from the data collected in the various pedagogical sites, is presented. The chapter identifies different types of pedagogical communication practice, including communication practices in the multilingual classroom.

1.5.5. Chapter 6 - Conclusion on the nature of professional communication in radiotherapy.

In the final chapter, a model of communication practices in professional and educational radiotherapy developed through the study, is presented. Recommendations, derived from the research findings, are made with regard to communication in the workplace and communication strategies for the radiotherapy classroom. Areas for further research are identified and contribution of this research is discussed. Finally the research questions are addressed, integrated and the chapter concludes with the discussion of the nature professional communication in radiotherapy.

CHAPTER TWO
A REVIEW OF THE LITERATURE ON COMMUNICATION
IN THE HEALTH SCIENCES

It's to make the students aware that they might come across [that] terminology used in the department but as the literature, you would also teach them the professional language, the correct word to use. So that when they come in the department and they read maybe that same piece that they were taught practically. Then to correlate the words and to see the words in the text, the same way they try to convey that word into practice. (P3, 01/08/2006, C2)

2.1 Introduction

A substantial amount of communication studies exist in the literature of the health science professions around the world. The emphasis of these studies is on physician-patient communication in medicine and medical education (Ong *et al.*, 1995; Stewart, 1995; Makoul, 1998; Tulskey *et al.*, 1998; Baile *et al.*, 1999 ; Makoul & Schofield, 1999; Makoul, 2001; Fallowfield *et al.*, 2002 ; Makoul & Curry, 2007). The growing interest in physician-patient communication is reflected in international consensus statements (Simpson *et al.*, 1991; Workshop planning committee, 1992; Makoul & Schofield, 1999; Makoul, 2001;); communication manuals for students (Crawford, Brown & Bonham, 2006; Wyrley-Birch & Wright, 2003); guidelines for medical schools (Association of American Medical Colleges, 1999; Back *et al.*, 2003.), departments or colleges where radiotherapy is taught (Wingfield *et al.*, 1994; Booth & Manning, 2006; Booth, 2007; Booth, 2008; Bolderston, 2008), and standards for professional practice and education (Bass *et al.*, 1997; Benson *et al.*, 2002.). There are considerably fewer studies that have to do with technical or inter-professional communication, and even fewer studies are specific to radiotherapists.

Definitions for the terms “communication” or “communication skills” were rarely found in the literature. Authors in the health sciences tend to assume that readers have a common sense understanding of what is intended when reference is made to “communication skills” – usually that practitioner-patient communication is intended. It should also be pointed out that many of the authors surveyed frequently conflate different abilities such as “interpersonal skills”, “team work”, “patient empathy”,

“professionalism”, “effective feedback” (McMahon, 2006), and “reflective practice” (White, 2003) with communication skills. This suggests a superficial learning approach to the topic rather than the ‘deeper’ learning approach advocated by McMahon (2006). The overview of the literature below thus covers a variety of fields in the health professions; most of which are not radiotherapy specific, but were selected for their general relevance to radiotherapy, such as studies in communication with regard to cancer care, oncology, patient counselling, and medical, nursing and radiography education.

The chapter categorises the literature under headings related to the different types of communication studies found: 1) in the clinical environment, 2) in the Health Science curriculum and classroom, 2) in the induction of novices into the health science professions, and 4) in professional expertise. The chapter concludes with a theoretical framework, developed from the literature studied, for understanding communication practices in radiotherapy.

2.2 Communication in the clinical environment

In this section the literature on three types of professional communication is reviewed, namely: 1) professional and technical communication within similar health practitioner groups, such as radiographer-to-radiographer communication; 2) professional and technical communication across health practitioner groups, such as in interdisciplinary health care teams; and 3) communication involving patient-health professional interaction.

Most of the literature on communication deals with practitioner-patient communication. There are very few studies that focus on intra- or inter-professional communication in the health sciences; such studies are more common in other professions, such as engineering (Winsor, 1996), or in the “pure” disciplines such as physics (Airey & Linder, 2006) or biology (Myers, 1990). The few studies that do address professional communication (intra- and inter-professional communication) tend to do rhetorical, discursive analyses of the knowledge and power differentials between, for example, health providers and their patients, and between healthcare colleagues (Longo, 1998). A typical study in this regard

might be Lingard and colleagues' (2002) study of the discursive constructions of "the other" in the operating room (Lingard *et al.*, 2002) where they further identified the consequent impact on professional identity formation and development; Bell and colleagues' (2000) study of the rhetoric of clinical protocols in the drug development process (Bell, Walch & Katz, 2000); Virtanen, Leino-Kilpi and Salanterä's (2007) study of empowering discourses in patient education; and promoting patient participation in the cancer consultation (Brown *et al.*, 1999). Such studies (on intra- and inter-professional communication) are not that common in the health science literature. Literature tends to focus more on health professionals exploring how to enable more constructive communication for the benefit of patients, such as studies of patient evaluation of radiotherapist-provided educational materials (Bakker, *et al.*, 1999; Rowe *et al.*, 2007; Bolderston, 2008); and Arora (2008) calling for more research on patient-centred cancer communication. Thus the emphasis is on communication with the patient and only peripherally, the communication practices with colleagues.

2.2.1 Professional and technical communication within similar health practitioner groups

Radiotherapists' practice is unique to their task and competency within the radiotherapy profession and expresses their commitment to their role within the multidisciplinary team that comprises their working community, for the purpose of providing maximum benefit to the patient (Harnett *et al.*, 2008). Radiotherapists in practice could be seen as what Wenger (1998) terms a community of practice. He further defines a community of practice as that "formed by people who engage in a process of collective learning, working in a shared domain of human endeavour". Ekmekci & Turley (2008) note that the exact nature of the radiotherapist's field of practice is an area that needs further clarification, as the technical aspects of the profession are emphasised and little importance is attached to the affective components of practice, including communication skills. Radiotherapists have a common purpose, and this forms their particular professional identity and their particular communication practices (Boyes, 2004; Bolderston, 2008; Ekmekci & Turley, 2008).

Intra-radiotherapist communication

In a study of radiography journals, Niemi and Paasivaara (2007) identify specific “discourses” related to radiography; namely 1) a technical discourse (that includes issues such as the rapid development of technology and changes in the content and scope of radiographers’ work, 2) a “safety discourse” (that deals with radiation from a safety and quality point of view), and 3) a “professional discourse” (focusing mainly on issues of patient communication). The communication that takes place between colleagues is thus specific to that team or group (Faber, 2002).

Communication between professionals and novices

Professionals will often induct or socialise their novice members into the group’s practices, including its ways of communicating (Herndl, 1993; Niemi & Paasivaara, 2007; Ekmekci & Turley, 2008). Professional radiotherapists can then be expected to play a major role in inducting their students into technical and professional communication practices, acting as role-models and helping them to develop both academic and clinical competence (Palmer & Naccarator, 2007). Lewis and Robinson (2003) identified a number of areas in which radiotherapists act as role-models to students or new practitioners, namely in leadership, technical skills, radiation safety, patient care and advocacy, professional development, planning and evaluation, independence, ethical conduct, as well as communication skills, and communication-related skills, such as teamwork.

2.2.2 Professional and technical communication across health practitioner groups

Radiotherapists work in integrated treatment teams and there is an emerging literature dealing with the various aspects of collaboration and cooperation amongst health professionals, and the importance of inter-professional communication in the health care teams (Colyer, 1999; Elman, 2000; Parkarinen & Jussila, 2007), including curricular recommendations for specific training in this regard (Leaver & Norris, 2000). Aspects such as the advancing of practice alongside technological advances are discussed where inter-professional collaboration coincides with: the development of the ‘supertechnologist’ (Friedenberg, 2000); the achievement of consultant practitioner status

(Hardy & Snaith, 2007); and, increased practice where the professional boundaries are advanced (Martino & Odle, 2007).

The education of health professionals in common communication skills and practices is another aspect of the importance of inter-professional collaboration and team work (Maguire *et al.*, 1996). Recent literature highlights the importance of professional knowledge and inter-professional practice within an integrated team and role of inter-professional education (IPE) in preparation for the workplace collaborations (Yates, 2006; Milburn & Colyer, 2008). Suitable teaching methods and the consequent assessment of health care professional communication skills is also discussed (Razavi *et al.*, 2000; Carlisle, Cooper & Watkins, 2004; Williams *et al.* 2006).

2.2.3 Patient-health professional communication

By far the largest body of literature on communication in the health sciences deals with practitioner-patient communication. Previously, such communication was seen in terms of patient “counselling” (Riccardi & Kurtz, 1983) and was the responsibility of counsellors, not medical practitioners. Communication skills were therefore not regarded to be “core skills” for physicians or the technical health professionals, whose training focused on the “hard skills” of their field of practice (Ong *et al.*, 1995). More recently, however, there has been a shift that requires health practitioners to take more responsibility for patient communication (Brown *et al.*, 1999; Ong *et al.*, 1995). In radiotherapy and cancer care contexts there have been calls for practitioners to become more “compassionate” towards patients (Adams, 2006).

The sub-sections which follow survey the literature on informed patient consent, informed consent in multilingual contexts, patient empowerment, and the reported benefits of good patient-practitioner communication practices.

Informed consent

Informed consent is a fundamental principle of health care ethics (Di Prospero *et al.*, 2006). Consent can be defined as a patient's agreement for a health care professional to provide care. Consent is particularly important in radiotherapy treatment, as is the need for patients to understand the treatment and its effects and thus to be 'informed'. Patients should have access to information to help them make informed decisions about available treatments. Patient-health professional communication in radiotherapy is thus strongly linked to informed consent.

Thompson (2007) explored some of the issues in implementing a consent policy within the radiotherapy department. She notes that according to the United Kingdom Department of Health regulations it is the doctor prescribing the treatment who is responsible for obtaining consent from the patient. Therefore, in radiotherapy, it is the consultant (radiation oncologist) who will obtain the consent of the patient as the doctors are responsible for prescribing the radiation therapy. Thompson (2007) notes that although the radiotherapist's role is to administer the radiation treatment, they are not involved in the patient consent process. Thompson's study (2007) discusses some of the issues around implementing a consent policy addressing appropriate role-players in terms of who can give and confirm consent. The study further addresses the possible training requirements for health professionals in the giving of appropriate information to patients and thus the taking of informed consent for treatment. The study highlighted the need for patient-centred quality care and for changes in the way patients are asked to give their consent to treatment. Colyer (2007) in a survey of practices used internationally concluded that the obtaining of informed consent should be the responsibility of the radiotherapist. Di Prospero *et al.* (2006) studied particular ethical dilemmas facing radiotherapists, including informed consent, confidentiality, and professionalism in interactions with colleagues, accepting gifts from patients, unacceptable requests, and disagreements among the treatment team.

The U.K. Department of Health published a Good Practice in Consent Implementation Guide (2001) for use within all National Health Service (NHS) Trusts. The Guide aims to

provide consistency across the NHS and provides a policy model and generic consent forms. The policy recommends that the health professional carrying out the procedure is ultimately responsible for ensuring that the patient is genuinely consenting to what is being done, as it is they who would be held responsible in law should a case be made by a patient against a health professional. Robinson (2007) recommends that consent should not only be obtained in writing from patients, but records of the dialogue between patient and radiotherapist should be included in the patient's medical notes.

Informed consent in a multilingual context

The literature on informed consent for non-English-speaking radiotherapy patients in English-speaking hospitals highlights the importance of communication (Di Prospero *et al.*, 2006; Gargan & Chianese, 2007). Studies indicate that many non-English-speaking patients are not in a position to give true informed consent due to lack of knowledgeable interpreters (Butow, Tattersall & Goldstein, 1997; Crawford, 1999; Gargan & Chianese, 2007). Literature notes that there is a lack of professional interpreters in health care and this often results in the inappropriate use of family, friends or other staff members as interpreters. This practice, firstly, doesn't allow for patient confidentiality; and secondly, interpreting in these circumstances can be stressful for the *ad hoc* interpreters; and thirdly, the information can be interpreted inaccurately (Butow, Tattersall & Goldstein, 1997; Crawford, 1999; Gargan & Chianese, 2007). Therefore it is debatable, in these circumstances, whether health care professionals are giving treatment with the informed consent of the patient. Written information for radiotherapy patients is very often only available in English which compounds the problem for the patient's understanding (Crawford, 1999; Gargan & Chianese, 2007). Ideally, a fully accessible professional interpreting service should be available to allow non-English patients equal rights in accessing appropriate health care options and treatments (Crawford, 1999; Di Prospero *et al.*, 2006; Gargan & Chianese, 2007).

Communication for patient empowerment

Many cancer patients have high levels of unmet needs, particularly with regard to health information, psychological issues, and daily living needs (Crawford, 1999; Mercuri &

Kallady, 2005). Arora (2008), in her overview of the research on patient-centred cancer communication lists many benefits of patient-centred communication, in particular the fostering of healing relationships and enabling patient self-management through information provision. Virtanen, Leipo-Kilpi and Salanterä (2006) identify elements of empowering discourses between nurses and patients, and claim that empowering discourses (which are dependent on empathetic tone and expression) can help patients to feel more at ease, more knowledgeable and more able to make decisions. Booth and Manning (2005) identify five communication styles of radiographers in their interactions with patients, that derive from the style repertoire of Transactional Analysis, namely 1) the “controlling parent”, 2) “nurturing parent”, 3) “adult”, 4) “free child” and 5) “adapted child”. Of these communicative styles the “adult” style has the greatest potential for patient empowerment.

Potential benefits of good communication practice to patients

Communications research in the health sciences shows its potential to enhance provider competency and affect measurable changes in outcomes for cancer patients (Hawken, 2005). Stewart (1995) performed a meta-analysis of studies published over 10 years on the effect of physician-patient communication on health outcomes. Stewart (1995) found that most of the studies reviewed demonstrated a significant correlation between effective physician-patient communication practices and improved patient health. The most significant aspect was identified as the quality of communication between doctor and patient and this effective communication was found to have both positive physiological and emotional effects on the patient’s health generally. Stewart (1995) suggests that the aspects of effective communication practice identified in these studies could be used for curriculum development in medical education as well as for patient education programmes.

Girgis and colleagues (1997) conducted a series of interviews with surgeons to find out whether they perceived a link between communication and positive patient outcomes. Only two of the physicians perceived such a link. The authors recommend that medical

practitioners need to be informed about the role that communication can play in achieving positive patient outcomes (Girgis, Sanson-Fisher & McCarthy, 1997).

2.3 Communication in the Health Science classroom

This section looks at the literature on communication in medical and health science curricula, on best practices in the teaching of professional and technical communication, with a particular focus on teaching health science communication in contexts of linguistic and cultural diversity, and concludes with an exploration of the gap between educational research and educational practice.

In the higher education literature, it is generally accepted that having a professional qualification or higher degree does not prepare one for the complex enterprise of university-level teaching (Biggs, 2003.) Seidel *et al.* (2006) claim that there are disciplinary styles in the scholarship of teaching and learning and that teaching and learning is embedded in the epistemology of disciplines. If this is the case in radiotherapy then there is a need for educators to understand what kind of communication should be taught in radiotherapy classrooms. Hawking (2005: 225) notes that successful learning and retention of knowledge depends on the good communication practice between student and teacher. Although lecturers may implicitly socialise their students into the discipline (Allen & Field, 2005), they often explicitly introduce undergraduates to the content of the academic of knowledge and do not necessarily acknowledge practices, such as communication. Gittens (2007) notes the importance of the high level of teaching and learning practice necessary to ensure ‘authentic’ and positive learning of the desired practices. This is why the study of disciplinary communication practices is essential work in all disciplines to enable academic staff to discover and develop those pedagogical understandings and strategies that will involve or engage new learners (Kreber, 2002). Faber (2002) argues that if professional communication research and teaching is to become prominent in academic programmes; researchers, theorists, teachers, and students must become more aware of the conceptual issues that inform and define the role of communication in professional work. Tichenor and Tichenor (2005) note that in professional education, teachers have the dual role of being professional practitioners,

and professional educators. With specific reference to radiography, Parkarinen and Jussila (2007) claim that radiographers need to produce research for both the advancement of clinical radiography and the instruction of radiographers. Bolderston, Harnet *et al.* (2008) advocate that radiotherapists develop an academic practice and this would include increased communication practices and skills and communication forms.

2.3.1 The communication curriculum

As educationalists understood the importance of communication, interpersonal and communication skills moved from the periphery to become a core area of competency in professional education (Van De Camp *et al.* 2004; Lynch, Surdyk & Eiser, 2004; Butler *et al.*, 2005). A number of researchers have recommended the need for curriculum development with regard to communication in the health sciences (Harper, Cook & Makoul, 2007; Lockyer, 2005; Klass *et al.*, 1998). Communication skills have also been suggested as an admission requirement for radiography programmes (Espen, Wright & Killion, 2006). Communication practices are key to effective classroom practice and for building a reciprocal relationship between educators and students (Espeland & Shanta, 2001). Professional communication has thus become a growing component of health science curricula. As such, professional communication increasingly plays a role in our understanding of professionalism or the process of professionalisation (Parle, Maguire & Heaven, 1997; Engel-Hills, 2007). With regard to clinical education, there is a need for greater communication between the health and education sectors and the need to concentrate on strategies which will strengthen this bond (Nolan, 1998; Baile *et al.*, 1999; Benson *et al.*, 2002; Bansal & Supe, 2007; Bolderston, Palmer *et al.* 2008).

Examples of skills and competencies necessary for health care professionals to learn include: having a flexible approach to communication, expressing their own ideas and feelings, using reflective practice, identifying and addressing patients' concerns in order to understand their own reactions, avoiding negative interactions, creating a comfortable setting, including family, detecting a patient's anger, anxiety, and sadness, discussing bad news, avoiding medical jargon and responding to emotional reaction (Maguire *et al.*, 1996; Baile *et al.*, 1999; Fallowfield *et al.*, 2002; Baile & Aaron, 2005; Hawken,

2005; Arora, 2008). Most curricular documents involving clinical skills include communication as a core competency (Syme-Grant, Stewart & Ker, 2005).

The essential elements of patient-physician communication were identified by participants in the Bayer–Fetzer Conference on Physician–Patient Communication in Medical Education (Makoul, 2001: 390). These seven essential sets of communication tasks were: (1) build the doctor–patient relationship; (2) open the discussion; (3) gather information; (4) understand the patient’s perspective; (5) share information; (6) reach agreement on problems and plans; and (7) provide closure. The participants, led by Makoul, wrote a consensus statement regarding these communication tasks, known as the Kalamazoo Consensus statement. They noted that these elements provided a useful framework for communication-oriented curricula and standards (Makoul, 2001: 390).

In a self evaluation of their own communication skills during a communication course for first-year medical students done between 2000 – 2003, Zick, Granieri and Makoul (2007) found that the students viewed their strengths as: eliciting of patient information, establishing rapport with the patient, conversational flow, offering support and encouragement, and ensuring patient comfort. They noted further that the students identified their weaknesses as: problems with: paralanguage, particularly in terms of tone, rate, volume, and lack of fluency as in ‘um’, difficulties in discussing health risks, attending to conversational flow and changes, as well as the students’ own levels of preparation for the encounter (Zick, Granieri and Makoul, 2007).

Increasing recognition of the complexity and difficulty of communication in patient care has led to an increased literature on the role of communication skills in health science contexts. Makoul and Schofield (1999), then later Schofield and Butow (2004), proposed a seven-stage model of communication curriculum research that would provide clear directions to improve communication in cancer care specifically. The stages are: (1) identification of communication difficulties; (2) documentation of patient and clinician views; (3) identification of practices associated with better outcomes; (4) the development of evidence-based guidelines and interventions; (5) testing the effectiveness

of the intervention in changing current practice and improving patient outcomes; (6) dissemination of the effective interventions; and (7) broad adoption of the intervention. The researchers provide examples for each of the above stages to explain the type of study proposed (Makoul & Schofield, 1999; Schofield and Butow, 2004). Makoul & Curry (2007) note the need for a co-ordinated, planned approach that is required to facilitate the rapid development and implementation of evidence-based interventions in this area of health science education and practice.

Engel-Hills (2007) proposes a collaborative, integrated curriculum to meet the need for the education of radiotherapists on the African continent. In such an environment optimised learning would be facilitated by access to good clinical role models, the development of skills toward reflective practice and student participation in the learning environment (Engel-Hills, 2007).

2.3.2 Teaching professional and technical communication

While medical advances have been understood and adopted by many institutions, Bansal and Supe (2007) claim that the same is not true for educational planning and implementation in India. They argue the need for well-trained educators in order to meet the demand for quality graduates. Bansal and Supe (2007) found that existing medical educator training programs in their country, India, are insufficient, both in number and in the aspects that they cover, to meet this demand. Creating an environment where the teaching and learning of communication can occur is difficult, as Emans and colleagues found in studying the creation of a faculty development office in an academic paediatric hospital (Emans *et al.*, 2008). Literature notes the pressure of adding further to an already large curriculum in the case of medicine and allied health sciences, so education in communication practices may tend to have a low priority even though the need has been identified (Fellows, Wilkinson & Moore, 2003; Baile & Aaron, 2005; Makoul & Curry, 2007).

Academic staff development

Before a faculty is able to take an interest in educating students in the communication practices associated with its discipline, it first has to take an interest in the education of its teachers (Back *et al.*, 2003; Thorndyke *et al.*, 2006). Thus, literature is showing that in the last decade or so, medical schools have been taking an interest in research of and the pedagogical practice of the communication aspect of the curriculum. Previously academic promotion depended mainly on research publications and public profile and little on an assessment of an ability to teach but as Thorndyke *et al.*, (2006) notes there is a necessity to empower the academic medicine teaching faculty to be successful teachers.

Increasingly both undergraduate and postgraduate teaching is now subject to evaluation from those taught, and universities are now doing formal assessments of their teachers' ability in communication and pedagogical practices (Sandars & McAreavey, 2007).

Sleight (1995) reported on the process of evaluating the communication skills of all newly appointed medical teachers at Oxford University. Each teacher had to give a short presentation before a panel. This presentation was videoed. A critique of their presentation technique was then given, using the video footage as part of the reflective process. This was seen as valuable feedback in allowing lecturers to reflect on teaching faults and to help improve their techniques in the future (Sleight, 1995). While this approach may seem a little draconian and harsh for new lecturers, the general focus is that practitioners may be expert in their discipline but are not necessarily good educators, and that good pedagogic communication skills need to be assimilated by educators (Nicholls, 2004). McLeod *et al.* (2004) acknowledge that many clinical educators have a tacit pedagogic knowledge and suggest that this knowledge needs to be enhanced and supported rather than a complete radical change in present pedagogical practices.

Best practices in communication teaching

Waldron (1973) was an early advocate for the inclusion of communication skills in the medical curriculum. He used simulated interviewing, followed by feedback from instructors and peers, and thought it an appropriate and successful method for teaching such communication skills to medical undergraduates. Waldron (1973) used innovative

technology for the time, such as closed-circuit television. Waldron found students' reactions to this technique, over a number of years of implementation, to be positive. Zick, Granieri and Makoul (2007) also used an audio visual approach where first year medical students assessed their own performances in a simulated patient interaction that had been videoed. The authors found that this was a good approach to teaching a core competency such as communications skills as well as providing the opportunity of analysis and self-reflective practice for the students (Zick, Granieri & Makoul, 2007).

Deveugele *et al.* (2005) point out small group methods, such as that proposed by Waldron (1973) are very labour intensive. Deveugele *et al.* (2005) studied the implementation of the communication segment of the new medical curriculum at Ghent University, which was introduced in 1999. The training starts with basic communication skills but graduates to more complex medical communication and consultation training in varied contexts and with specific patient groups. The programme emphasizes rehearsal of the communication practices required and any student who has difficulty has further opportunities for practice. Deveugele *et al.* (2005) noted that several teaching approaches are used: the communication skills and practices are demonstrated by means of videotapes and patient scenarios and case-histories; skills are taught in small groups where emphasis is on role-playing with colleague students or simulated patients (model patients); and videotapes of real consultations are taken in order to analyse the student's performance. Deveugele *et al.* (2005) note that each year the students are assessed by means of an objective structured clinical examination (OSCE). The researchers have observed that this method of small group training creates a significant workload and, that with different trainers, there are variations in learning experience between the groups. They noted that as the most important pedagogical approach lies in practising the skills, the selection and training of simulated patients remains a challenge. Deveugele *et al.* (2005) suggest that communication should be maintained throughout the medical curriculum. They suggested that students who have specific communicative difficulties should be identified early, extra training provided and that continued rehearsal every year seems to lead to better communication skills being gained. Deveugele *et al.* (2005) further noted is that in their opinion communication should be embedded in the overall core curriculum as essential

outcomes and that communication skills should be seen as core elements of good medical practice (Deveugele *et al.*, 2005).

Back *et al.* (2003) studied communication teaching in a clinical oncology context. A number of different approaches were used. As described by Back *et al.* (2003), firstly, there were large-group presentations which focused on a specific task involving communication and there were associated guided written tasks with specific criteria required. Back *et al.* (2003) described the topics for these large group teaching sessions as: fundamental communication skills, giving bad news, conducting a family conference, managing transitions from curative to palliative therapy, responding to requests for futile treatments, and discussing “do-not-resuscitate” orders. Students received a specific notebook that included relevant references. Back *et al.*, (2003) noted that the students had opportunities to practice in role-play/simulated situations. They received individual specific feedback from lecturers and peers, and also observed other participants and provided them in turn with feedback. A particularly helpful intervention was “patient role play” whereby the medical student played the role of the patient and then was asked to reflect on specific questions, for example “How did you feel when the doctor said ‘I wish I had a better treatment for you’?” (Back *et al.*, 2003).

Booth (2007) recommends the use of Transactional Analysis as an approach to teaching patient communication skills in the health sciences. Kotecki (2002) points out that where there is no communication training in the clinical educational context, students are particularly concerned about “saying the wrong things” to patients.

Sleight (1995) studied the teaching of communication in a context where medical practitioners needed to inform patients about hypertension. He noted that communication under these circumstances should be a combination of patient education and relevant information with the development of a personal interest and interaction with the patient such that patient follows the practitioner’s advice and therapy. Sleight (1995) claims that communication skills in medicine are learnt experientially. Thus in addition to lectures, he noted, that it is equally important to teach students the basic skills in communication

with individual patients, including non-verbal communication. Sleight (1995) found video techniques very useful in demonstrating difficulties and identifying good communication techniques.

Fallowfield *et al.* (2002) felt that the communication problems of senior doctors working in cancer medicine are not resolved by time and clinical experience. Their research shows that training courses significantly improve important communication skills and argue that more resources should be given to address doctors' training needs in this essential area.

Teaching communication in a virtual environment

Because of the labour-intensive nature of communication teaching, many universities are using on-line communication teaching software. Fuller and Kuhne (2008) studied the best interactive communication teaching practices in effective health care education programmes in six major universities that offer online health care programs. They concluded that different types of facilitation approaches are needed to generate adequate interaction in four distinct types of health care communication courses: foundational classes, skills classes, analysis/synthesis classes, and hybrid-type courses (Fuller & Kuhne, 2008).

2.3.3 Teaching health science communication in contexts of linguistic and cultural diversity

Global trends in internationalisation have influenced the mix of students in classrooms in health science faculties. Thus faculties are faced with an increased mix of students that represent a diversity of cultures; this presents challenges for students and academics in the resulting transcultural encounters. Omeri *et al.* (2003) documents the findings of a systematic literature review exploring the implications of cultural diversity in academia across a number of countries and disciplines. Many of the research studies that were included in the meta-analysis focused on university experiences of indigenous students, local students from non-English speaking backgrounds and international students. Omeri *et al.* (2003) propose methods and skills that could assist educators and discusses the

implications for teaching and learning strategies for enhancing educational experiences of culturally diverse students and their educators in the academic settings.

Harper, Cook and Makoul (2007) note that there is a need to develop medical students' skills in interacting with individuals who have limited health knowledge in order to develop the core skills necessary for effective communication with all patients. Dogra and Karnik (2004a, 2004b) argue for the inclusion of teaching cultural diversity to medical students, who may often fail to perceive the relevance of the behavioural and social sciences in clinical practice. Cleland, Foster and Moffat (2005) point out that undergraduate medical students' attitudes to communication skills learning differ depending on the year of study and gender, with first year students and female students more positive in their attitudes towards learning communication skills.

2.3.4 The gap between research and practice in communication teaching

Literature points to the gap between the research findings with regard to health science education and education practice generally (Ferguson, 2005). Butler et al (2005) used the Cochrane Review of the communications training literature and conducted a critical interpretive analysis of 47 studies. They looked at the indicators used to assess provider communication competencies. They also looked at how these indicators were defined in the context of a cancer care system. Few of the studies reviewed showed agreement with the recommendations from two international consensus conferences of experts in communication teaching research, namely the Toronto consensus statement (Simpson *et al.* 1991) and international consensus statement (Makoul & Schofield, 1999).

Butler *et al.* (2005) noted how important it was to identify the communication needs and criteria for the particular context and the health professional team involved, in this case, in cancer treatment and care. They concluded that the relevant teaching and learning strategies along with the appropriate assessment models could then be developed (Butler *et al.* 2005). As pointed out by Omeri *et al.* (2003) there are increasingly diverse cultural student bodies and this true of many campuses globally. This is true of South African health science students and of the research site of this study. Wyrley-Birch (2004, 2006)

has, in previous research, explored and highlighted aspects of the communication practice happening in pedagogy between student and teacher. These aspects were: academic literacies, multilingual classroom practices and the 'language of learning' experienced by the student (Wyrley-Birch, 2006). A gap that needs research is perceived by the researcher to be; the communication practices, actual workplace and pedagogic, experienced and used by the students and radiotherapists respectively in their professional experience and practice. This is the research gap being explored by this study.

2.4 The role of communication in inducting novices into the health science professions

Mentorship and the induction of novices into clinical practice is a traditional practice in the health sciences (Hilton & Slotnick, 2004; Mohanna, 2007; Mohanna, Chambers & Wall, 2007). Much of the induction process has been noted to be the appropriate role modelling of clinical communication practices (Hilton & Slotnick, 2004; Mohanna, 2007). These appropriate clinical communication practices should take into account aspects such as the diverse community and student body where there may be varied expectations and educational experience respectively (McLean, 2004; McMillan, 2005; McMillan, 2007).

Certainly in South Africa there is the challenge of a diverse, multilingual student population in the healthcare professions and the mentoring and enabling students to enter the community of communicative practice does mean consequent appropriate pedagogic methodologies and research into best practice (Alexander, Badenhorst & Gibbs, 2005; McMillan, 2005; McMillan, 2007a; McMillan, 2007b).

The development of professional identity and professionalism is linked to communication practice and it was found that the way colleagues communicated with each other in a professional situation and performing a specific task informed their sense of self in the professional team (Lingard *et al.*, 2002; Ferris *et al.* 2007).

It is noted that students in the health sciences, studying in a medium of instruction different to their mother tongue, may need specialist learning strategies and interventions in order that they get the maximum benefit from their studies and to help develop their professional identity (Omeri *et al.* 2003, Dogra & Karnik, 2004a; Dogra & Karnik, 2004b; Alexander, Badenhorst & Gibbs, 2005; Wyrley-Birch, 2006; Bolderston, Palmer *et al.*, 2008; Ekmekci & Turley, 2008).

2.5 The role of communication in professional expertise

A professional is a worker required to possess a large body of knowledge derived from extensive academic study (usually at the higher education level). Professionals are to a degree self-regulating, in that they control the training and evaluation processes that admit new persons to the field, and in judging whether the work done by their members is up to standard. Professionals usually exercise autonomy in the workplace, and are expected to utilise their independent judgement and professional ethics in carrying out their responsibilities (Freidson, 1970). Day (2002) notes that a professional radiotherapist provides a service in accordance with established protocols for licensing, ethics, treatment procedures, standards of service, training and certification. Attaining professional expertise, Day (2002) says is an ongoing process where the expert radiotherapist relies on professional knowledge, experience and intuitive application of knowledge when problem solving in a particular situation, such as that involving communication. Van de Camp *et al.* (2004), in a survey of health professionals, identified three aspects of professionalism, namely 1) interpersonal professionalism, 2) public professionalism, and 3) intrapersonal professionalism.

In the following sub-sections, the role of communication in professionalism is discussed. It should be noted that many of the skills and practices discussed, such as ‘inter-personal’ skills, or the ability to constructively contribute to ‘team-work’ imply communicative competencies, even if they are not specifically referred to by the researchers and authors concerned. Professionalism for health care providers is now being defined as a commitment to standards of excellence in the practice of the profession that are designed

primarily to serve the interests of the patient and to be responsive to the health needs of society (Fellowes, Wilkinson & Moore, 2003).

2.5.1 Professionalism and communication

Current assessment formats for the health professionals reliably test core knowledge and basic skills, however they may under-emphasise some important domains of professional medical practice, including interpersonal skills, lifelong learning, professionalism, and communication (Epstein & Hundert, 2002). Early studies of professionalism have pointed out that particular forms of communication are linked to particular professions. The economist and sociologist, Max Weber (1934/2003) noted that professions are defined by the power to exclude and control admission to the profession, as well as by the development of a particular vocabulary that is specific to the occupation and at least somewhat incomprehensible to outsiders.

Another early theorist on professionalism, Abbot (1988) identified the medical profession as the prototypical profession. The focus of Abbot's study is the jurisdiction of the professions, the tasks that professionals do, the expert knowledge needed for the accomplishment of those tasks, and the ways in which the jurisdictions and tasks of professions change over time. The fundamental criterion that distinguishes a profession from other occupations is its autonomy, mainly because there is an unusual degree of skill and knowledge involved in professional work and this disqualifies non-professionals from evaluating it (Freidson, 1970). High on the list of professionalism is that professionals need to communicate their expertise to colleagues, to those in other professions, and to the lay public (Geisler, 1994; Norgaard, 1999).

A true professional must be proficient in all criteria for the field of work in which they are practising professionally. Criteria according to Freidson (1970) include following: academic qualifications; expert and specialised knowledge in the field in which one is practising professionally; excellent practical and literary skills in relation to the profession; high quality work performance in required criteria; a high standard of

professional ethics, behaviour and work activities; and, the ability to communicate within and outside of the profession.

2.5.2 Communication in professional education

In a meta-analysis of professional assessments, Lynch, Surdyk and Eiser (2004) studied changes in the ways that professionalism was assessed over a 20-year period (1982-2002). The authors studied assessments of medical professionalism in terms of affective, cognitive, behavioural, and environmental criteria. They identified the following general area themes: ethics, personal characteristics, comprehensive professionalism and affirming diversity. Each of these areas or domains had specific communication requirements, and based on the review, the authors recommended the inclusion of these domains in professional education, as well as the enhancement of the associated communication skills in medical students, resident physicians and practicing physicians (Lynch, Surdyk & Eiser, 2004).

Professionalism and its assessment across the medical education continuum have become prominent topics in medical education. Hilton and Slotnick (2005) considered the nature of professionalism and how it emerges and relates to the work carried out by doctors and doctors-in-training. They suggested six domain areas in which evidence of professionalism could be found and they propose that professional communication is a fundamental part of the professional's evolving knowledge and skills base. Hilton and Slotnick (2005) explained the need for communication meta-skills, and until these skills are achieved the term used during the 'learning' time is 'proto-professionalism'. They proposed that influences on this 'proto-professionalism' time should be considered in the light of the individual's moral, psychosocial development and reflective judgement. They recommend a curriculum that develops communication meta-skills, in turn, will foster the acquisition and maintenance of professionalism (Hilton & Slotnick, 2005).

Van De Camp *et al.* (2004) embarked on a similar meta-analysis to clarify which themes and elements constitute professionalism in medicine. Three consecutive steps were taken:

(a) a systematic search of the literature to identify constituent elements of professionalism mentioned in definitions and descriptions of the concept; (b) analysis of these elements using the constant comparison technique to reveal possible themes covering these elements; and (c) validating the results using an expert panel. Van De Camp *et al.*, 2004 identified a total of 90 separate elements of professionalism in the 57 articles included in the study. Three themes within professionalism were uncovered: (1) interpersonal professionalism; (2) public professionalism; and (3) intrapersonal professionalism, each requiring specific forms of communication. Their findings show that the concept of professionalism is multidimensional, and includes communicative competence in all dimensions (Van De Camp *et al.*, 2004).

Lockyer (2005) reports on a Multisource feedback (MSF) on health professionals who were evaluated by peers, patients and co-workers on key performance behaviours which included communication practices. It was found that interpersonal skills, communication, professionalism, and teamwork were identified as being in need of development and that MSF was an appropriate tool to assess these competencies (Lockyer, 2005). In a similar study, Williams *et al.* (2006) noted the importance of multi-group feedback for the purpose of enhancing the quality of clinical education in diagnostic and radiotherapy departments in the U.K.

With specific reference to radiotherapy, Chapman and Oultram (2007), reporting on a study in Australia, noted that a negative experience in the clinical experiential training of radiotherapy students resulted in student attrition and a loss to the profession, as well as varied clinical experiences. They report on a single government intervention programme at one clinical centre in New South Wales, Australia, designed to enhance the radiotherapy students' clinical experience, where extra practitioners were appointed in clinical education positions in order specifically to address their clinical training needs. These Radiation Therapy Educators (RTE) designed a structured student clinical programme that included orientation, student information packs and tutorials, as well as structured feedback sessions. Chapman and Oultram (2007) report favorable responses from the students as they noted the improved communication, increased confidence in the

skills learned and induction into the team and discipline of radiotherapy. This initial report indicates the need for enhancing the students' clinical experience by means of increased attention to inducting students into the discourse of the discipline of their studies. In a self-assessment exercise, in which radiographers themselves considered the nature of "clinical effectiveness", Upton (1999) found that communication was highly valued.

2.5.3 Communication and the multi-professional team

Professional teams have become central to health care as evidence emerges that effective teamwork enhances the quality of patient care (Fielding, 2008). Currently, health care professionals are poorly prepared by their education for their roles on the team (Fellowes, Wilkinson & Moore, 2003). There is a growing interest internationally in the development of inter-professional education, with the potential goal of achieving more effective healthcare delivery (Carlisle, Cooper & Watkins, 2004; Milburn & Colyer, 2008). With the increasing demand for health care professionals to serve the interests of society and patients through engaging in effective professional partnerships comes the concomitant need for inter-professional communication (Van De Camp *et al.*, 2004; Carlisle, Cooper & Watkins, 2004). There are many barriers that impede the development of professionalism beyond a single frame of reference, of which inter-professional communication is particularly significant (Fellowes, Wilkinson & Moore, 2003).

McNair (2005) reports on an intervention to develop "interprofessionalism" in a pre-registration curriculum that includes understanding the interests, concerns and communication practices of different health care professionals, which should be understood in order to more adequately prepare students for working in health care teams. McNair (2005) argues that inter-professional education should provide appropriate methods by which to learn inter-professional communication, and that this will ultimately contribute to overcoming professional singularity. D'Eton (2004) suggests an approach to the education of health professionals to prepare them for inter-professional teams in which collaborative tasks are staged in levels of difficulty, and in which groups are

trained in a variety of skills, including team work, interpersonal skills, and communication skills.

2.5.4 Radiotherapy, professionalism and communication

As radiation therapy practice evolves with treatment and planning technologies getting more sophisticated, the merging of imaging modalities, working models changing and the advancement to higher education, radiotherapists are frequently finding themselves in the fore front of translating new knowledge into practice (Harnett et al., 2008). The increasingly, sophisticated medical technologies involve radiotherapists in different types of communication – with fellow radiotherapists, with the integrated treatment team, with patients and with radiotherapy students.

The results of a departmental initiative implemented at a large urban cancer centre in Toronto, Ontario, Canada resulted in a new model for radiotherapists, called Advanced Integrated Practice (AIP) that was developed to encourage and promote scholarship within radiation therapy (Bolderston , Harnet *et al.*, 2008). The AIP model incorporated integrated clinical specialty roles designed to blend exemplary clinical practice within an integrated inter-professional team with focused academic activities, including written communication for professional and academic journals (Bolderston , Harnet *et al.*, 2008). Writing for publication has been a neglected area of communication in radiotherapy (Duxbury, 2001). With the drive towards publication comes a range of issues such as: the training of radiotherapists in research methods (Leaver, 2000; Adams & Smith, 2003; Palmer & Bolderston, 2006), the avoidance of plagiarism (Kenny, 2007), involving students in health science practitioner research in an ethical way (Ferguson, Myrick, & Younge, 2006), and so on.

Growing involvement in self-directed original research, with the associated dissemination of completed results, has led to an increasing number of therapists being encouraged to pursue an academic path in addition to a clinical career. Opportunities are increasing for radiotherapists to be able to play a role in developing an evidence-based professional body of knowledge while at the same time being recognised for scholarly endeavours

(Harnett *et al.*, 2008; Jagsi *et al.*, 2007). Promotion in the clinical department can occur with mentorship (Rush, 2001) but in the future promotion could depend upon academic output, in the form of publications (Harnett *et al.*, 2008; Bolderston, Harnett *et al.*, 2008). This situation would be compulsory for those radiotherapists involved in academia at the university level as the movement is towards radiotherapists as scholars in both clinical and academic settings (Harnett *et al.*, 2008; Bolderston, Harnett *et al.*, 2008).

2.5.5 Radiotherapy, professionalism and communication in the South African context

In the South African context, the radiotherapist has the responsibility of being an autonomous professional within a collaborative multi-professional team. In a case study of international students on fellowship studies to a South African higher education institution, Engel-Hills (2007) explores the development of professional expertise in radiographers. Her findings show that professionalism comprises applicable knowledge, clinical and generic competence as well as appropriate behaviour and attitudes.

Wyrley-Birch (2004, 2006) has looked more specifically at communication skills needed for the complex, multilingual environment of tertiary HE academic institutions in South Africa; and then the HE institution combined with the academic hospital environment respectively. She argues that the ability to communicate effectively within the clinical team and with the patient, in the work environment, is a core clinical competence in radiotherapy practice. SAQA expresses communication as a critical cross-field outcome (SAQA, 2000). The HPCSA scope of practice (HPCSA, 2000a) and those of The College of Radiographers' Code of Conduct (Sept, 2004) do not list communication explicitly as part of the scope of practice. However, communication skill and practice is implicit in the in the description of the required practices, such that in order to perform as an effective professional radiotherapist, they are necessary. The HPC of the United Kingdom in the Radiographers' Standards of Proficiency (July 2003), and those of the CAMRT (2007) explicitly express the need for effective communication skills for the radiotherapy practitioner and therefore, for the student.

Each radiotherapist, as a professional, has to develop a repertoire of necessary communication skills (Martino & Odle, 2007; Marshall, Punys & Sykes, 2008).

Each radiotherapist lecturer gathers expertise in both the discipline and pedagogy from different sources as the pathway from novice lecturer through to expert lecturer is negotiated. On this journey from novice to expert, two conclusions regarding expertise can be drawn. Firstly, that expertise is a process, and secondly, that expertise is context dependent (Geisler, 1994; Norgaard, 1999; Bolderston *et al.*, 2005; Bolderston, Harnett *et al.*, 2008).

2.6 A theoretical framework for understanding communication practices in radiotherapy

Winsor (1996) in Norgaard (1999: 47) notes that disciplinary experts “accept the idea that our knowledge is shaped by our language”: similarly, expertise is demonstrated through both practice and language. Expert work requires both knowledge and communication practices. The facilitation of students’ access to knowledge also involves language and communication. The tacit knowledge and values of the professional are likely to become more explicit to the practitioner when he or she needs to facilitate the learning of others (Jacobs, 2007a; Jacobs, 2007b).

Thus in the practitioner’s progression towards expertise the ability to reflect and analyze classroom dynamics and learning is a valuable practice. Allwright and Bailey (1991) describe such a practice in their concept of exploratory teaching. They discuss the importance of the lecturer’s reflections on his or her experiences and emphasize that the understanding of the dynamics of the experiences should be a goal as well as the recalling and discussion of the particular classroom experience. Allwright (2000) develops this concept further in his idea of ‘exploratory practice’ where he suggests that it is an appropriate method for both lecturers and students to engage and deepen their understanding of classroom dynamics as well as in the lessons themselves. Thus, exploratory practice is possibly a further method by which lecturers could seek to enhance and reflect on their development of expertise.

When considering professional communication a number of interrelated aspects emerge. Each practitioner will have varied levels of expertise within each of these aspects

discussed. Professionalism presupposes the practitioner to have mastered the specific knowledge of his or her discipline (Norgaard, 1999). He further notes that expert knowledge is applied in practice, but in the case of educators, it is “transmitted” for undergraduate students who are learning the discipline or the field of their chosen profession. Geisler (1994) argues that expertise can be divided into two distinct components, these being the “domain content” and the “rhetorical process”, or communication practices linked to the “domain content”. Thus in order to attain professional expertise and become a practitioner, a novice or student has to attain mastery of a knowledge-base (content domain) and its associated communication practices (rhetorical process). Professionals who teach have students as a target audience and have the task of inducting the students into the professional knowledge and communication practices required by the profession (Geisler, 1994; Norgaard, 1999). Thus the communication practices of the field of practice comes into play – and in this particular context, both in the radiotherapy workplace and classroom.

Radiotherapy practitioners as educators have another challenge as they have a dual role to perform within their work. The ‘language of learning’ of radiotherapy has multiple components that include technical and medical terminology, the medium of instruction (MOI), the discourse of the academic subjects that form the knowledge base of practice, and the ways of communicating in the field of professional practice. Just as Geisler (1994) suggests that expertise in the discipline is divided into content knowledge and communication practice, so expertise in pedagogy can also be divided into the two components of radiotherapy knowledge (both theoretical, practical, and pedagogical) as well as knowledge and skill in the different communication practices associated with these knowledge areas. Thus, the professional expertise of radiotherapy practitioners, in both the academic and clinical environment, requires them to be master of both the content and the discourse of their profession as well as the necessary pedagogic discourse (Geisler, 1994). Thus the radiotherapy practitioner as educator has a four-fold expertise to master. This is shown in the schematic model adapted from Geisler (1994) by Wyrley-Birch (2006) and illustrated in Figure 2.1.

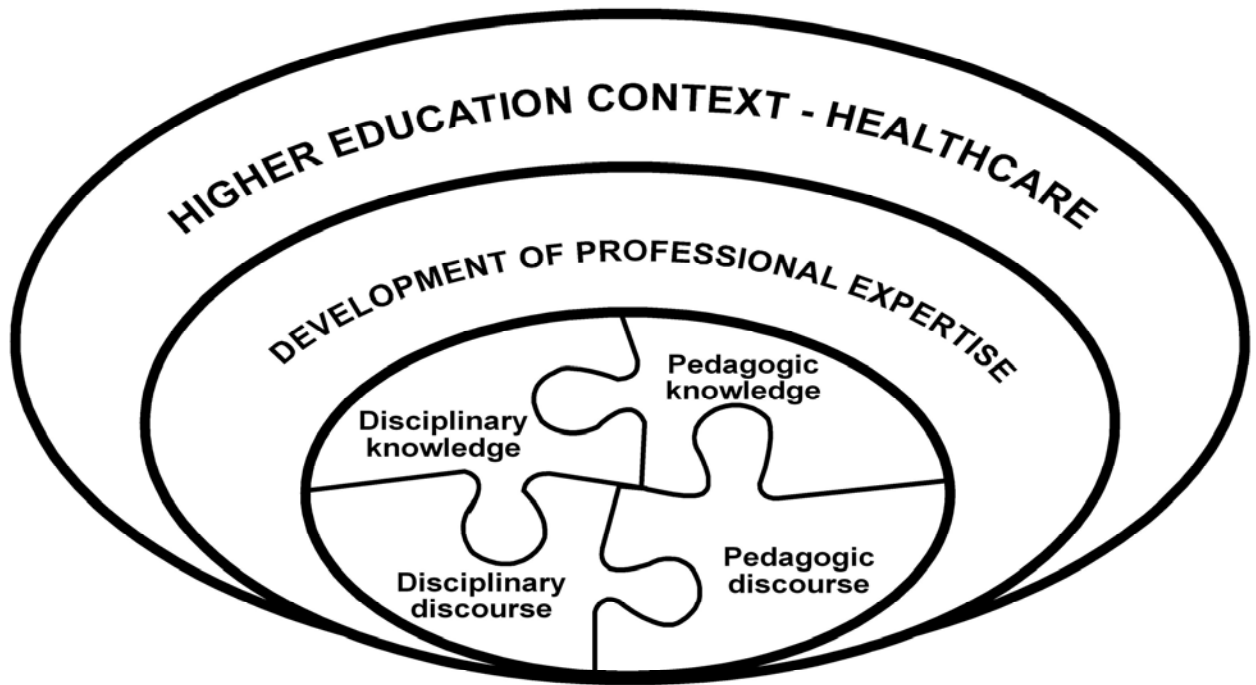


Figure 2.1: A schematic representation of knowledge areas and associated communication practices (adapted from Geisler (1994) in Wyrley-Birch, 2006).

This model illustrates the four-fold expertise required by the health science educator, for example the radiotherapist-educator. The radiotherapist-practitioner is expected to be expert in disciplinary knowledge and disciplinary discourse. The radiotherapist-educator is expected to be expert in both the disciplinary knowledge and discourse and the resultant pedagogical knowledge and pedagogical discourse. Thus the radiotherapist-educator is expected to have the integrated four-fold professional expertise within the higher education healthcare context as illustrated in Figure 2.1.

Professional communication and disciplinary discourses are tacitly understood and practiced by practitioners, from whom the students acquire, tacitly or overtly, the communication practices of their chosen discipline. The acquisition of discourse is dependent upon factors such as the students' and HE practitioners' previous life experiences, cultural context and value systems (Bazerman, 1994; Geisler, 1994; Katz, 2000).

The learning environment plays an important role in the student successfully learning the required professional and academic discourse. The learning context is a social context and the meanings which the student experiences are relevant to that particular context (Bazerman, 1994; Gough, 2000). The students learn to be academically literate within their chosen social and disciplinary context. Gee (1996) refers to primary and secondary discourses, where primary discourse refers to everyday language and transactions and secondary discourse is that which is found within specific contexts that require certain expertise. Gee (1996) notes that there is a continuum between these discourses and that, dependent on context and our 'language interactions', we place ourselves where most appropriate between the primary and the secondary discourse. Students have to learn to place themselves in relation to the secondary discourse of the chosen profession and the practitioners become facilitators in this regard. In this study, the students or novice radiotherapists interact with both expert radiotherapists in the clinical workplace and radiotherapist-educators who attempt to facilitate the learning of the daily communication practices. These communication practices include both the relevant primary and the secondary discourse of radiotherapy.

The next chapter explains the research methodology for studying how a group of expert and novice radiotherapists communicate in the execution of their tasks and in introducing students to the profession and its 'secondary discourses'.

CHAPTER THREE
A RESEARCH METHODOLOGY FOR STUDYING COMMUNICATION
PRACTICE IN RADIOTHERAPY.

I am ... glad I came to watch this...I am really...I was a bit reticent...because I don't like watching myself on video...it's one of those things because the idea and the perception you have of yourself and the way you speak and the way you move and everything you do...is not what is actual...it's a perception you have of yourself and I think when you see a video of yourself it sort of shatters all those perceptions because you've got an idea of you and the way you act and then you see yourself and then you realise I don't speak the way I think I speak in the mind it sounds like one thing but when you hear it sounds like a different thing and also the way you look etc etc your reactions etc...you never see yourself...its other people seeing you all the time (P1, 22/06/2006, A2).

3.1 Introduction

This chapter explains the research design and data collection and analysis methods used in this study. The research design and selection criteria and procedures are explained, before the data collection procedures and data analysis methods are described. Issues around the validity and reliability of the data are then addressed, and ethical considerations explained.

The research question of this study is: "What are the communication practices of radiotherapists in their professional practice and as higher education teachers?" This research question can be broken down into four sub-questions, as follows:

1. What constitutes communication in clinical radiotherapy practice?
2. What constitutes communication in radiotherapy educational practice?
3. How do practitioners use communication strategies to induct student/novice radiotherapists into professional practice?
4. What is the relationship between professional communication and professional expertise in radiotherapy clinical and educational practice?

3.2 Research design

The research design involved observations of the communication practices of radiotherapists and senior radiotherapy students engaged in a series of related tasks that were selected as being representative of clinical radiotherapy practice and senior level radiotherapy education. Authentic communication in clinical radiotherapy practice and in the teaching of final year students takes place across different sites: in practical demonstrations, tutorial discussions, formal lectures as well as in the professional, hospital-based activities of radiotherapists in collaboration with an integrated treatment team. The research design therefore needed to enable the capture of authentic communication practices across a range of representative tasks at different sites.

A case study approach was chosen as the most appropriate research strategy for capturing authentic communication practices. A case study “is an empirical inquiry that investigates a contemporary phenomenon within its real-life context” (Yin, 2003:13), where both the phenomenon and the context are closely connected. The phenomenon to be explored in this study is the communication of radiotherapists in clinical and educational practice. In this regard, there are specific and defined contexts: clinical, classroom, tutorial, and demonstration room.

When reporting on a case study, detail and immediacy are required to “take the reader into the setting with a vividness and detail not typically present in more analytic reporting formats” (Marshall & Rossman, 1999: 159). The research design thus needs to be “emergent and flexible, responsive to the changing conditions [because] the goal is to understand the phenomena from the viewpoint of the participants” (Palmer & Bolderston, 2006 :16). This “situationality” requires rich, textured data which can be interrogated and analysed within a real-life and real-time environment using grounded research methods (Strauss & Corbin, 1998).

Yin (2003) explains that case studies, when used as a qualitative research tool, could be exploratory, descriptive or explanatory in nature, and that areas of commonality may exist. Different types of case study are more appropriate to different types of research

question. Yin suggests that explanatory case studies generally would address “how” and “why” research questions, while exploratory case studies would tend to address “what” research questions (2003, 5-7). This research intended to develop a rich description of radiotherapy communication practice, which would require an exploratory case study approach. However, in-depth interpretation of expert work communication practice was also required. Following Yin’s guidelines, the case study approach selected was predominately exploratory in nature with elements of the explanatory approach.

Babbie & Mouton (2001) characterise case studies as ethnographic research that is qualitative, empirical, exploratory and descriptive in nature. Mouton (1996) also notes that case studies provide an in-depth description of a small number of events or organisations in specific communities. Although Mouton does not specifically mention the health sciences as a “community”, the radiotherapy profession could be said to constitute a “community of practice” (Wenger, 1998) with its own communication needs and practices. Yin notes that “the case study is preferred in examining contemporary events, but when the relevant behaviours cannot be manipulated” (2003, 7); this is the motivation for the type of case study (i.e., exploratory with some explanatory elements) used in this study of the communication practices of radiotherapists in their clinical practice and as higher education teachers.

3.2.1 The role of case studies in qualitative health science research.

Case studies are commonly found in the health sciences in the form of descriptive clinical case studies and teaching exemplars. Case studies can describe and explain specific clinical conditions, often in hypothetical scenarios (Stjernquist & Crang Svalenius, 2007). Case studies are commonly used to illustrate and to describe clinical practice in both oral presentations and journal publications.

Although there is not much information with regard to case studies as a research strategy in the health science research methodology literature, there are some notable exceptions (Grbich, 1999). Case studies as a health science research methodology are described by Brink, van der Walt and van Rensburg (2006: 110) as being “an in-depth study of one

individual, a group of individuals or an institution” which is predominately descriptive in nature. Brink *et al.* (2006:116) state that “a case study is frequently used when there is a new phenomenon about which not much is known”. Yin (2003: 2) claims that the distinctive need for case studies arises out of the desire to “understand complex phenomena”.

3.2.2 Motivation for qualitative research in the health sciences

Recent journal literature in radiography world wide (Polger & Thomas, 2000; Adams & Smith, 2003; Brink, van der Walt & van Rensburg, 2006; Grbich, 1999; Ng & White, 2005; Palmer & Bolderston, 2006) is beginning to show the use of qualitative methodology to explore radiographic practice and clinical education. Adams and Smith discuss the need to increase research in radiography and suggest that “there is considerable potential for the sustained use of qualitative methodologies in radiography research to more clearly define what radiographers do and how they do it” (2003: 193-194). Adams and Smith focus on three areas suitable for qualitative research study: “intra-professional issues”, “inter-professional issues” and “clinical practice, patient and health delivery issues” (2003: 195-198). The communication practices of radiotherapists include all three of the areas recommended for qualitative research. A qualitative approach is therefore appropriate for this study of radiotherapy communication: what it is, how it is used and applied, and how it relates to professional expertise in radiotherapy.

3.3 Selection criteria

The case study in this research comprised a series of related events within a complex radiotherapeutic intervention involving the treatment planning procedures necessary for the head and neck area. This involved the selection of specific events in the overall intervention, the selection of sites at which different elements of the intervention occurred, and the selection of participants to be observed, video-recorded and interviewed. The selection processes are described below.

3.3.1 Selection of events

Events were selected to be representative of complex radiotherapeutic practice. The range of activities of radiotherapy planning was chosen as those that involved patients who were to have radiation treatment planning to the head and neck area. Specifically, the planning of a radiotherapeutic intervention of the head and neck area was chosen as it represents a complex series of tasks that range from the positioning and immobilization of the patient to the localisation of the target treatment area, using multiple imaging modalities, to the eventual three-dimensional target volume planning. These tasks represent a complex range of activities and professional expertise that the radiotherapy practitioner has to display in the workplace and is itemised in the scope of practice (radiotherapeutic) (HPCSA, 2000b). Related education events, in which academic radiotherapists and clinical educators facilitated students' learning were also selected to include the educational range of communication practices. The areas of communication practice chosen for detailed study are as follows:

- Patient and radiotherapy practitioner interactions in the clinical environment;
- Inter-professional interactions between the treatment planning team members in the clinical environment;
- Student and radiotherapy educator interactions in the classroom and in demonstrations;
- Student and clinical radiotherapy practitioner interactions in tutorials and practical demonstrations.

The researcher followed radiotherapy practitioners and their students in events described above, which were selected to illuminate the daily communication practices of the participants as they moved between different contexts: from the classroom lecture to the practical demonstration and thence, into the clinical radiotherapy department. This is illustrated in Figure 3.1.

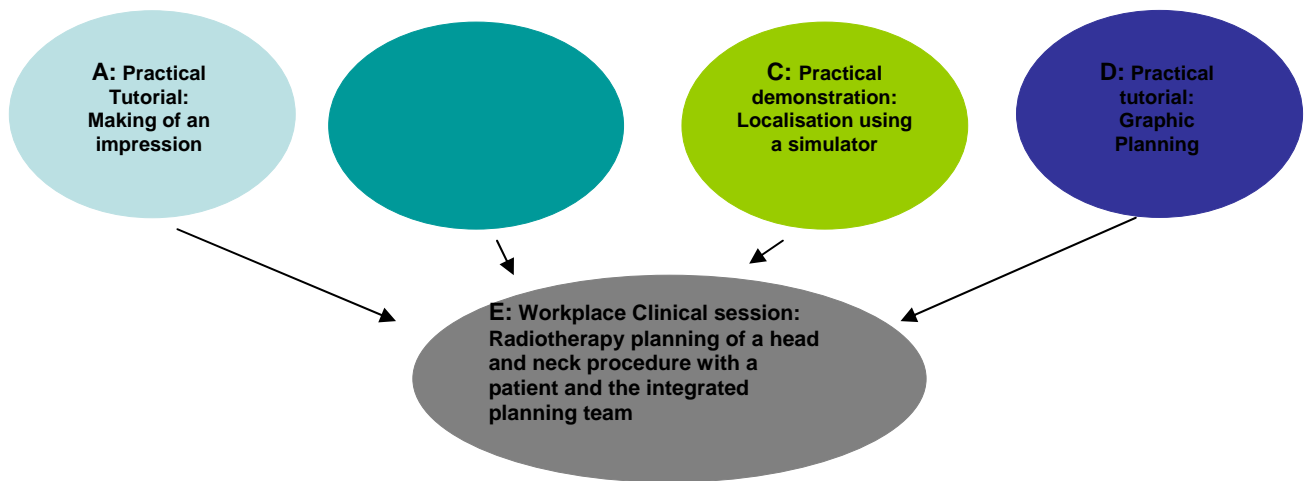


Figure 3.1: Graphic presentation of classroom and workplace teaching interactions culminating in the ‘real’ clinical workplace planning procedure with a patient and the radiotherapy treatment planning team.

These elements of working life are unique to radiotherapy and can be studied in detail through the methodologies described in sections 3.4 and 3.5.

3.3.2 Site selection

Radiotherapists practise in a range of sites/contexts which include clinical departments, meeting venues, classrooms, tutorial rooms, and practical demonstration venues. While radiotherapy practice tends to take place in the clinical environment, radiotherapy students’ learning takes place in both the clinical and classroom environments. With regard to the students, practical demonstrations, clinical observations, and experiential learning tend to take place within the clinical environment, while the more formal, theoretical learning occurs predominately within the “classroom”. There is an expectation that the students should integrate the theoretical knowledge gained into their experience within the clinical work environment in their pursuit of professional expertise. The chosen range of tasks, listed briefly in 3.3.1, were selected for the rich data about clinical practice, and the appropriateness and relevance to the study of the communication practices of radiotherapists as clinical practitioners and as educators. For the reasons outlined above the sites selected were a joint higher education and tertiary hospital campus and the Radiation Oncology department of the hospital.

3.3.3 Selection of participants

Purposive sampling was done, which requires the researcher to select deliberately research participants that represent and are able to participate in the phenomena to be investigated (Katzenellenbogen, Joubert & Abdool Karim, 1997; Brink, van der Walt & van Rensburg, 2006).

Integrated treatment team members

In addition to the clinical educators and academic radiotherapists and students, the integrated team included a radiation laboratory (mould room) technologist, a radiation oncologist, oncology registrar and radiotherapists responsible for the necessary imaging procedures. Not all of these participants were present at all events.

Clinical practitioners/clinical educators

Four hospital-based practitioner-radiotherapists, who were responsible for the teaching of a variety of planning procedures involved in the radiation treatment of the patients, participated. One of these radiotherapists was part of the integrated treatment team. As the site selected was a teaching hospital, the four radiotherapy practitioners also had a responsibility towards the training of students in the skills needed to complete the selected activities competently. The interactions occurring between students, radiotherapy practitioners/clinical educators and the planning team were observed and recorded.

Academic radiotherapists

Included in the integrated treatment team were one full-time radiotherapy lecturer and one part-time radiotherapy lecturer (who was also one of the four radiotherapists described above). The communication practices of the academic radiotherapists in the integrated team meetings and in the classroom and other sites of learning were studied. Radiotherapy lecturers are expected to be in possession of a professional qualification, usually a four-year degree and, increasingly, a Masters degree in radiotherapy.

In addition, radiotherapy lecturers would be expected to have clinical, as well as academic expertise. Academic radiography departments are aligned to an academic

hospital and lecturers move between the clinical and classroom environments.

Qualifications and years of experience as a practitioner define the level of expertise of a radiography lecturer. Because they practice within the clinical environment in South Africa, they must be registered and fulfil the statutory requirements of being up-to-date and gaining continuous professional development (CPD) points within their profession. They must register annually with the statutory registration body, the Health Professions Council of South Africa (HPCSA) which registers radiographers for clinical practice in South Africa. Table 3.1 describes the radiotherapists who were participants in the study:

Table 3.1: Clinical and academic radiotherapy research participants

Practitioner	Practitioner code	Occupation	Qualification	Gender	Experience (years)
Practitioner 1	P1	Radiation laboratory technician	SAMDC	Male	> 10
Practitioner 2	P2	Part-time radiotherapy lecturer	NDTHER, BTECH (Radiotherapy), BTECH (Post school education)	Female	9
Practitioner 3	P3	Radiotherapy lecturer	NDTHER, BTECH (Radiotherapy)	Female	8
Practitioner 4	P4	Radiotherapist	NDDIAG, NDTHER, HDTHER.	Female	>25
Practitioner 5	P5	Radiotherapist	NDTHER	Female	12

Selection of students

The whole class of ten third year students were selected for the study. It was rationalised that third year students being senior students/novice radiotherapists would be able to be “legitimate peripheral participants” (Lave & Wenger, 1991) in the complex tasks involved. As it was necessary to include a high level of difficulty in the tasks in order to produce authentic communication, this made the selection of senior students/ novice radiotherapists suitable and thus excluded introductory level students. (See below under

“Delimitation” for additional reasons for the exclusion of introductory level students and their basic induction into medical and technical terms).

The students are referred to as “novice radiotherapists” in workplace sites where they are working under the supervision of the radiotherapist, but as “senior students” when they are being more formally trained in the classroom context. Table 3.2 describes the student participants in the research activities.

Table 3.2: Student research participants

Student	Student code	Qualification level	Gender	Home language
Student 1	S1	1 st Qualification, NDTher	Female	English/Afrikaans
Student 2	S2	1 st Qualification, NDTher	Female	English
Student 3	S3	2 nd Qualification, NDTher	Male	Luganda
Student 4	S4	1 st Qualification, NDTher	Female	English
Student 5	S5	1 st Qualification, NDTher	Female	Xhosa
Student 6	S6	1 st Qualification, NDTher	Female	English/Afrikaans
Student 7	S7	2 nd Qualification, NDTher	Male	English/Afrikaans
Student 8	S8	1 st Qualification, NDTher	Female	Seswati
Student 9	S9	2 nd Qualification, NDTher	Male	English/Afrikaans
Student 10	S10	2 nd Qualification, NDTher	Male	Kiswahili

3.4 Data collection and production

The rationale for data collection was to enable the capture of authentic communication practices in radiotherapy planning activities, as described in section 3.3 above. Yin (2003) identified multiple sources of evidence in case studies:

- Documents
- Archival records
- Interviews
- Direct observation
- Participant-observation
- Physical artefacts

In the description given below, it will be seen that most of the forms of evidence described above provide the primary sources of case study data in this research.

3.4.1 Data collection: authentic communication practices

The primary source of data for this study was derived from observations of the areas of communication practices described in 3.3.1 and previously illustrated as Tasks A – E in the ‘balloon’ graphic in Figure 3.1. Authentic exemplars of communication practices from the different events (planning, teaching, demonstrating) at the different sites of practice (classrooms, practical demonstration venue, tutorial in workplace etc) were captured for detailed study. Video recording was not permitted in the clinical environment (see “Ethical considerations” 3.8) and where events were observed with a patient and the integrated treatment team (Task E) in the clinical setting, observation charts (Appendix A and B) and field notes (Appendix B has some samples of Task E) were used. In other cases, the events were video-recorded and field notes taken for use (Appendix B has some samples of Task A to D). Snapshots taken from the video recordings, with the participants’ permission, illustrate Task A (see Appendix F), Task B (see Appendix E) and Task D (see Appendix G).

Data was gathered from three sources of interactions:

1. Student and educator and radiotherapy practitioner interactions
2. Patient and radiotherapy practitioner interactions
3. Professional interactions between treatment planning team members.

All participants gave their written consent before each task or interaction was observed and recorded. These authentic exemplars could then be analysed, following the procedures for analysis of verbal data in 3.5.

3.4.2 Data production: interviews

Additional data production comprised discourse-based interviews (Odell & Goswami, 1985) which enabled the research participants to explain, further elaborate and generally reflect on their communication practices, using the videos of the interactions as points of reference in the interviews. Videotaped clinical encounters allow students to review their own behaviour and make specific comments supported by tangible examples. Zick, Granieri & Makoul (2007:161) note that “an open-ended approach to self-assessment of communication skills can serve as one important component of a systematic education and evaluation program” and this approach of data production allowed all the research participants the opportunity to reflect on and evaluate their performance and perceptions of each interaction.

Interviews were done with all the research participants to ensure triangulation of the observational data and to facilitate triangulation across the interview data. For example, if at interview a clinical educator felt that a particular communication practice was helpful to students, the students’ opinion on the communication practice would be elicited. All interviews were semi-structured specifically to allow participants to express themselves freely; at the same time participants were asked to comment on and discuss specific themes and interactions occurring within the video footage of the above interactions (Bernard, 1995; Babbie & Mouton, 2001).

The themes that each interviewee was asked to respond to included:

1. The instances of communication that made this tutorial/demonstration/lecture work for you? Why did this work? What didn't work? Why?
2. The instances of communication that are examples of professional communication.
3. The instances of professional language.

Each interview was conducted in English and recorded on audiotape and then transcribed.

In cases where the participants were video-recorded, they were asked to watch the video of the entire proceedings of the tutorial/demonstration/lecture, which acted as a stimulus to memory. They were asked to write down notes pertaining to the above themes while watching the video. After viewing the video recording they were interviewed about specific communication events. Particular video clips could be accessed and viewed again within the interview. Discourse-based interviews of between 40 minutes – one and a half hours were conducted with both practitioner and student research participants in separate interviews.

The sources of data, and the system developed to identify the participant, the event, and date of interview are summarised in the Table 3.3:

Table 3.3: Data sources and abbreviations used in the findings

Participants	Participation abbreviation	Interview date and code	Event	Event abbreviation
Practitioner 1	P1	22/06/2006, A2	Mould room impression	A
Students 1 - 10	S1, S2, S3, S4, S5, S6, S7, S8, S9, S10	13/06/2006, A1 (S6, S8, S9 in interview)	Mould room impression	A
Practitioner 2	P2	17/07/2006, B2	Lecture: plan analysis	B
Students 1 - 10	S1, S2, S3, S4, S5, S6, S7, S8, S9, S10	22/08/2006, B1 (S2, S3, S6, S7 in interview)	Lecture: plan analysis	B
Practitioner 3	P3	01/08/2006, C2	Simulator demonstration	C
Students 4, 5, 7 & 9	S4, S5, S7, S9	03/08/2006, C1 (S4, S5, S7, S9 in interview)	Simulator demonstration	C
Practitioner 4	P4	22/06/2006, D2	Graphic planning software tutorial	D
Student 8	S8	23/06/2006, D1	Graphic planning software tutorial	D
Practitioner 5	P5	06/12/2006, E2	Integrated treatment team planning procedure with patient	E
Student 4	S4	30/11/2006, E1	Integrated treatment team planning procedure with patient	E

3.5 Data analysis

In order to accomplish an analysis of the highest quality, Yin suggests four principles:

1. Show that the analysis relied on all the relevant evidence;
2. Include all major rival interpretations in the analysis;
3. Address the most significant aspect of the case study;
4. Use the researcher's prior, expert knowledge to further the analysis (2003: 137).

The unit of analysis for this study is the communication practices of radiotherapists both within the classroom and the clinical workplace. Tellis (1997: 5) notes that the unit of analysis is critical in case study analysis and that "it is typically a system of action rather than an individual or group of individuals". Data was collected from five events (see figure 3.1) covering the communication practices of the participants in the interactive events as described in Section 3.4 above. The data collection and production process resulted in the capture of observational and verbal data in the form of video-records, observation charts, and field notes. In the following sections the data analysis processes

for the different forms of data are explained, and attempts were made to meet the criteria outlined by Yin (2003) above.

3.5.1 Analysis of observational data

The observational data was captured in the completed observation schedules, field notes and video-recordings. All these documents were studied for recurring patterns and trends. Research participants who had been video-taped were included in the discussion of the data to accommodate possible “rival interpretations” of the data. All interpretations were noted and compared with the coding and production of categories in the verbal data in 3.5.2. The video recordings contained verbal data, which were analysed as described.

3.5.2 Analysis of verbal data

Verbal data was obtained from both video and audio recordings. This data was transcribed, using a standard transcription methodology (Byrne, 2001; Mellion & Tovin, 2002). The transcriptions were then studied for the participants’ keywords to identify the most significant aspects of communication practice. Trends were noted and then coded by the researcher (who has expert knowledge of the radiotherapy field). There were three levels of analysis:

- Level 1: open coding, which established an initial ten categories of “concepts that stood for phenomena” (Strauss & Corbin, 1998: 101). The “phenomena” being the instances of communication practice by the participants;
- Level 2: axial coding, the process of relating “categories to their sub-categories” (Strauss & Corbin, 1998: 123) in which three final categories were identified. Here the ten categories were re-assessed to see their ‘big’ category and as such three final categories were identified: intra-professional, inter-professional and extra-professional communication;
- Level 3: the range of variability, with “variation being built into the theory by sampling for diversity and ranges of properties” (Strauss & Corbin, 1998:

143). At this level, the analysis further identified and clarified the genre and register of the communication practice;

- Standard coding procedures and protocols were used (Geisler, 2003) and content thematic analysis was done using a grounded approach (Strauss & Corbin, 1998: 143). Analytic categories were then developed in level 2 analysis as discussed above, which enabled a more detailed study of the characteristics of radiotherapists' communication practices in terms of the formal and informal register of the practice. A further sub-category of technical communication, specific and non-specific to radiotherapy communication practice, was identified at level 2 and level 3 analyses.

3.5.3 Overview: Detailed research design

Having discussed the overall research design, selection criteria as well as data collection and analysis methods, it is now possible to diagrammatically represent the entire research design in Figure 3.2 schematically.

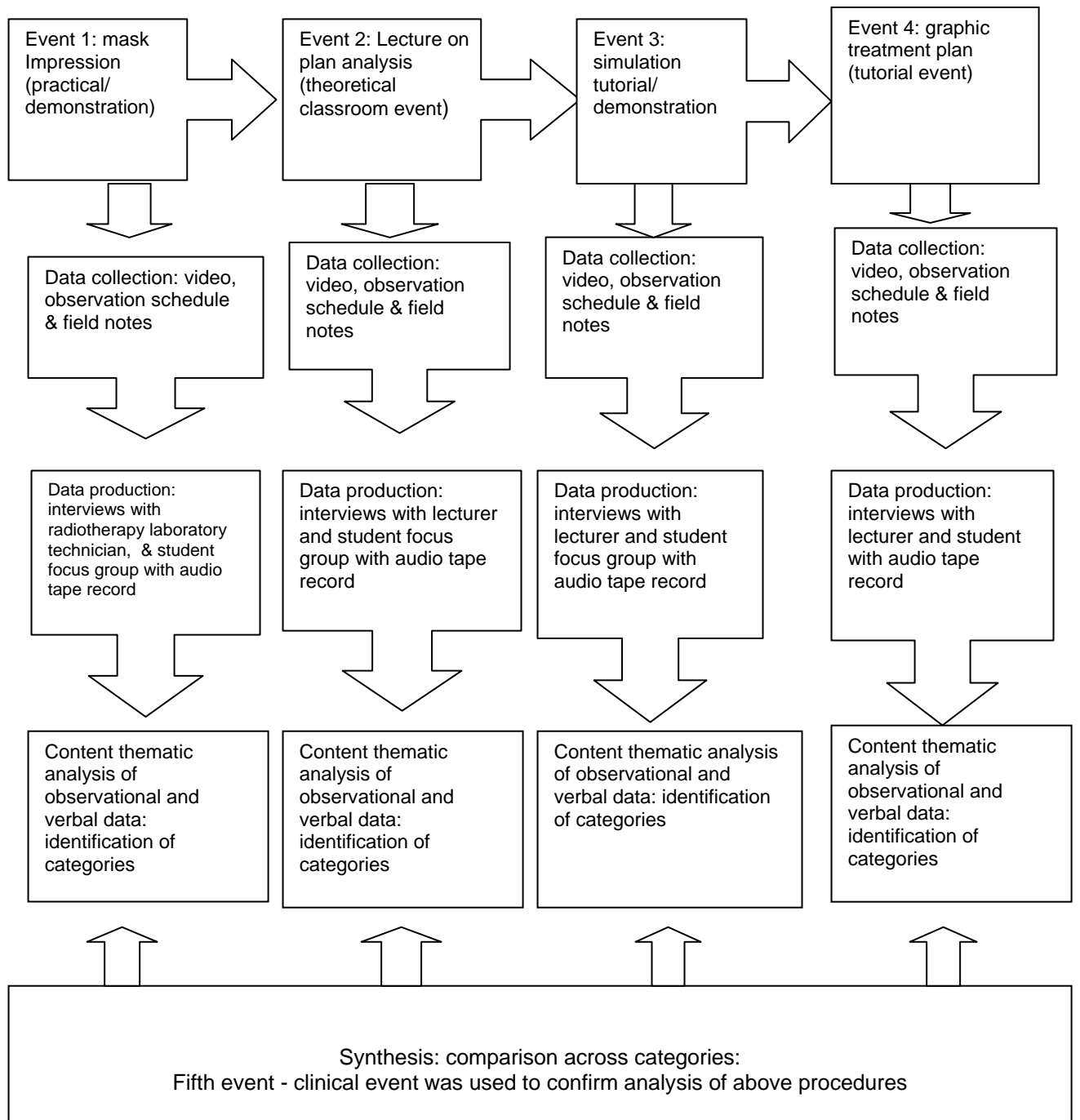


Figure 3.2 A schematic representation of the research design

The above diagram illustrates the progression of events 1 – 4, and the forms of data collection, production and analysis which comprise the research design. There was a fifth event, the clinical event, in which the radiotherapist with her senior student and the

integrated treatment team, planned a patient's treatment. All of the above procedures were reflected in event 5. This event consisted of interactions over a week. The initial three procedures – impression and the localization imaging (simulation and CT scan) could not be video-recorded as the patient was present and only audio-recording and field notes were allowed. The graphic planning process was video taped as only radiotherapist and student were present and the patient confidentiality could be maintained. Both radiotherapist and student involved in this clinical interaction were interviewed post-observation.

3.6 Validity and reliability of the data

The quality of case study data should be judged in terms of four criteria: construct validity, internal validity, external validity and reliability (Yin, 2003: 34-39; Brink, van der Walt & van Rensburg, 2006: 118 - 119).

3.6.1 Construct validity

Construct validity refers to the consistency of the environment in which the research takes place. Yin raises concerns as to the possibility of showing construct validity within case study research as the environment might not be accurately shown in accordance with the research questions raised (2003: 35-36). Yin proposed three remedies to counteract this: using multiple sources of evidence, establishing a chain of evidence, and having a draft case study report reviewed by key informants (Yin, 2003: 35). Construct validity was addressed in this study in the following ways: multiple sources of evidence were used: data was obtained from different events, different sites, and from different participants. Attempts were made to establish a 'chain of evidence'. For example, if at interview, a clinical educator felt that a particular communication practice was helpful to students, the students' opinion on the communication practice would be elicited and vice-versa. Wherever specific comments and statements could be verified they were by using interviews and transcriptions, the video footage and the final clinical interaction in the clinical workplace which took place after the initial four interactions. The video recordings were viewed by interview participants and the research findings were made

available to the participants as a form of ‘member check’. Brink *et al.* (2006: 118 - 119) note that ‘member checking’ enhances the credibility of the study.

3.6.2 Internal validity

Internal validity is a concern in causal or explanatory cases. This is usually a problem of ‘inferences’ in case studies, and can be dealt with using pattern-matching, which has been described in section 3.6.3. Brink *et al.* note that both credibility and authenticity are aspects looked for in qualitative studies to establish internal validity (2006: 118 - 119). Authenticity was established by comparing the four interactions taught and demonstrated with a real life interaction in the clinical workplace and checking emerging themes against the authentic clinical practice. Credibility includes ‘member checking’ and using data from a variety sources and searching for points of convergence, therefore, triangulating the data (Brink, van der Walt & van Rensburg, 2006: 118 – 119; Leedy & Ormrod, 2005, 136 - 137).

3.6.3. External validity

External validity deals with the generalisability or transferability of the research results beyond the immediate case. Campbell (1975) described ‘pattern-matching’ as a useful technique for linking data to the propositions made and thus enhancing the external validity of the case study. Campbell further notes that pattern-matching relates several pieces of information from the case-study to the postulated theoretical proposition. In this research study, a standard coding system was used as a pattern-generating technique. Tellis (1997: 3 - 4) notes that using multiple cases can validate results by allowing further pattern-matching in multiple and different sites. Thus by the use of multiple cases the confidence in the robustness of the theory to which the results are generalised is increased (Tellis, 1997; Yin, 2003). While a single case study is the basis of this research design, the study extended over various events and sites, thus enhancing the transferability of the findings.

3.6.4 Reliability

Reliability is achieved in many ways in a case study. One of the most important methods is the development of the case study protocol and employing consistency in its application (Yin, 1994; Brink, van der Walt & van Rensburg, 2006). A case study protocol contains more than the research instruments, it should also contain procedures and general rules that should be followed in using the instrument. A typical protocol should have the following sections:

- An overview of the case study project (objectives, issues, topics being investigated)
- Field procedures (credentials and access to sites, sources of information)
- Case study questions (specific questions that the investigator must keep in mind during data collection)
- A guide for case study report (outline, format for the narrative) (Yin, 1994: 64).

An overview was developed to explain the general topic of inquiry and the purpose of the research. The field procedures in this study mostly involve data collection issues. During the open-ended interviews the observation records and schedules dictated the direction of the interview. Gaining access to the clinical environment, applying research protocols while in the field, clearly scheduling data collection activities, and providing for unanticipated events, were all done to ensure the reliability of the data collected and produced in this study.

3.6.5 Declaration of positionality

Potential investigator subjectivity has been highlighted in case study research, but Yin points out that in case study research the investigator does not control the data collection environment as in other research strategies (Yin, 2003: 35). Yin asserts that a case study investigator must be able to operate as a senior investigator during the course of data collection. This is an important factor to bear in mind, which has both advantages and disadvantages for the research design.

Single-case studies, as in the current study, are ideal for “revelatory cases” (Tellis, 1997)

where an observer may have access to a phenomenon that is not that obvious or inaccessible. Tellis (1997) notes that it is essential that a single-case study needs careful methodology design in order to ensure authentic data and to allow the researcher to observe true evidence. Tellis (1997: 6) states that case-studies can be holistic and reflect a broad picture of the phenomenon under investigation; or, the case-study can be embedded within the phenomenon being investigated. Tellis (1997: 6) notes that the embedded case study occurs when, within the same case study, more than one unit of analysis could be involved.

The principal researcher, and author of this thesis, is a lecturer and colleague of the research participants. The researcher observed the five primary events, video-recorded the data, completed the observation schedules and took field notes. The researcher also interviewed the research participants and transcribed and analysed the data.

Research procedures and protocols become all the more important in the reduction of research bias. The consistent application of accepted methodologies, such as those described in sections 3.4 and 3.5 helped to limit researcher bias; while the researcher's knowledge of the context, and previous research, enabled the purposive sampling and ensured a high level of trust in the interviews.

Ferguson *et al.* discuss the need for health science educators to be careful that their students are volunteers and are comfortable participants in research studies (2006, 705 – 706). The ethical issues of potential 'conflict of interest' and privacy of participants must be acknowledged and the trust between teacher and student needs to be maintained when in-house research is undertaken (Ferguson, Myrick & Yonge, 2006, 705 – 706). The informed consent process of all participants emphasised the voluntary nature of participation in the research. All interactions researched were part of the usual planned teaching programme for the year and likewise within the clinical programme for the final year novice radiotherapists. Confidentiality of the data collected and produced was discussed within the bounds of the consent process. Ethics considerations are further discussed in section 3.8.

3.6 Delimitations

This research study is delimited to professional and novice practitioner levels of practice. The communication practices study did not involve basic communication or the teaching of introductory level students. In a previous study (Wyrley-Birch 2006), the researcher investigated basic-level communicative competence in the radiography classroom, which involved strategies for the introduction of medico-technical terminology, for the development of conceptual abstraction and academic literacies. In order to accomplish complex tasks, radiotherapy senior students are required to have mastered both the terms and the concepts with regard to human anatomy and the pathologies relevant to their work. The focus of this research study is on high-level professional radiotherapy and the communication practices associated with this.

3.8 Ethical considerations

Ethics permission for the data gathering was obtained from the relevant research ethics committees of both the higher education institution and the academic teaching hospital involved (Appendix C). Written informed consent (Appendix D) was discussed and taken from all participants before each task and for the subsequent interviews. The consent forms (Appendix D1 to D4) were designed in English and translated into Afrikaans and Xhosa. These three were the most common regional languages at the site of study and thus it was necessary for ethical purposes to have a consent form in the required language of choice for the participants, patient, and radiotherapist. The informed consent form made mention that the data collected and produced would be used in the writing of this thesis and possible publications resulting. Participants were assured that confidentiality would be maintained for purposes of the thesis and publications. During the process of member checking (see 3.6.2 to establish internal validity of research) the researcher asked the participants shown in the snapshots of Appendices E, F and G permission to use the snapshots with their faces blocked out as illustrations for this thesis only. All participants agree as they felt this hid their identity sufficiently.

Ethical principles adhered to guidelines from the relevant research ethics committees of both the higher education institution and the academic teaching hospital. These principles are based on national and international guidelines (Department of Health, Republic of South Africa, 2004; Abratt, 2001; World Medical Association Declaration of Helsinki, 2004).

3.9 Link to next chapters

In the next two chapters, chapter four and chapter five, the research findings are presented and discussed.

In Chapter four the findings of the communication practice in the radiotherapy workplace are presented and discussed. In this chapter the nomenclature referring to the participants will be novice radiotherapists (or senior students) and radiotherapist (or practitioner). The researcher feels this is appropriate as this chapter reports the findings of professional communication in clinical radiotherapy practice.

In Chapter five the findings of the pedagogical communication practice in the classroom and workplace, the 'virtual' classroom are presented and discussed. In this chapter the nomenclature of the participants will refer to senior students and radiotherapist-educator or educator or lecturer because this chapter reports the findings of pedagogic professional communication in radiotherapy practice.

CHAPTER FOUR

FINDINGS: PROFESSIONAL COMMUNICATION IN RADIOTHERAPY

Being diagnosed with a disease like cancer will be difficult on any patient...now us as radiographers we always have to bear in mind that we have to treat our patients with understanding...with respect to the far as our ability... I know sometimes that we can say, the patient...some people will say.. the patient is being difficult...If we really think about it...put ourselves in that patient's shoes...the patient is not being difficult... because we were never in that situation, so the patient is not being difficult...the patient is just being the patient which is fine...who has just been diagnosed with cancer which is now a life threatening illness...so that's how you can understand if the patient comes with a complaint here or questions many times...many times people don't have answers for it but I feel that as radiographers we have to make time to answer the patient's questions and that's our first priority...to answer our patients...to treat our patients with dignity and respect and always to treat our patients...the more comfortable the patients are...the better they are...like when I'm working on the machine ... you'll get the really uncomfortable patient and you'll get the comfortable patient... the uncomfortable patient will come in ...really, really moody...it's like they're forced to be there in a sense... whereas the comfortable one will come in... 'morning' and speaking and everything is at ease...the patient goes into the room and the setup is much easier ...everything is at ease because the patient is more comfortable which is our responsibility to make our patients feel like that...that is not the patient's responsibility...why is the patient uncomfortable when they get in there? We don't know if its personal problems or you don't know if its problems that the patient has on the machine now....so it's our responsibility to find that out...that is what I feel...it will make us better radiographers (S6, 13/06/2006:A1).

4.1 Introduction: radiotherapy communication in the workplace

This chapter presents the findings of this research with regard to the communication practices of professional and novice radiotherapists in the clinical environment. A number of clinical procedures and interactions were observed in the workplace and were followed by interviews conducted with senior radiotherapist-practitioners and novice radiotherapist participants of each interaction, as described in the previous chapter. The verbal data from each interview was analysed and the thematic categories identified in the coding. The analysis processes are presented and discussed in this chapter.

It is important to note that in describing their own language practices, radiotherapists and students (as novice radiotherapists) tend to categorise their language using broad-based terms, such as “professional” or “everyday”. For example, one of the radiotherapists interviewed described “professional language” as comprising terms such as “the isodose curves, wedges, field arrangements, primary beam, beam placement, photon, orientation of plan, posterior, anterior, cord tolerance...” (P2, 17/07/2006, B2). The coding process chosen categorised the above as “technical” communication which may be seen as one aspect of professional communication in radiotherapy. Students similarly identified professional communication as dependent on “the terminology ... used” (S7, 22/08/2006, B1). The analysis process further divided the category, “technical communication” into additional sub-categories such as formal technical communication and informal technical communication. Thus, the thematic category of technical communication with formal and informal elements that emerged from the coding process has provided an enhancement of the radiotherapists’ and students’ perceived language categories of either “professional” and “everyday”.

Although both professional and novice radiotherapists found it difficult to define what they meant by “professional communication”, they were very clear on what was not professional, as a student explains:

Another thing [that] I’ve picked up and I’ve unfortunately I’ve been guilty of this...you get ...people making a cast...standing around a patient...the cast is almost done and they talking about stuff that’s not work related...the language used is not professional...it’s got nothing to do with work...the patient might not be able to hear what you’re saying but the patient could be...it’s possible...you’re standing there and I think that is one of the aspects where you should be... practicing your professional or your professionalism...I think that is really unacceptable for...any health professional to that in front of a patient (S9, 13/06/2006, A1).

Students in this particular focus group interview (13/06/2006, A1) generally spoke about the importance of good patient communication and the importance of professional behaviour at all times. Several students acknowledged with admiration that the practitioner's communication method and manner was professional towards both themselves and the hypothetical patient under discussion in their tutorial.

It should also be noted that in the observations and interviews, a single section of dialogue or explanation often contained more than one category. This means that a piece of authentic verbal data might contain an exchange with a medical practitioner that also involves a patient. Such verbal data could be used to illustrate both the "radiotherapist-integrated treatment team" and the "radiotherapist-patient" categories of communication. Similarly congruency occurs in the participants' explanations of how language is used in practice. The separation of the verbal data into categories is thus understood to be primarily for the purpose of analysis and understanding, because in the actual clinical environment these categories are usually integrated in a variety of formats.

The thematic categories identified through the process of analysis are described and explained in this chapter. The first sections (4.2 and 4.3) deal with radiotherapy-specific technical communication, as used by the professional radiotherapists and as acquired by the novice radiotherapists. The next two sections (4.4 and 4.5) address the formal technical communication practices of professional and novice radiotherapists in the integrated treatment team. The following two sections (4.6 and 4.7) examine professional and novice radiotherapist-patient communication. The final section of this chapter (4.8) summarises the types of communication and levels of formality as practised by professional and novice radiotherapists in the clinical environment.

4.2 Radiotherapy-specific technical terminology and communication

The technical communication practices of professional radiotherapists comprise scientific and medical terms that are associated with specific concepts and procedures. These concepts and procedures constitute the knowledge-base of the field of practice. The technical language used by radiographers in the clinical environment appears "natural" to

them. So natural, in fact, that if asked to explain concepts, actions, or terminology within their field of practice, they may struggle to do so. A radiotherapist (Practitioner 4) on discussing how she learned the language of her particular context, noted the following:

Mostly from absorbing from in-service training and as you get more experience ... it makes more sense and ... you just get more used to using it...eventually it's just second nature...you noticed that it was so dense with all of the professional terminology ... which we don't realise we just use it all the time (P4, 01/08/2006, D2).

As the practice of radiotherapy and radiotherapy treatment methodologies get increasingly sophisticated, the resultant technical communication includes varied levels of communication (both formal or informal) which derive from the work context and target audience.

4.2.1 Formal technical communication

Formal technical communication refers to the terminology used to describe, for example equipment or task specific to the discipline. The discipline discussed in this case is radiotherapy. Formal technical communication is both discipline and context specific, and forms the secondary discourse of radiotherapy communication practice. Gee (1996) refers to primary and secondary discourse where primary discourse refers to the everyday language of communication and secondary discourse refers to that language found in specific disciplines or contexts, for example the professional language used in radiotherapy communicative practice. Technical communication has a continuum between the formal and informal levels of communication. Both formal and informal technical communication form part of the secondary discourse of radiotherapy communication practice.

These levels are dependent upon the work context and target audience. Technical terminology in radiotherapy communication practice can move between the formal and informal in the same clinical interaction, depending on who is speaking and who is being

spoken to. A good example of the selective usage is the making of the immobilization device of the head and neck area that is preparatory to a patient’s prescribed radiotherapy treatment. Amongst radiotherapists this is known as “taking an impression” or “making an impression” in preparation for radiotherapy treatment.

In the practical demonstration where students were learning to make an immobilisation device, both formal and informal technical terminology was demonstrated. Practitioner 1 was observed to be meticulous in using the formal technical terms in his initial detailed exposition and demonstration of the task. Once the students started to perform the task, both he and the students started to use more informal terms as they discussed the progression of the task. While performing the task they briefly noted what would be suitable layman’s terms to use when explaining the procedure to their patients in order that the patient would understand the process. The formal academic term, “immobilisation device”, which is used in written texts and formal presentations, has varied formats in the field of clinical radiotherapy practice. Both the Practitioner (P1, 22/06/2006, A2) and senior students in their respective interviews commented on the usage of the above concept and its changing format for use in different communicative contexts. From these discussions and observation of the various interactions, the progression and usage of the term in clinical radiotherapy practice, can be tabulated as follows:

Terminology	Mask	Cast	Impression	Immobilization device
Classification of terminology	Layman’s term	Informal Technical term : jargon	Formal technical term	Formal academic term
Use of terminology	Generally for use in radiotherapist-patient Interactions.	Generally for use in: - radiotherapist-integrated treatment team; - radiotherapist-radiotherapist interactions.	Generally for use in: - radiotherapist-integrated treatment team; - radiotherapist-radiotherapist interactions.	Generally for use in: - radiotherapy texts; - radiotherapy equipment presentations & websites

Table 4.1. Progression of the term denoting immobilization device in clinical radiotherapy practice.

Acronyms and abbreviations

Another example of formal technical communication are the acronyms referring to the planning of target volumes, for example, “PTV” and “ICRU point”. Both these acronyms are in current international use in radiotherapy practice in both clinical departments and standard radiotherapy academic texts (such as textbooks, peer-reviewed journals and reference materials) as stand-alone terminology. Respectively they may represent planned target volume (PTV) and International Commission of Radiation Units (ICRU) point of normalisation but they are used predominately in radiotherapy practice in the acronym version. As such they represent formal technical terminology from radiotherapy graphic planning. The Practitioner (P4), teaching students about PTV and ICRU point of normalisation in radiotherapy graphic planning notes that:

...because that is an international norm...they need to know about the Report and where to look for it, what to look for and the fact that they can refer [to it] for those sorts of things...(P4,22/06/2006,D2).

The novice radiotherapist noted of the graphic planning technical terminology, that in her experience:

...the language that we use in planning is not like any other language that you would use ... in any other department ... so the only people who really understand is your colleagues, the people that you work with and also the people [on] the [treatment] machines...they will really understand that language ... (S8, 23/06/2006, D1).

The communication practices of the radiotherapist and student depicted in both these clinical interactions is specific and understood only by its members in the performance of their respective tasks and thus could be seen as discipline-specific secondary discourse as defined by Gee (1996).

Developing new technical terms

Technical language in any field is constantly evolving (Anderson, Brockman & Miller, 1983). New practices, particularly those involving computers with new imaging technologies, new treatment planning software and more sophisticated treatment units for radiotherapy treatment have resulted in new forms of technical language. In the extract below, a practitioner explains a specific term in graphic planning:

It's called the data page...it's the printout of all the fields and the specific field arrangement... the field size... whether wedges [were] used... whether it was photon beam or electron beam... so it's all your details on each particular field that you used...so its called the data page (P2, 17/07/2006, B2).

Increasingly sophisticated software has allowed the development of three- dimensional mathematical algorithms and new terminology has been coined to describe the various functions. One such technical function is “beam’s eye view” and Practitioner 4 comments on the difficulty of explaining its essential three-dimensionality function:

...and I try make them see that every time we look at the one picture on the mainframe...on the plan itself...then we go back to the beam’s eye view...that’s why I make them put up all of the different views and I keep saying...‘use what you’ve got available to help you orientate yourself’...because its all very well for the coplanar stuff but once you hit the non-coplanar its very difficult to...unless you using whatever you’ve got...it’s very difficult to visualize where you are...(P4, 22/06/2006, D2).

Student 8 understands the term as a graphic planning technical term and discusses how to explain beam’s eye view to a fellow junior student or with colleagues such as consultants or registrars:

I would definitely use the same language I’ve used like beam’s eye views... [and] to explain the same thing [to a first year student]. Like for ‘beam’s eye

view' I would have to really simplify it and just tell her or he that beam's eye view is the collimator...is the source which is the machine looking down at the patient...and from there definitely as time goes on she will know that's beam's eye view...and she'll also start using 'beam's eye view' (S8, 23/06/2006, D1).

Further technological advances in the simulation equipment and radiation treatment units have resulted in the development of further technical terms. For the simulator the terms "wires" and "blades" in relation to field size and actual field size are used when working in the clinical environment of the simulator. Practitioner 3 outlines the possible difficulty that these technical terms may pose to the uninformed practitioner as the terms may possibly be exclusive to specific models of simulator:

I would say it's also a mixture because in some literature...some manufacturers will refer to the collimator setting the field size as 'blades'...but then...some other manufacturer might see the 'blades' as the 'wires'...actually those collimators that set your primary field size...so depending on the piece of equipment that you're using and also the terminology used in the department...it might have a whole different meaning in another department...you must conform in your department and as to what you would use (P3, 01/08/2006, C2).

4.2.2 Informal technical communication (jargon)

Embedded within the formal technical communication practices of radiographers is an informal technical language, a jargon that if listened to by a person outside the radiotherapy world or even a fellow health professional in the same department, would not make particular sense. A jargon comprises terms that relate to a specific activity, profession or group (Coe, 1996). Much like slang, it develops as a kind of shorthand, to quickly express ideas that are frequently discussed between members of a group, for example, in the clinically-based observations of graphic planning and plan analysis interactions, the term "hot spot" was frequently used by radiotherapists. Practitioners commented that they assumed that senior students were familiar with the use of the term as the plans were discussed and analysed.

Jargon involves a standard term that is given a more precise or specialised usage among practitioners of a field. If the term “hot spot” were to be formally defined it would refer to an area of high dose within the treatment volume that was to be assessed as either to be significant or not if the treatment plan was to be deemed acceptable or not. In the clinical context, the interactions included questions and comments such as: “Is the hot spot okay?” and “What is your hot spot”? If a person, unversed in this technical jargon, were to be party to this interaction they would not understand its meaning, whereas the interaction described above progressed with the implicit understanding of all parties. The discourse used varied between formal and informal technical language as the various aspects were negotiated by the practitioner and others. Terms like “hot spot” have become so prevalent that one of the practitioners interviewed claimed that: “‘Hot spot’ is professional language because you find ‘hotspot’ in textbooks as well...they talk about ‘hotspots’ so it’s not jargon...” (P2, 17/07/2006:B2).

There is thus some blurring between the categories of “formal” and “informal” technical communication. Commonly used abbreviations, such as “ID2”, were also understood as formal technical terms: “that’s not jargon...because ID2 is also a specific term that if you mention ID2 to anyone within radiotherapy they will know what you’re talking about... because its published...isodose equivalent dose 2Gray” (P2, 17/07/2006, B2). The practitioner suggests that a term used in the professional or research literature then ceases to be an informal technical terms and enters the mainstream of formal technical language.

In the medical field, Latin (or Latinized) terms for common words and phrases are used particularly in the life sciences and biological sciences. Thus in the health science particular jargons have developed that allow medical professionals to communicate quickly and effectively where long Latinized terminology would take much longer (Makoul, 1998). This is particularly true of radiotherapy practice, both in the workplace and the classroom. A particular jargon develops to accommodate a specific practice and task, such as patient position. Practitioner 3 notes this while giving her opinion of the difference between professional language and jargon:

I would say...there was definitely a difference between the two because professional language...is using the academic terms as it is...whereby jargon is relating it to our everyday use of words ... a professional language would be saying the word for 'superior'...where when we set the patient up we will just say 'sup'...where I would distinguish between 'sup' and 'superior'... 'sup' meaning the jargon and 'superior' the professional language (P3, 01/08/2006, C2).

Jargon may cause a barrier to communication as many may not understand the specific references – and this has advantages and disadvantages depending on the target audience and bystanders. For example, jargon can serve a euphemistic purpose when terms that are unknown to the patient can be less forceful than words the patient would understand. As one of the novice radiotherapists pointed out:

That is also the good thing of using professional language because there are instances where you want to speak to a colleague but you can't exactly because there's a patient nearby...so that if you use professional language, you might be speaking of a specific patient perhaps...but the patient wouldn't know that because you're using certain terminology that the patient doesn't understand at that point...to make something clear to another colleague or something...which is also the good use of professional language (S6, 22/08/2006, B1).

4.3 Novice radiotherapists and the acquisition of radiotherapy-specific formal and informal technical language

In the academic teaching hospital environment radiotherapists are often accompanied by novice radiotherapists, their students. An integral part of their job description is the supervision and teaching of radiotherapy students of all levels in radiotherapy practice in the clinical workplace. This study involved the senior student group, the novice radiotherapists, involved in various clinical tasks with several practitioners. One practitioner expressed concern as to whether the students would understand the language used to explain the task:

Will they know what I'm asking of them? ... I find myself using words a lot such as 'coming in' instead of 'beam entry point' and 'exit point' ... I'm not using the professional jargon as we call it then I just use layman's terms but for the third year group I shouldn't be using that...I have found...quite a few words that I use and not everyone understands...when I say 'orientation of the plan', I say 'large volume', I say 'boosts', I say 'small volume' ...do the students really know what I'm talking about? (P2, 17/07/2006:B2).

In contrast to these concerns, another practitioner (P5) discussing a clinical integrated team task performed with her student, said she definitely expected that the senior student in question (S4) should understand the terminology and contents on the request form² for their patient. However she did express her doubts as to whether a more junior student would understand everything:

For a first year student not everything...two opposing lateral [fields], opposing two [fields]... would maybe be ant and post...they wouldn't necessarily think laterals...electrons I think...closer to the end after they've seen a bit of planning they would understand where the electrons comes in...first bit [of the form], yes, but from technique on down...I don't think a first year would understand much [because] you need to explain ICRU terminology and all to them as well (P5, 06/12/2006, E2)

After observing herself on the video-recording (see Appendix E), one practitioner was critical of her use of jargon because of the effect that it would have on students:

And when I say 'open up the angles' ... I should have said ... like I did a little diagram for myself on this page here...where I should have said... a 45 degree angle or a 90 degree angle' that everyone would have understood...I mean that's maths...everyone would have understood if 'we coming in with an anterior

² Request form refers to the Radiotherapy Planning and Treatment booking form used for each new patient at the site of this study.

oblique and lateral oblique at 90 degrees to each other' instead of saying 'if I had to open up this angle a bit more' I could have said 'if I came in an angle of 130 degrees or 120 degrees, would I need a third field?' (P2, 17/07/2006, B2).

The practitioner quoted above explains a difference between formal and informal technical language, namely that when the language is discipline-based (for example, mathematics) it then becomes more formal. This idea occurs in the following excerpt:

They did understand because I was referring [pointing to the plan] and I was saying...this was about the hotspots...and they were saying what the significant hotspot was and that it was just a point that it was registering...and then I said then you have to add in the value...I meant they have to add in the value on the computer manually...add in a 102% and see what it is...and I think they did get that I was talking about the percentages that they need to physically add those isodoses (P2, 17/07/2006, B2).

Students quickly pick up the jargon of the clinical practice, even though it is not always appropriate to use the informal term, as the following senior student explains:

We're not supposed to [use jargon] but the thing is there [i.e., the clinical environment] we get so used that...the words that the staff use upstairs...like a 'comp' [i.e., compensator] and when it comes to tests or oral exams we tend to also use that word ... a shorthand...so we should just be careful when it comes to that...as to remembering what the correct word is (S2, 22/08/2006, B1).

Here the student is noting how it is not appropriate to use what is essentially a verbal shorthand in written academic discourse, for example in a test, the word "comp" should be written or referred to as a "missing tissue compensator". All practitioners interviewed noted the prevalence of jargon, both formal and informal technical jargon in radiotherapy practice. The jargon is acquired in the clinical environment and a student explains that "the more [you] speak to them [i.e., professional radiotherapists], the more you also learn

as you go along” (S6, 22/08/2006, B1). Thus the use of jargon enhances practice, once novices have acquired a working knowledge of the technical terms and the shorthand jargon in the different areas of radiotherapy practice.

4.4 Radiotherapists communicating with the integrated treatment team

A more formal, explicit form of communication takes place between the role-players of the integrated patient treatment team. This communication comprises the formal technical terminology that is not specific to situated radiotherapy practice. In other words, the formality is less context-bound and more able to cross over different professional fields of practice.

Commenting on the examples of formal professional terminology that are to be found on the patient request form³ practitioner P5 notes this wider use of the terminology:

...chin extension, SSN, tragus and nasion are all examples of the professional terminology that...that we use...[and] I would say it's very important that we use that terminology with the students...[it is] the type of things that the doctors refer to as well ... I think that the profession we are in [that] we need to know what those are because it's terminology that we use basically throughout the hospital I would think and [in] discussion between the doctors and the clinics they would also use that terminology (P5, 06/12/2006, E2).

She concludes that radiotherapists use these particular examples of formal professional terminology “all the time” (P5, 06/12/2006, E2).

In another example of communication within the integrated team working on the patient localisation in the simulator, Practitioner 3 confirms the use of the specific jargon phrase “merging the picture” which is commonly used by those staff working on the simulator. Staff who used the phrase include members of the integrated team such as radiotherapists,

³ Patient request form: Radiotherapy planning and treatment booking form

radiation oncologists and medical physicists. She notes that the phrase is a very specific example of professional jargon for that site:

Definitely ‘merging the picture’...everyone will immediately know what you [the radiotherapist] are talking about (P3, 01/08/2006, C2).

The communication that takes place between colleagues – the radiotherapy practitioner, student and other colleagues within the multidisciplinary team – is often specific to that team or group. Thus, the radiotherapy practitioner and student have communication practices that are unique to their task and competency within the radiotherapy profession, as well as communication practices that enable communication across the integrated treatment team, their working community, in order to provide maximum benefit to the patient.

4.4.1 Professional identity and the professional hierarchy

The hierarchy of the profession and its influence on professional codes of practice are reflected in a variety of communication practices. There are specific hierarchical practices that may occur in radiotherapy practice between planning and treatment team colleagues. One of these practices is the use of a formal language and tone that complies with professional behavioural norms in communication interactions between colleagues. This is reflected by the following practitioner, who remarked that he tends to understand professional language as “speaking correctly as English should be spoken or as Afrikaans should be spoken...not using slang...and also using the correct technical terminology or anatomical [terms] ...“(P1, 22/06/2006, A2). He notes that he tends to want “to speak perfect English” whenever a professor or consultant enters his department, when giving a presentation in front of departmental colleagues or when giving a tutorial. In these situations he chooses “proper English” which he feels is more formal and is more suited to that particular context. This practitioner, happens to speak equally good Afrikaans as well as the dialect of the Cape Flats. However he chooses to use those languages for more informal language when communicating with close colleagues, where he feels more comfortable (P1, 22/06/2006, A2).

4.5 Novice radiotherapists communicating with the integrated treatment team

Senior students are, at first, observer-participants in the integrated treatment team but as they gain more experience, their participant roles increase and they work on specific tasks under the supervision of an experienced radiotherapist. The students interviewed were conscious of having to create a good impression, which included mastering technical terminology to give “the impression that you know what you’re talking about” (S7, 22/08/2006, B1) as well as learning communication practices by observing team interactions.

The following point was raised, regarding using professional terminology as part of professional behaviour when working with colleagues.

...if [practitioners] have to explain something ... to a student...rather ... stick with the actual terminology [so] that you can get that idea across...whereas with the staff member you can still use a bit of slang ... they will understand what you mean...they’ve got the background on that specific area (S9, 03/08/2006, C1)

Regarding the final clinical interaction observed and taped, Practitioner 5 confirms that her novice radiotherapist (S4) was capable of participating fully during the procedure with a colleague (P1) because of her experience. She also confirmed that she and Student 4 had a process of team work between themselves and colleague P1, which included the communication practice of pointing and showing each other. She noted that team work had developed with all three sharing the task appropriately with very few commands and comments to each other and the predominant communication was words of direction and reassurance to the patient. She noted that a more junior student would probably have needed prompting to complete the same tasks that the senior student (S4) was capable of initiating and completing within that integrated treatment team (P5, 06/12/2006, E2). The novice radiotherapist (S4) in her reflections of the same clinical interaction independently confirmed Practitioner 5’s views on the dynamics of this professional team work where pointing and silent body language is substituted for verbal communication in order not too worry the patient unnecessarily with ‘technical talk’ and terminology (S4,

30/11/2006, E1). She confirmed that as a senior student/novice radiotherapist she was in tune with professional team and the requirements of the task and thus, didn't need much verbal instruction.

4.5.1 Conveying a professional impression

One of the senior students interviewed noted the importance of the radiotherapist creating "a good impression" when communicating with other professionals. The role of the correct use of terminology in competent professional communication as a means of creating a positive impression was discussed:

I think it would be a good impression...because for example...we are going to do community service next year...if you're going to a department besides [the hospital] and you get up there and you know your terminology...you're speaking to another colleague now...a new colleague of yours...and you know exactly what you're speaking about...what terminology you're using, the person will be amazed... you [have] just been a student...now...you know exactly what you're speaking about...you're using the correct terminology...and basically not using slang...which is a lot of [bad] habits which we pick up along the way...it's a good impression that's my point of view (S6, 22/08/2006, B1).

4.5.2 Language choices in the integrated treatment team

The question of language choice was well canvassed in the interviews involving the students. When asked about whether all communication in the integrated treatment team would be in English, the response was varied. One student claimed that:

When you speak to staff it's usually in English ... [when] communicating with staff we should try to keep and stick to English (S2, 22/08/2006, B1).

However, another student pointed out that English is not always used amongst members of the integrated treatment team in the clinical setting:

...not in all instances...it depends basically with who is working with as well because we have the Afrikaans-speaking staff on the machines who try...to speak, when I'm on the floor... they try to explain in English but certain staff are more comfortable explaining in Afrikaans...so there're staff who start in English and then they switch over to Afrikaans but I make it clear that I still understand...if they can't explain verbally then it's a diagram...it's visual aids that they use but that is using English and Afrikaans...so it's not necessarily just English they're using (S6, 22/08/2006, B1).

Another student was posed a scenario regarding a simulator tutorial situation where the tutor and students all had the same home language and this home language was other than the medium of instruction of English. The question was posed: "could you do this tutorial using another language as the medium of instruction and would it matter?" The student's considered reply was:

...I think ... that will also help because I mean when you are told something in your mother tongue you won't forget it but the thing is...for example...I don't know the simulator word for Xhosa...we will still need to...use these words, those words...but okay...I understand the way you are asking...but the English will be there as [well]...because they will be like words that we can't translate to Xhosa...but when you're told something in your mother tongue it will even...it will ...also help (S5, 03/08/2006, C1).

4.5.3 Learning how to communicate in the integrated treatment team

The senior students highlighted the importance of learning how to communicate with patients by observing team members. In the extract below, a Xhosa-speaking senior student explains how she learned about specific Xhosa terms from an English-speaking medical practitioner who had many years experience as to the appropriate terminology to use in Xhosa:

For example, when you have to change the word ... cancer...to Xhosa it's *umhlaza*, it's like it's really like...when I had to explain to this patient I didn't even know about it and it just happened that [names medical practitioner] was there and I was explaining and he then sort of like noticed that I didn't say the word cancer but he knew the word and then he just said to me *umhlaza* ...then I explained and then the patient really understood everything...because it was a problem that I had missed out that word cancer. And like the patient had this cancer...this disease...it's called cancer but I didn't explain...you know...so he really helped me you know...because or else if he wasn't there I think the patient would have maybe went home ... I think it was good that he was there but now I know how to like really explain...effectively (S8, 13/06/2006, A1).

Student 8 considered the question of using home language alongside the medium of instruction to explain concepts to team members and her thoughts were as follows:

...its better to stick to English because if you try to change it in Xhosa...you could be changing everything and it's very important...that it would be...the exact thing...[so that] they will not think its something else...so ... I always try to stick to English [and]...not change it...because I don't even know how would I change it (S8, 23/06/2006, D1).

She continues her thoughts about adapting terminology from radiotherapy planning concepts in order to explain effectively to a patient in their home language and expresses her concern that:

...planning language...the terminology...the planning terminology is very difficult to change from...Xhosa or Afrikaans...even from English...because its ... something like [it] is really different...so I think it would very difficult, I mean, to explain it to the patient...fortunately we, we don't have to take the plan and

show it to the patient [and say] ‘this is what is happening’...but if we were to do that ... it would really be difficult... (S8, 23/06/2006, D1).

The student’s thoughts about explaining to the patient and, by extension, working effectively within the integrated team in different contexts highlight the extent of the multiple communication interactions: with students, colleagues, radiotherapists (staff), consultant doctors and the patients; each brings their own challenge to the communicative practices which occur within a workplace of multiple languages and cultures.

4.6 Radiotherapist-patient communication

The communication between practitioner and patient has features that are unique to this interaction. The language used differs from that used between colleagues, for example, the use of layperson’s terms with patients is appropriate. The radiotherapist has also to be sensitive to the language needs of the patient and whether interpretation is needed to ensure the patient is well informed of all procedures. The language and tone used should also provide comfort and reassurance to the patient. The specific features of radiotherapist-patient interactions mark it as a particular form of professional communication in radiotherapy. Its specific features are described below.

4.6.1 Adapted terminology

As previously noted the radiotherapist practitioner has to be sensitive to the language needs of the patient; good judgement is needed to ensure the patient is well informed of all procedures. Thus practitioners pointed out the need to adapt the language that they used when communicating with patients:

...and the thing is a lot of time people think...especially working in a hospital that you should speak in a certain way...because it’s a professional occupation ...and ...they don’t like it when you speak...slang and that kind of thing...but as I say [names doctor] is a perfect example of that...the way he deals with patients...I mean he’s brilliant and you can see he has a rapport with his patients because of

that...because he knows if somebody's a farm girl and she's come from the farm and it's all she knows he will speak to her like that ...and ...I think it works (P1, 22/06/2006, A2).

Practitioner 3 discussed the way radiotherapists adopt a personalised slang, as in “go to your midline” while positioning the patient on the simulator bed. She concludes that it is possibly a necessary method of professional communication both for the patient's comfort and to complete the task accurately. Her thoughts on the adapted communication process are outlined in the extract below:

I would say ... its part of what we doing and if I must refer to ‘go to the patient's midline’ then immediately the patient would think ‘what are they doing?’ and it's also maybe a language that we form between us...not to exclude the patient but not to make the patient so much alert to what we are doing ... because we need to talk to each other...and while we're talking to each other...we always use the patient or the patient's name and then alerting the patient as to ‘what's happening, what're they doing?’ and then bringing about movement from the patient's side maybe...I don't know...maybe ... I would have said ‘check Mrs X's midline’, ‘check Mrs X's height’ then immediately the patient would after each command basically move or be alerted and maybe bring movement about ... (P3, 01/08/2006, C2).

4.6.2 Ensuring patients' comfort

Radiotherapy practitioners pointed out that the language and the tone used should also provide comfort and reassurance to the patient. Radiotherapists felt that it was particularly important to use appropriate communication practices to comfort and ease the patient:

...we are the first people that normally see them after they've been diagnosed so you've...we've got handle them...with kid gloves as it were...be cognisant of the

fact they that they're going to be nervous and that they're not sure what's going on...they've just been told that they've got a lesion (P1, 22/06/2006, A2).

Here Practitioner 1 acknowledges the need for sensitivity and empathy for the patient's state of mind on arrival in his department. This sensitivity to the patient's needs extends to the next aspect of radiotherapist-patient communication where the practitioner has to give the patient specific instructions and directives to complete the procedure.

4.6.3 Giving instructions and directions to the patient

Radiotherapists need to instruct patients in how to sit or lie in order to make an impression accurately, and when they undergo tedious imaging procedures to localise the planned target area for later radiotherapy treatment. Again the language and tone used should provide the patient with confidence and reassurance. It is important then, that the practitioner communicates instructions to the patient gently, but in a way that is also clear:

I don't think there's anything worse for a patient than walking into a room...having somebody briefly tell you in two seconds what they're doing...getting them down on the bed and then doing something and not telling them...'we're going to close your eyes now' etc....because they...need to know what you're going to do and...and it puts them at ease and in...the end...your final product rests a lot on how comfortable the patient is especially...long larynx casts...they come and their shoulders are scrunched up...Monday they come back again and you find they've dropped by two...three centimetres (P1, 22/06/2006, A2).

It was pointed out to Practitioner 5 that she spoken more loudly or more softly to different role-players in the multiple clinical interactions happening and experiences in the clinical practice task (E/CS/a, 29/09/2006) where the role-players included: the patient, the consultant, the registrar, the radiotherapist practitioner, novice radiotherapist, radiation laboratory technician (P1) and other radiotherapists.

I think we generally when we speak to the patient we sort of speak a bit louder just to make sure that they actually understand and hear what we [are] saying ... when I take it from myself...if I'm laying there and quite nervous I don't always pick up on detail...we make sure that we get their attention but we [are] speaking a little bit louder and the softer tones...are when we [are] speaking amongst ourselves...which is not really important for the patient at the point...well not to say not really important to them but not really...how can I say?... it's not meant for them to hear...it does pertain to them but its more just what we...[speak] just between us basically...I think most of us, most of the staff, when we speak to the patient then we basically raise our voices a bit just to make sure that they are understanding and saying. (P5, 06/12/2006, E2).

Practitioner 5 acknowledges the importance of ensuring that the patient understands the procedure and that she tends to speak louder using “full words” to ensure this. Whereas, her exchanges with her colleague tend to be softer in order not to alarm or overwhelm the patient with the technical jargon pertaining to their task. She acknowledged that they both used shortened jargon, for example “ant” instead of “anterior” and she goes onto explain why this is so:

We use the full words and full terminology with the patients...obviously [it] is more professional and also its easier for them to understand because they wouldn't understand the jargon that we use when we speaking to one another... and we also try and keep the words as simple as possible for the patients purely for understanding purposes as well (P5, 06/12/2006, E2).

4.6.4 Flexibility in radiotherapist-patient communication

Clinical practitioners interviewed pointed out that different patients have different needs. Patients have different levels of education and different levels of understanding of their diagnosis and prognosis. Issues such as the language medium used to explain and the level of language used are also important. Practitioner 1 outlined these issues, and noted

that the radiotherapist needs to accommodate these differences in their communication practices:

[When you take] an impression and explain what the impression was ... how we are going to use it to produce the actual cast... and also with a patient... I wouldn't go into a lot of technical detail ... depending on the patient of course ... some of them want to know a lot and they will ask and ask and ask and ask and ... they are going to know exactly what you're doing ... more than other patients ... other patients will just lay there and be happy that you do the procedure and get it done...there's a patient that I did yesterday...strangely enough a pituitary patient...and talking to him I could pick up that he was a doctor...he said...he actually worked at [the hospital] left before I was even born...so then a person could...speak at a higher level to him because he knew what you were talking about and...he knew about prognosis and type of lesions and he knew all of that...he knew exactly that he had a pituitary adenoma...benign...he knew all of that... so you can take it to a higher level...but...when you've got the uneducated patients...you want to explain things as simply as possible to them so that they can understand what you're saying...because to go into detail you just going to confuse them more...terminology-wise...I think that a person who is brilliant at that is [names medical practitioner] you know he looks at the patient and he will speak to them at their level... (P1, 22/06/2006, A2).

He reflected on how he employed the continuum between informal to the formal language practices. He judged the level of professional language and explanation each patient required and would find most comfortable. An interesting point this practitioner raised was that of the perception of the hospital social/professional hierarchy with his comment that “even though he's a doctor and a big consultant etc he will come down to their level and speak to them and they understand him and...they get on very well with him because of that...” (P1, 22/06/2006, A2). He perceives that the doctor can be seen as occupying a higher social position than the patient and that could inhibit the patient's ability to ask questions and understand. He notes the same possibility in his own

radiotherapist-patient communication where his “white coat” could distance the patient and thus he adapts the formality of the language medium as well as his style. In the extract below it can be seen how he tries to fit his mode of language and level to that which would most benefit the patient’s comfort and understanding; he believes that the patients appreciate his efforts and “open up” to him:

I think I try and do that with certain of the patients...especially if...patients come from [nameless suburb]...drivers for a living or they work in a shop ... and not educated with a standard six...then I’ll speak Afrikaans to them in the way that they speak Afrikaans and I think they appreciate that because...it’s the language that they speak so they understand exactly what you’re saying and that kind of thing. Instead of trying to speak in English which they’re really ... they’d be struggling to understand the basic English because its not what they use and still if you’re going to throw in technical terms and then you’ve really lost them completely ... they tend to open up as soon as I start speaking Afrikaans. They will actually open and start asking more questions. Instead of you standing back and as... you know... they tend to look at everyone in a white coat as a doctor as well...and you stand back and you speaking in English and that’s a problem for them (P1, 22/06/2006, A2).

This practitioner discussed very clearly the different needs of the patient and illustrated the various aspects pertaining to the need for flexibility in radiotherapist-patient communication.

4.7 Novice radiotherapist-patient communication

This section discusses the various factors that comprise the communication interactions between novice radiotherapists (students) and their patients. The students brought up the issue of patient communication in their interviews very readily and that the issue of their communication practices with the patients was fore-grounded in their perceptions of correct patient care and patient communication in the workplace situation.

The senior students interviewed, both in focus groups and individually, were well aware of the need to adapt their mode of communication to the needs of their patients, as is expressed in the interchange between the researcher (BWB) and one group of students below:

BWB: ... when talking to a patient you won't talk about the tumour area or the PTV...would we? what would we say?

S6: The area that we will be treating...

S3: ...the area where the disease is...

BWB: ...the problem area...

S6: ...or the affected area...

BWB: ...or something like that...amongst ourselves we won't talk like that...or would we?

Chorus: No (Focus group interview, 22/08/2006, B1).

They note the need to employ everyday, lay language where necessary and where appropriate in order to ensure their patient's comfort and understanding. They acknowledge too that there is a specific intra-radiotherapist language that they will employ "amongst ourselves".

4.7.1 Levels of patient understanding

Students consistently saw that the professional language was dense and over-technical, and could act as a barrier to patient communication where their patients would not be able to understand sufficiently and that they would not be able to explain effectively to their patients. Student 9 reflects on the effect of formal language used with different target audiences:

Even though you are professional its always good to keep in mind that the language that you use with the patient won't always be appropriate...they might not understand what you mean by your terminology and all that and he actually

did very well in the method of...carrying the message across...to keep as basic but yet to the point, keep it very simple and for the patient to understand what you are saying...so I think [that] ... professional language [is] important...but you need to...convey your message to the patient in such a way that you... don't confuse them...you want them to understand what you are saying...that's the whole point...(S9, 13/06/2006, A1).

Thus he emphasises “the whole point” of the patient communication interaction being that the patient must understand the information being conveyed to them. Similarly, he concludes that too formal language in the sense of being “pure” Afrikaans (very correct grammar) versus more informal everyday Afrikaans can also be responsible for distancing the patient and can prove to be a patient-unfriendly language:

If a patient comes in that's Afrikaans...and you have this opportunity where you can communicate with them before you start with whatever you're supposed to be doing...whatever procedure...I need to be able to communicate with the patient in that way [i.e., informally in the patient's home dialect]...even though its not...what should you call it...a standard or...not professional but its going to get the idea across...I will do that because that's the whole idea of communicating with the patients to get the idea across...so I'm not going to stand there and speak pure Afrikaans to this person and then they're still looking at me or they're going to keep quiet and not say anything and just look at you as if they do understand but they actually don't...so that's why I'm saying... assessing the patient beforehand I think that's very important so that you can decide for yourself the manner and the way you should communicate with this patient (S9, 13/06/2006, A1).

While over-formal or technical language is an impediment to effective student-patient communication interactions, a second factor is the multiple languages of the workplace and the region: namely, English, Afrikaans and Xhosa.

4.7.2 Translation to enhance patient understanding

As noted in the previous section, students were concerned that patients needed to understand the procedures they were about to undergo. A second factor identified as a barrier to effective patient communication is that of multiple languages of the workplace and the patients. One strategy that the students all identified throughout the interview process was that of translation into the patients' home language:

It's really important...for...the first step of planning your treatment for your head and neck and any other treatment...it would be the impression...the patient must really understand what's happening and it's...really scary if you're going to be putting...the plaster of Paris and the patient doesn't even know what's happening so it would be better to have somebody who's going to interpret...and the very same person they can just stay after...you are done with the impression if there are any questions you can answer them....but there should be somebody...who is explaining everything...in their mother tongue language (S8, 13/06/2006, A1).

The students pointed out that translating from English, particularly technical English, into Xhosa or another local language is not particularly straightforward. The following three reflections from students with differing life experiences highlight the challenges this poses:

Reflection 1:

I would say its really difficult to ... bring some of the words from English to Xhosa...and ... normally when I explain to the patient ... upstairs I just feel sometimes it's not effective you know like some patients they speak deep Xhosa and mine is just ... very superficial and ... in the end I just think...okay...I have explained but I don't think they really, really understand because even the patients that we...especially the older ones...their Xhosa is different from ... the younger generation ... so its not always easy to switch from ... English to Xhosa or any other language (S8,13/06/2006, A1).

Reflection 2:

I can expand on that with the Xhosa because I actually did Xhosa at school and what [is meant] by Deep Xhosa and...superficial - is...there's a lot of slang in the language...and if you go and...talk like that to an...elderly person, that's about 80, 90...and they have...I don't want to call it the original version of Xhosa...but ... some of the words have just faded away and they were replaced with slang words...you might not be able to get the proper idea across and they [will not be] sure what you mean (S9, 13/06/2006, A1).

Reflection 3

...regardless of any other language I would still feel those terminologies should be stated the way they are since you are talking with a colleague who also knows them. They should stay the way they are demonstrated in their own contexts English terminologies or medical terminologies, but not to be put in our own language, for instance , there is a word...I would say like skin burn which we normally talk of the side effect of radiation. If you put it in different languages like in Swahili, it would be *choma* and in my language it maybe *okosa* and in another language it...so when we get all those interpretations, people get them differently, but if [you] explain it as a sunburn it would appear very much well demonstrated to the patient than using our own languages...because [in] those languages [it] sometimes mean "fire that is burning" and the patient might be scared. (S3, 22/08/2006, B1)

These three reflections offer an interesting insight into an issue of professional communicative practice, namely that formal English is not easily translated into another language. It is noted that the two languages under discussion, Xhosa and Swahili, have not developed the equivalent terminology of radiotherapy practice. English-Xhosa is discussed in the first two reflections, where the issue of deep versus superficial Xhosa is addressed and this also seems to bring to the fore cultural issues regarding age and language change. The third reflection, which discusses English-Swahili translation, emphasises the problem of incorrect or inadequate description for lack of specific words

or metaphorical references to match the English technical term. Student 3 notes that a patient's peace of mind can be affected by a misconception of what the treatment actually involves. Crawford (1999) makes a similar point with regard to the success of interpretation in clinical contexts.

Afrikaans, English and Xhosa are the three major languages spoken by patients and staff in the research site. The reflections of the student participants indicate their sensitivity to their multilingual and multicultural workplace, as well as the consequences for the patients and themselves.

4.7.3 Communication to aid patient comfort

The next aspect of communication practice highlighted by the novice radiotherapists showed that they had learned how to adapt their communication practices to accommodate patients' needs and ensure their comfort. The students had developed high levels of empathy with their patients. Communication practices to improve comfort included: speaking during the procedure to reassure the patient, use of the patient's home language, and empathetic tone of voice. These are all exemplified in the extracts below:

While you're...applying the impression it's very important to speak to your patient especially when...like at that moment...when you're about to remove the impression because...it's all quiet...so it would be better to reassure them...just to tell them that they are doing well and just to affirm them (S8, 13/06/2006, A1).

Several students emphasised the role of the home language in making the patient comfortable. It is important, one of the students claimed:

...to be on the patient's level...because if the patient is Xhosa-speaking its our duty to make the patient comfortable as well...so what...commonly happens on the treatment floor if you have a new patient starting and if the patient is Xhosa-speaking we would find somebody on the treatment floor who is Xhosa-speaking to explain to the patient clearly what is going to happen and if the patient

understands...the same will work in the mould room...because...the patient is already a bit uncomfortable and so that makes the patient more at ease when you are speaking to the patient in their home language and coming with English or something that the patient doesn't understand makes it bit more difficult (S6, 13/06/2006, A1).

Student 6 felt quite passionately in her empathy for the patient's comfort and well being. She highlighted issues such as: the patient's unease with the procedure, the radiotherapist's responsibility to ensure the patient's comfort, the patience and knowledge needed in the event of the patient's possible psychosocial issues on undergoing treatment of this nature, and the intuitive ability that is needed by the radiotherapist. She finished her reflections with this to say about the communicative practice needed:

I feel that as radiographers we have to make time to answer the patient's questions and that's our first priority...to answer our patients...to treat our patients with dignity and respect...the more comfortable the patients are...the better they are...like when I'm working on the machine...you'll get the really uncomfortable patient and you'll get the comfortable patient... the uncomfortable patient will come in ...really, really moody...it's like they're forced to be there in a sense... whereas the comfortable one will come in... 'morning' and speaking and everything is at ease...the patient goes into the room and the setup is much easier ...everything is at ease because the patient is more comfortable which is our responsibility to make our patients feel like that...that is not the patient's responsibility...why is the patient uncomfortable when they get in there? We don't know if its personal problems or you don't know if its problems that the patient has on the machine now...so it's our responsibility to find that out...that is what I feel...it will make us better radiographers (S6, 13/06/2006, A1).

4.7.4 Language as a patient right

The hospital is a multilingual environment in which patients speak the regional languages of the Western Cape. The students were particularly sensitive to the rights of the Afrikaans and Xhosa speaking patients in the workplace. Students interviewed suggested that patients had a right to understand the radiotherapist:

...if you have problem with communicating with that particular person...say the person is Xhosa-speaking or whatever...you definitely owe it to the patient to have someone there that would be the medium between the two of you...to be able to instruct the patient (S9, 13/06/2006, A1).

The need for there to be clear understanding between the radiotherapist and the patient was true across all the regional languages, as shown in the three extracts below:

And I think that's...the same...with the level of language...that you use...even if the patient is English-speaking if you're going to go and use these terms and terminologies...and the patient doesn't understand...that's not going to help you very much to put that patient at ease...I mean it speaks for itself (S9, 13/06/2006, A1).

I think it's a must...to always before [you] commence with any procedure whatever...upstairs [i.e., in the clinical environment]... it's a good idea to always just chat with your patient...get a feel where the patient is at...the patient's communication level...just to be able to give yourself an idea as to how to go about communicating with this patient efficiently because some patients if you use the word 'impression' they'll know what you're talking about...other patients might not (S9, 13/06/2006, A1).

When it comes to explaining to a patient...like when they start treatment as to not washing the area...then if their mother language is Afrikaans...try explain it in Afrikaans so that they understand it and they know exactly what you're trying to

tell them...even if it's in Xhosa...get one of the staff who knows how to speak Xhosa and explain to them (S2, 22/08/2006, B1).

Mastery of all regional languages was clearly difficult for the students. Not all of the students could speak all three of the regional languages. Those who were English speaking, but could speak Afrikaans, found themselves code-switching between Afrikaans and English without realising it. Student S6 happened to code-switch between English and Afrikaans and felt embarrassed by it. She acknowledges that she was feeling nervous in one of the interactions because the examiner was present during a clinical patient assessment. She commented:

I start with Afrikaans... because I know the patient is Afrikaans-speaking and I eventually end up with English which is not right because I am supposed to continue in Afrikaans...because it's like I lose the words as I go along... I can't find the right word...some of the patients are at ease because the patients always say 'no I speak mixed' the patients say 'I speak mixed...it's fine...you don't need to worry' but its not right we have [a duty] to speak to [the] patient in their home language...so if your home language is Afrikaans, I think the duty of us especially when we do assessments...is to prepare ourselves and say that...we know our patient's Afrikaans...we know we going to tell the patient this...so we have to prepare and know exactly what we're going to tell the patient...I'm sure you do prepare but you're so nervous at that time that you don't exactly get there...so the same when you're doing an impression on an Afrikaans-speaking patient if you can't...tell the patient exactly what you want to say...then get somebody to help you to bring it across to the patient...(S6, 13/06/2006,A1).

4.7.5 General sensitivity and cultural issues

Students pointed out that a straightforward translation is very often not adequate for the patients' needs, and the communication needs to take into account general sensitivities as well as cultural norms. For example, referring to a patient as "the breast" or "the prostrate" (as in "send the breast in now...") dehumanises the person. It would be better

to refer more politely to the patient, using their titles and surnames rather than their site of their diagnosis. Student 8 noted:

It's fine to use professional language among your colleague but when it comes to the patient you must just make sure you make things very easy for the patient and as well as when radiotherapists...when we're working its also important when you're working like...even in planning or in the treatment floor, when you...if maybe you're trying to decide in the morning are we going to treat the patient with cancer of the breast... just make sure that you say it in an appropriate way ...like, don't just say 'the breast' because...the patient might be...might be sitting there you know or maybe 'the prostate' ...so it's very important that you know at times ... we mind our languages...especially if the waiting room is very close to where we are sitting (S8, 13/06/2006:A1).

There are obviously different cultural norms with regard to modesty in talking about the body, and these norms should be understood and respected.

4.8 Conclusion: type of communication and levels of formality in the workplace

The research findings discussed above can be grouped into three basic types (or genres) of communication – with each of the types able to extend across a continuum of registers, from the formal to the informal. A proposed model depicting these three basic types of communication is presented in Figure 4.1. The model shows the three main areas of communication interaction occurrence in radiotherapy practice. Although the model depicts three distinct types the reality of radiotherapy practice in the workplace is that each of the three types do have some areas of commonality such that there is overlap. This occurs as the communication interactions between various role-players extend across a continuum of registers, from the formal to the informal, within the bounds of clinical practice in the workplace.

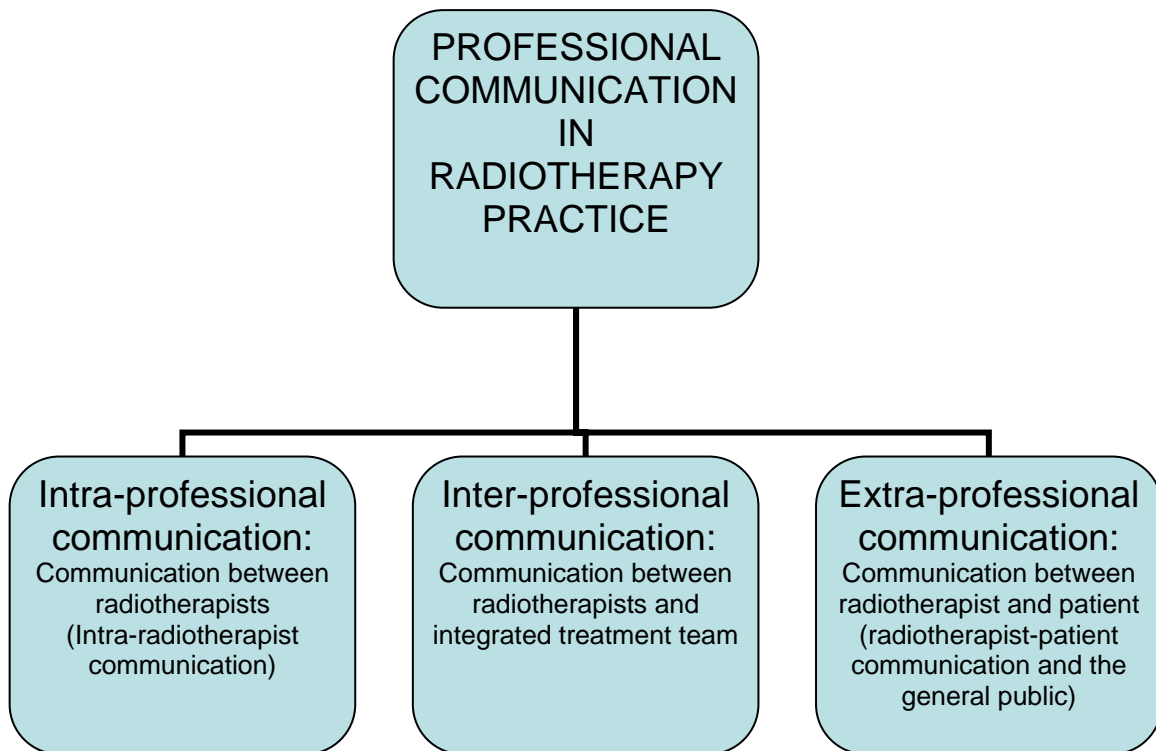


Figure 4.1: The three main genres of radiotherapy professional communication

4.8.1 Professional communication types

The three basic types of professional communication are identified : 1) intra-professional communication (i.e., radiotherapists’ communication with each other), 2) inter-professional communication (i.e., radiotherapists communicating with other health professionals in the integrated treatment team), and 3) extra-professional communication (i.e., radiotherapist-patient communication). The findings indicate that there were marked similarities between the radiotherapists’ and the novice radiotherapists’ levels of communication, with the novice radiotherapists (students) somewhat more aware of their own, and others, communication practices.

Intra-professional communication

When radiotherapists communicate with each other, or with novice members of their profession, they use a technical lexicon, which is in line with the technical nature of their work. The language of radiotherapy can be said to comprise of terms from many

disciplines such as mathematics, physics, anatomy and pathology, in their applications to radiotherapy and an increasingly specific “digital vocabulary” that is arising from the increasingly sophisticated technology employed in radiotherapy. This vocabulary is both radiotherapy specific and radiotherapy non-specific and the question was raised in the findings as to whether the terminology is multilingual in application. A student noted this aspect when he remarked on a common term-language that:

...because I think if you explain clearly enough in any language its just the terms that’s the problem...[it is] like a universal language...so wherever you go ... you use the terms and the next person will know what you’re talking about. (S7, 03/08/2006, C1)

Referring to the above model this genre of professional communication between radiotherapists is defined as intra-professional communication practice.

Inter-professional communication (communicating with other health professionals)

Radiotherapists are required to adapt the content and register of their language when communicating with the integrated treatment team. This usually involves the addition of a more medically-oriented lexicon which includes terms for example for anatomy and pathology or physics. As previously noted this vocabulary is both radiotherapy specific and radiotherapy non-specific. However in the context of radiotherapy workplace, the communication practice becomes, as shown in the proposed model, intra-professional communication; in other words communication between fellow professionals, or fellow “experts”. The findings indicate that there is the necessity for common technical vocabulary, both formal and informal such that all can communicate equally and with common purpose. Student 7 calls it “a universal language” (S7, 03/08/2006, C1) which is transportable to other professional radiotherapy teams, regardless of language (meaning English, Afrikaans etc). Referring to the proposed model, this genre of professional communication between radiotherapists and other health professionals working together in the integrated treatment team is defined as inter-professional communication practice.

Extra-professional communication

Radiotherapists deal directly with patients, and will see the patient undergoing radiotherapy treatment more often than any other member of the integrated treatment team. This justifies a particular emphasis on radiotherapist-patient communication. It is not surprising that this was the area most discussed by the novice radiotherapists as they acquired the particular skills of patient communication. The patients undergo a time of very dense information and psychological tension when preparing for radiotherapy treatment and as student S6 noted: “it’s our responsibility to find that out...it will make us better radiographers” (S6, 13/06/2006, A1).

The findings indicate that radiotherapists and students communicate in a similar fashion. Interestingly, the findings indicate that in the area of radiotherapist-patient communication the students were significantly more aware of their own practices in this regard and aspired to what they saw as ideal communicative practices with *their* patients. The students in their description of communicative practices with patients referred to *our* patients and thus were taking ownership of their professional practice. The radiotherapists were somewhat more aware of their own communication practices in terms of the broader clinical landscape that included the students under their supervision and the integrated treatment in general and their professional responsibilities to all role-players. Referring to the proposed model, this genre of professional communication between radiotherapist and patient is defined as extra-professional communication practice.

4.8.2 Levels of formality

Each of the types of communication outlined above has a range of different registers and levels of formality. Referring to the model, professional communication in radiotherapy practice defined as intra-professional communication, inter-professional communication and extra-professional communication practice, would, in turn, be subject to these different registers, with regard to levels of formality within the three basic genres.

Registers in intra-professional communication

The informal, 'shorthand' language is commonly used in practice. There was some dispute about which terms were formal and which were informal. Radiotherapists claimed that a term becomes a formal, technical (and therefore "correct") term when it is "published", or when it is commonly used in the language of a traditional discipline such as mathematics. Certain jargonised terms, common in general clinical radiotherapy practice, have been published in established radiotherapy reference texts. Examples discussed include terms such as: "hotspots" or "ID2". Therefore the informal jargon has moved to become established formal technical language and become part of the universal radiotherapy vocabulary used in both clinical daily practice and written analysis. There is certain jargon coined which is radiotherapy-specific such as "merging the picture" this informal jargon is not necessarily always available to all the members of the integrated treatment team. This can be further defined as the intra-professional communication of radiotherapy practice.

Registers in inter-professional communication

Formal, technical language is predominantly used when radiotherapists communicate within the integrated treatment team. The level of formality is partly determined by the radiotherapists' sense of the status of their profession. The findings indicate that they tend to speak more formally to the medical practitioners, specialists and consultants, but will use a more informal register (and might even code switch to another language, such as Afrikaans) when communicating with technical colleagues in the team. For example the radiation laboratory technologist (Practitioner 1) works extremely closely on a daily basis with the radiotherapists so the level of interaction between them is likely to be informal. However the level of formality would immediately increase in the presence of the patient and consultant oncologist, for instance, when fitting the cast in the simulator in preparation for localisation of the patient for radiotherapy. As a practitioner noted in a clinical interaction with multiple role players present: "we use the full words and full terminology with the patients... obviously [it] is more professional and also its easier for them to understand because they wouldn't understand the jargon that we use when we speaking to one another [the team colleagues]" (P5, 6/12/2006, E2). While this is defined

as inter-professional communication of radiotherapy practice, it should be noted that there are elements of commonality with intra-professional communication dependent on the context and closeness of work procedure.

Registers in extra-professional communication

A practitioner illustrated a typical radiotherapist-patient communication interaction when performing clinical procedures in the radiotherapy workplace by referring to the use of “full words”. In doing this she acknowledged the dense technical jargon used by colleagues and its shortened versions in that particular clinical scenario. She felt that the tone of the procedure was professionally formalised by the use of full words and sentences for her patient, albeit in everyday language. Generally the register used for patient communication is predominantly an informal one in which technical terms are avoided and substituted with everyday terms whenever possible. One of the senior students, when asked whether she would use the term “impression”, responded:

Well I wouldn't particularly use that to explain to a patient...I would probably use the word mask...I mean everyone knows what that means and that is simple and it explains the same way (S6, 13/06/2006, A1).

Communication with patients has the function to ensure that they understand the treatment, that they are comfortable, that they are treated with respect and dignity (which involves sensitivity to language and cultural issues), and that there is empathy between the patient and radiotherapist, as in the following student excerpt:

Greet the patient...if the patient's uncomfortable how to make the patient at ease ...explain everything to the patient...you get ... patients who [have had] ... tracheostomies and things...which we must always make sure as radiographers that we know...how to handle the situation (S6, 13/06/2006, A1).

Both the radiotherapist and student noted that it is necessary to establish the patient's understanding when gauging the “level of language” to use, as some patients may have

more knowledge of the procedures so therefore more technical terminology can be appropriately used. This can be further defined as the extra-professional communication of radiotherapy practice.

4.8.3 Reflections on levels of formality

When changes are made to the formality of technical terms used to describe what is essentially one concept, further weight and meaning is added to the technical communication that is negotiated between the various parties of experts and the layman. For example, the layman may refer to a “mask” to be made of their face whereas the radiotherapist, the “expert”, may refer to the “cast” or “impression” to be made of the facial or head and neck area. The knowledge of the meaning of the change of terminology and why the change is made and the importance attached to the change is not verbalised by the ‘experts’ involved – it is tacit knowledge understood within the field of radiotherapy practice. The radiotherapy student entering the field of practice learns the technical terminology from the expert practitioners (radiotherapists) and thus enters the communication practices and discourse required without consciously realising it. Novice radiotherapists are immersed in the clinical practice and absorb the nuances of this new ‘language’ almost by a process of osmosis. They learn to speak and respond to it without really being able to explain why that is so. The acquiring of technical communicative practice is also dependent upon factors such as previous life experiences and cultural context (Bazerman, 1994; Geisler, 1994; Katz, 2000). Value systems may thus impact upon the acquisition of communication skills.

The progression of terminology from the informal to the formal within one clinical procedure (making of an immobilisation device) is shown in the Table 4.2 where the highlighted section indicates the three genres of professional communication identified relative to this particular term.

Terminology	Mask	Cast	Impression	Immobilization device
Classification of terminology	Layman's term	Informal technical jargon	Formal technical term	Formal academic term
Basic type of communication use in clinical practice	Generally for use in: - radiotherapist-patient Interactions.	Generally for use in: - radiotherapist-integrated treatment team; - radiotherapist-radiotherapist interactions.	Generally for use in: - radiotherapist-integrated treatment team; - radiotherapist-radiotherapist interactions.	Generally for use in: - radiotherapy texts; - radiotherapy equipment presentations & websites
Categories of communication	Extra-professional communication	Intra-professional communication	Inter-professional communication	Inter-professional communication

Table 4.2: Progression of the term denoting immobilisation device in clinical radiotherapy practice showing the three genres of professional communication.

Figure 4.2 provides an example of technical communication involving a series of typical exchanges between different role-players and audiences within the radiotherapy clinical environment where the procedure planned is the manufacture of an immobilisation device in preparation for radiation treatment.

- Consultant doctor (radiation oncologist) may say to the patient:
*We need to make a **mask** of your face so that you can have the treatment.*
- Patient may reply:
*“What sort of a **mask**? How is it made? What treatment?”*
- Radiotherapist to patient:
*We need to make a **mask** of your face so that you can lie still to have the **radiation** treatment to the problem area.*
- Radiation laboratory technician to Radiotherapist
*We are ready to make the **cast**? Where is the request form?*

•Radiotherapist to Radiotherapist or student
*We are going to make the **cast** now. Please book the patient for the sim and CT on Monday.*

• Radiotherapist lecturer in seminar discussion with colleagues and/or students:
*An **impression** was made and the patient booked to return for localisation on Monday*

•Radiography lecturer in written case study analysis or texts meant for colleagues and/or students:
*It was necessary for an **immobilisation device** to be made in preparation for the patient's radiotherapy planning and treatment therefore an **impression** was taken.*

*The radiation treatment technique required the use of an **immobilisation device** for the accurate treatment of the patient.*

Figure 4.2: Illustration of typical exchanges between different audiences within the health care team.

The above exchanges illustrate very clearly the differences in the forms of technical communication used in the radiotherapy context showing the use of technical jargon and the hierarchy of terms. Changes in the term are dependent on the purpose, context and audience. Thus the shift from *mask*, to informal technical jargon, *cast*, and then to formal technical terminology as in *impression* and then to the formal professional language of *immobilisation device* are context dependent. Terms are used differently by the different teams of experts within the common fields of practice, radiotherapy, for a common purpose but with varied communicative interactions with differing role-players (audiences).

Depending on the transactions and contexts, the terms would be used in the different regional languages of the Western Cape:

English:	mask	–	cast	–	impression	–	immobilisation device
Xhosa:	masiki	–	<i>broken leg in plaster used as example– in description</i>	–	izininto zokunqnda ukushukuma		
Afrikaans:	masker	–	masker	–	afdruk	–	immobilisasie apparaat

Figure 4.3: A technical term translated into the regional languages of the Western Cape

As shown above, these terms would further be used in Afrikaans and Xhosa within the clinical workplace. Afrikaans has equivalent terminology however, as seen in the example above, technical communication in Xhosa is more limited and equivalent terminology is still being developed.

In the next chapter, the findings with regard to the communication practices of radiotherapists as classroom and clinical educators are presented. Many of the above findings, with reference to the genres and registers identified in professional practice, re-appear in the pedagogic context. The pedagogic context involves additional layers and adaptations to the professional communication practices of radiotherapists in order to accommodate the specific needs of teaching and learning.

CHAPTER FIVE.

FINDINGS: PEDAGOGICAL COMMUNICATION IN RADIOTHERAPY

I mean its just a simple proven scientific fact. I mean if you are doing something or if you listening to someone, if you actively participating meaning whichever senses you use, the more you use, the more you going to remember. So obviously if you actually part taking in the whole tutorial ... you will remember more...I mean you will go away with a lot more so...definitely. (S9, 03/08/2006, C1)

More by explaining the terms that I used I felt that you can't just give the students a phrase or a term and expect them to know what you mean. By explaining that term and breaking it down into more understandable language and also to a language that they can relate to and then bringing it into context and explaining the more medical term. (P3, 01/08/2006, C2)

5.1 Introduction: radiotherapists as language teachers

This chapter focuses on the communication practices between radiotherapy lecturers and students in the classroom and practitioners and students involved in clinical teaching. As noted earlier, radiotherapy is a career-focused learning programme in which there is flow between the academic classroom and the academic hospital. Academic staff mainly teach in the classroom, but are familiar with the routines and practices of the hospital. In the context of a teaching hospital, radiotherapy practitioners will play a role in clinical education and in that sense are radiotherapist-educators. This chapter will refer to academic staff as lecturers and clinical radiotherapy practitioners as educators. The term Practitioner used as with capital letter P is identifying the lecturer/educator participants, as in Practitioner 1 or 2. The radiotherapy learning programme consists of theoretical lectures that are classroom based, practical demonstrations that are both classroom and

hospital based; and experiential learning that is based in clinical workplaces such as the academic state hospital and other regional hospitals and clinics.

Radiotherapy students are required to have specific academic subjects as entrance criteria to the course, for example Mathematics and English are compulsory entrance criteria, and Physical Science or Biology, and another additional language such as mother tongue. At the institution of this research site the students also underwent a panel interview and psychometric test which includes numeracy, language, cognitive reasoning and three-dimensional reasoning. Thus the students are considered to have a basic science and language expertise with which they approach their chosen profession, radiotherapy practice. Lecturers are considered to have a certain expertise in their academic subjects, for example, Radiation Sciences, Radiation Practice, Anatomy etc. and to have clinical expertise, and thus are considered to be sufficiently qualified to teach and guide students towards the required professional knowledge. They would also probably have postgraduate qualifications within their discipline, radiotherapy.

The findings reported on in this chapter are based on video-recordings and observation schedules of the teaching interactions as well as post-observation interviews with the participants. During the interviews many generic issues around pedagogical communication strategies were raised by participants, such as students' criticisms of lecturers who needed to "vary [their] presentation method ... to keep [students'] attention (S9,03/08/2006, C1), the importance of lecturers being "audible enough" to enable students to "hear ... instructions", the difficulties of overloading students with too many issues, when dealing with complex issues "it's always better to make diagrams when explaining these things" (S8, 23/06/2006, D1), the ineffectiveness of requiring the class to answer questions "as a chorus" (S3, 22/08/2006, B1), or teachers who insist on using "a red colour that we couldn't see so clear[ly]" (S2, 22/08/2006, B1). Although there were criticisms, students also commented positively on the generic aspects of pedagogical communication, such as teachers who take trouble with their presentation – such as "using visuals" to help student to "understand better" (S2, 22/08/2006, B1).

Teachers who ensured participation were particularly valued by the students, as in the example below:

...she gave us the chance to go to the board and then each student was able to ... for example the wedges...we filled in the wedges and it was the wrong way round she left it and the class decided what is wrong...so we all participated...there was whole participation deciding of what is wrong and how can fix it and the reason why...everything was explained clearly and for everything that was done...the reason was given why...it was actually very good (S6, 22/08/2006, B1).

Lecturers and radiotherapist-educators themselves were often self-critical when observing themselves in video interaction, for example a teacher says “I was talking and my back was facing them, because I was busy on the control panel but I could have maybe in the meanwhile, [given] them something to do or [raised] questions” (P3, 01/08/2006, C2), “I could’ve spoken a bit more clearly...because I couldn’t at all times hear myself”(P1, 22/06/2006:A2).

Another educator, observing herself, states, “I must admit sometimes I did find myself kind of casting about for a word that I was trying to clarify what I was trying to get from that particular point” (P4, 22/07/2006, D2). Educators also reflected on positive communication strategies employed, for example Practitioner P4 explains that she used “positive confirmation...affirmation...of various steps along the way...for me [that] worked” (P4, 22/07/2006, D2). The same practitioner confirms the importance of non-verbal communication such as “eye contact to ensure common understanding, seeing if [the student] nods or she looks puzzled” (P4, 22/07/2006, D2).

While the generic communication issues raised above are undoubtedly important, it is the more radiotherapy-specific communication practices that are the focus of this thesis. Higher education practitioners have always had the role of inducting students into the language practices of their chosen profession and radiotherapy lecturers and clinical practitioners are similarly teachers of radiotherapy communication practices.

5.2 Formal and informal communication practices in the classroom

In Chapter 4 different forms of professional communication were identified. In this section, the main formal and informal forms of professional communication are examined in relation to their application in educational contexts. All participants interviewed commented on expected behaviours and hierarchical roles as components of professional expertise in radiography. Many of these professional codes of practice are tacitly understood, but become more explicitly understood as they observed themselves on video or were interviewed about specific communication practices.

According to Practitioner 3 (who calls the different forms academic/professional and jargon/everyday language) it is important for students to be aware of the contextual differences between the two:

...there [is] definitely a difference between the two because professional language...for me...is using the academic terms as it is...whereby jargon is relating it to our everyday use of words...like...a professional language would be saying the word for 'superior'...where when we set the patient up we will just say 'sup'...where I would distinguish between 'sup' and 'superior'...'sup' meaning the jargon and 'superior' the professional language ...I would say it's important ... for the students to know that basic and also to know where the jargon comes from and to use the professional language as they go out into the field and... working with the patient...and...then again the jargon comes in when the people in practice use the jargon but for them to grow academically and also when they [are] reading and doing literature studies to know where that specific word comes from (P3, 01/08/2006, C2).

Their teachers are not the only source from which they learned formal technical communication, as one of the students pointed out:

By reading our textbooks we also come across those terms and that also helps us a lot...especially if we get...stuff to go read up at home and then you come across it and it should help in lectures as well (S2, 22/08/2006, B1).

The learning environment plays an important role in the student successfully acquiring the required academic, technical, and workplace languages and registers. The learning context is a social context and the meaning and learning which the student experiences are relevant to that particular context (Bazerman, 1994; Gough, 2000). It is here that the student learns to be academically literate within their chosen professional context. Gee (1996) refers to primary and secondary discourses, where primary discourse refers to everyday language and transactions and secondary discourse is that which is found within specific contexts that require certain expertise. Students have to learn to place themselves in relation to the secondary discourse of the chosen discipline and lecturers and instructors are facilitators in this regard. In introducing students to aspects of the secondary discourse, various strategies described below were employed to make the acquisition of theoretical knowledge and professional practice, including communication practices, more learner friendly and contextually relevant to the students.

5.2.1 Formal technical communication

In this section the formal communication practices between practitioners and senior students is discussed, particularly the ways in which lecturing staff model the correct use of formal terminology in their teaching practices. It should be remembered, as one of the practitioners points out, that the senior students do not need to be inducted into the basic generic technical communication practices:

...when you [are] dealing with...third years...[they] have got all the background knowledge already...so if you tell them 'nasion'... 'inner canthus'...they know exactly what you talking about and you don't have to explain (P1, 22/06/2006, A2).

The student interviewees were third year students (senior) who were used to the clinical environment and were comfortable with the professional language of radiotherapists. They had mastered the basic specific terminology and, as one student put it:

I do use the common terminology and...if I'm explaining to somebody...the person understands what I'm saying...it's easier for me to explain like that...to start off with professional terminology right in the beginning...it's just easier (S3, 22/08/2006, B1).

All practitioners were clear on the importance of the modelling of the correct medical or technical terms. Their explanations were in formally correct English which guided the classroom and clinically-based pedagogic communication practices, particularly as the medium of instruction (MOI) at the institution and teaching hospital is officially English. Practitioner 1 was specific on this point:

I understand it to be number one speaking correctly as English should be spoken ... not using slang...number one...and also using the correct technical terminology or anatomical...that's what I understand under that...just doing things by the book as it were (P1, 22/06/2006, A2).

Formal terminology, as Practitioner 4 explained, is “an international norm” (P4, 22/06/2006, D2) that students need to be familiar with. Students themselves recognise the importance of a standardised professional language. Student 8, for example, pointed out that one of the uses of knowing the formal form of radiotherapy communication, was that the standard terms remain the same across different contexts:

I remember when I went to [a state radiation facility] it was the same terms...so they don't change that...within any radiotherapy department they would always use the same terms...even in the books...it's the same terms...they don't change (S8, 23/06/2006, D1).

Formal communication practices express specific aspects of the radiotherapist's work; there are, for example, technical terms and expressions that have developed to explain the process of radiotherapy planning used both in the classroom and the clinical workplace:

The professional language is quite...[specific] when it comes to planning...[students] really need to know all the definitions...like...‘target volume’...and what it means because if you don't know that...it's really going to be difficult to plan...and ‘the wedges’...and the language that we use in planning is not like any other language that you would use...in any other [clinical] department...so the only people who really understand [are] your colleagues...the people that you work with and also the people in the machines...they will really understand that language (S8, 23/06/2006, D1).

Students understand that the language of radiotherapy planning, for example, has developed around the work involved with planning:

...so if you were to explain...the plan to somebody who does not know anything about this course...you would have to really simplify things...even show them with an example [for example]...‘isodose’...I would just say to a person who doesn't know...it's lines joining equal places (S8, 23/06/2006, D1).

The findings indicate that formal technical terminology can be seen as that terminology that has been published in reference texts, international reports and journals and as such is accepted internationally as universal radiotherapy planning language.

Consistent modelling of formal technical terminology

One of the radiotherapy lecturers interviewed (P2, 17/07/2006, B2) commented on how important it was to consistently use formal technical terms in explanation. When she observed her lesson on video, it confirmed for her the importance of formal technical terminology such as “isodose curves”, “wedges”, “plan analysis”, “field arrangement”,

“photon beam”, “beam orientation” and “posterior” – to list but a few technical terms. She commented that “It was terminology that I called professional language.”

Not all practitioners were consistent in their use of formal terminology. After observing a video of his teaching a tutorial, Practitioner 1 was concerned that he had not always used formal language consistently:

...when it came to...using the proper terms for ‘nasion’ and ‘inner canthus’...I was correct with that...but...I could have possibly used more professional language ... (P1, 22/06/2006, A2).

Students felt that using formal terms was important and that it was part of their integration into the treatment team with the other role-players:

...it’s actually quite crucial to start with correct terminology from the word go because...if a person is introduced into that environment...expose them to the actual...terminology of what’s being used in that specific field...instead of using jargon...and...that sticks with you...you’ll go through it and you’ll keep on using the wrong terminology...what I’m basically saying that if you have to explain something to a qualified staff compared to a student...rather with the student try to stick with the actual terminology...[so] that you can get that idea across...whereas with the staff member you can still use a bit of slang but they will understand what you mean...they’ve got the background on that specific area ...that is important in the sense that when you do a tutorial like this with students, for example, you actually do need to focus on the terminology aspect or part of it (S9, 03/08/2006, C1).

Students valued presentations by lecturers who modelled formal communication practices, but found it helpful when the lecturer switched from modelling the professional communication practice to the explanation in less formal terms as this helped to understand concepts and terms:

I would also like to say that the entire lecture was very professional...like [Student 7] was saying [the lecturer] used the professional language but there were instances that she didn't...to make us understand that this is what she is speaking about...because some of the terminology was not so clear at that point (S6, 22/08/2006, B1).

Practitioner 3 linked the precision of radiotherapy practice in treatment setup with the correct use of those formal terms that are best able to express this precision. She noted that the students need to understand the significance of these terms (x and y) as well as to apply them accurately in radiotherapy practice:

...the coordinates that we use in our planning...as on a graph we use the same x and y co-ordinates...we use it in such a different way...if I can say...that we take that x and y from the graph and then bring it into context of the patient and the images that you get...that we can so easily refer to it as x and y and maybe not positive and negative...because then you would give a completely different meaning to that, if you know what I mean...again I must say x and y meaning the field size...or x and y meaning the co-ordinates on the patient...the depth and the height...we must very clearly distinguish between the x and y because we [are] using for our field length and width...and also the beam location...so we must make the students aware of the difference between the two...that...when we talk about x and y setting of field size it's different to the x and y when we...say for instance...do verification films on the simulator...because that will be different co-ordinates (P3, 01/08/2006, C2).

One of the students confirmed the need for a precise use of language in clinical practice:

I also learned in the planning department where they were trying to...tell us...about the field size that the y is the length and the x is the width...that's where I came across those words the same way (S5, 03/08/2006, C1)

The difficulty of sustaining formal technical communication

The modelling of formal technical communication is difficult to sustain in a teaching context, as many radiotherapists involved in education pointed out:

I think the first point...[with regard to] a tutorial...is how well I know the students...in this case I knew them well...so it was...a lot less formal than I would have done with...students I didn't know...say with dosimetry students or say...postgraduate students...I would have probably been a bit more formal with them...I know exactly what they know...I know that they've seen the procedure before...so I didn't have to go into too much detail but what I did was...gave them the basic description of what I was doing and then as we went through it with each student if they had a specific question then go into more detail about that specific question...and how relevant it was to actually making the cast and the outcome of procedure and that sort of thing ...(P1, 22/06/2006, A2).

Thus with students that are familiar to the instructor, an overly formal tone becomes artificial and contrived and it feels more natural to communicate in a teacher-student style – where both modelling the formal occurs alongside a more informal pedagogic commentary. The strict use of technical terms in a formal communicative interaction is not always successful as the terms are radiotherapy specific. As one student pointed out:

...[it] doesn't always work in all instances...for example...if you should just say...the thin end...where's the thin end going?...and it's a first year coming out from the diagnostic department...it doesn't necessarily mean that the person will understand what you are saying...then the emphasis should be on using professional language and explaining to the first year exactly what you mean ... as clearly as possible...after you [have been] using professional language and the person still doesn't understand then you can settle for using more informal or diagrams or just trying to explain so that the student understands exactly what you speaking about...what the wedge is itself...why am I saying thin end? ... Why am I saying thick end?...things like that (S6, 22/08/2006, B1).

Student 9 explained that achieving the correct balance between the formal modelling and the informal pedagogic register is important as in this case it provided the necessary learning:

I'm trying to put myself in [Practitioner 3's] shoes ... you should try to stick to professional language but ... sometimes you [are] going to [say] 'press the button' ...if that gets the idea across...you can use it but ... I think you shouldn't get too lax about it (S9, 03/08/2006, C1)

One of the students pointed out that technical communication that is too formal can be a barrier to learning:

...sometimes when you're in a tutorial you would get the person delivering the tutorial...speaking in...too professional language where you feel intimidated in the sense that sometimes you don't understand what he's saying...you [are] too scared to ask questions [because] you might feel that you're going to look very inferior to the others...you might ask a stupid question ... so in that aspect [Practitioner 1] actually did very well ... put us as students at ease and just inviting us to participate in the whole way that he was communicating with us (S9, 22/08/2006)

Here the student was reflecting on of the fact that if the tutorial is conducted in a too formal register, the students are unlikely to relax sufficiently to start listening and learning. He concludes by noting that in this particular case the practitioner ensured they were relaxed and the communicative process was positive. This point is shown in further detail in the next section on teacher student relationships.

Teacher student relationships

The level of formality of the lecturer's pedagogic communication is dictated by the teaching context. As lecturers and instructors pointed out, the use of humour and fun can enhance student learning:

...regarding the informality...probably by introducing a bit of humour again because I knew them...I think it made them feel comfortable and at ease ... they didn't feel there was somebody authoritarian standing over them...and going to jump on them for each mistake that they made...where if they did go wrong...I would guide them ... rather do this and this is why you rather do this than what you were doing...(P1, 22/06/2006, A2).

The study of radiotherapy is technically demanding and the field of practice, which has to do with cancer patients, can be emotionally demanding. In certain learning contexts there is little opportunity other than extreme formality as the interaction may be within the integrated treatment team and this can be stressful for the student. Experienced practitioners understand this, and try to add some "fun" into students' experience. The task is illustrated with snapshots from the video footage in Appendix F and gives a context to the comments of the participants.

...it can be a fun thing making an impression...so...I guided the students through the procedure...seeing that watching a procedure and actually doing it...the students would feel...a little pressure being that the lecturer...was there and in this case it was video taped [in a research context]...and so they would feel a bit of pressure to actually get it right and not make a mistake in front of everybody ... (P1, 22/06/2006, A2).

The students interviewed confirmed the importance of these communication strategies. Student 6 commented on the instances of communication that made Practitioner 1's tutorial successful, namely:

...during the entire practical all information was clearly delivered ... [there] was humour which made the practical so much easier... everything was very ... clearly demonstrated...we were allowed ... to ask questions...we were always answered...and if we didn't understand something he would then demonstrate it again (S6,13/06/2006, A2).

Another student adds:

...as far as I'm concerned the whole method in which this whole tutorial was done...was...excellent I think because first of all...like [Student 1] said...you didn't feel intimidated...it was a very relaxed environment...relaxed...but yet professional (S9, 13/06/2006, A2).

Thus it can be seen that Student 9 makes the important point that a communication practice within a tutorial that is informal ('relaxed') can also be 'professional'. This is important because his conclusion was that it allowed the students to learn appropriately.

Communication and simulated clinical practice

When learning certain procedures in radiotherapy planning, the radiotherapy students do much of their clinical training using simulated practice using the appropriate equipment. There are two major areas needing simulated clinical practice: 1) computer graphic planning and 2) localisation imaging equipment. These were both teaching interactions (see Figure 3.1) in this study and the findings are reported below.

1) Computer graphic planning.

Radiotherapy students do much of their training for radiotherapy graphic planning with the use of the graphic planning software packages such as Theraplan Plus or Pinnacle.⁴ The particular software package used in this study was Theraplan Plus. The graphic

⁴ At this site the planning software Theraplan Plus Version 3.8 produced by Theratronics, and Pinnacle Version 8 produced by Philips Medical systems, were in use.

planning software brings a whole new set of communication practices into teaching and learning, as Student 8 explains:

I had to learn so many signs from the computer software...if you do not understand what they mean...you can't actually plan...you can't do anything and you have to know what is it used for...the icons...I can go and click there... because basically with planning you can't do anything...if you don't know what the icons stand for...our department is very different from other departments due to the fact that we are planning...the cancer treatment...we use computers and with the other departments I don't think they do that (S8, 23/06/2006, D1)

This software is based on the Windows format but as student 8 states there are many icons (“signs”) whose functions have to be learnt (“what the icons stand for”) before the student can even start graphic planning procedures effectively. Student 8 notes as well that she needs to learn the same technical terminology in order to communicate effectively with practitioner 4:

...because this is like even in the icons its ‘beam eye view’, you know...so...I should also...I just thought I should also start...using the same terms...because it actually make[s] things easier for both of because we...we [are] using the same terms and we [are] talking about the same thing at the same time (S8, 23/06/2006, D1).

Practitioner 4 reflected about optimal teaching methods when supervising a ‘practice’ patient treatment plan in this simulated teaching task and her reflections are illustrated by snapshots taken from the video footage in Appendix G:

I think I probably overdo it which for me...for me is waving round and about in front of the screen but I was trying to draw her eye to the specific part of the screen [we were] working with so I was using it to try emphasize and keep focus on the specific bit because there [are] all the different parts to the main window

[software on screen]...I also see it as a prompt for her to look at whatever it was that I was wanting her to focus her attention to (P4, 22/06/2006, D2).

Both student and practitioner found this teaching task quite intensive because of the factors outlined but the student stated it was a positive learning experience for her and she enjoyed being supervised by the practitioner.

Localisation imaging equipment – simulator.

Radiotherapy students do much of their training for radiotherapy localisation procedures using a simulator. The use of simulation software brings with it an additional layer of complexity for teachers. First, the lecturer needs to explain to the students how the simulator works. It is clearly difficult for students to listen to a lecturer describing this in an abstract way, so the lecturer tends to break the terms down “into more understandable language and also to a language that [the students] can relate to and then [bring] it into context and [explain] the more medical terms” (P3, 01/08/2006, C2). Abstract explanation can be enhanced through the use of appropriate examples:

...for example...the simulator when I started off...I asked them to explain what they thought the word ‘simulator’ meant...and also to bring it into context with everyday life...like a flight simulation...giving the an example of something else where you also use the word simulator (P3, 01/08/2006, C2).

Another example involved explaining how the simulator replicated bed movement and here the practitioner used formal technical terminology:

...then I would say bring the bed up and down...longitudinal...moving the bed superior...inferior and also...localising...what does localise...specifically mean? ...and by giving them an example of...to localise...a tumour (P3, 01/08/2006, C2).

Students appreciated Practitioner 3's detailed explanations and they claimed that:

it was well done...I learned a lot...in fact everything I learned that day...that's the basic movements of the bed and all that...I've learned from her that day ... it was very well done (S9,03/08/2006, C1).

5.2.2 Informal technical communication

In this section the informal technical communication practices between practitioners and senior students is discussed, particularly the way these practices are used within the workplace and cross into the classroom and vice-versa. The informal communication practices that are used between radiotherapists in professional practice is highly specific to their work and is usually jargonised and as one practitioner points out:

...most of the doctors...certainly the registrars...are not that familiar with aspects of planning and with the terminology...they don't spend enough time there (P4, 22/07/2006, D2).

Students become aware of the high levels of specificity and contextuality to radiotherapy practice in radiotherapists' informal communication:

I think over here we would understand each other but it would be a different situation if you go to another [clinical] department because each department uses their own slang...like as you would say jargon...so it's where [jargon] becomes a problem (S7, 22/08/2006, B2).

From classroom to clinical environment

Students first learn communication practices from their lecturers in the classroom and then from their supervising practitioners in the clinical environment. Students are introduced to technical terminology in the classroom and again in the clinical context. This repetition-with-difference enables students to become more familiar with the different forms of radiotherapy communication. As one student explains: "in clinical time

... when you [are] in planning you get exposed to the terminology so you get used to it after a while also” (S7, 22/08/2006, B1). Student 3 added that:

...some of the terminologies which were talked of were actually...in class during our...lectures and we [were] doing dosimetry and so on...that is when we heard those terms...like ICRU being mentioned...that is the standard that is being used ... it actually was not ... clear...but now that we have heard...our lecturer talking about it again then it reminds us of exactly what it meant...now we actually have to take it forward and understand it better (S3, 22/08/2006,B1).

Students’ responses to Practitioner 3’s explanation of the simulator demonstrates the difference between learning in the classroom and learning on-the-job:

[Practitioner 3]...would explain it to us...and this is how you do it...and not just...and she would explain why and how...but if staff [i.e., clinical staff] explain it to you then it’s the same whether its this way and that way...now I understand things better because she said how and why...and she did it and she showed us how it was done (S4, 03/08/2006, C1).

In this case, as the students noted, the physical procedure of the clinical simulation task became the virtual classroom for the students. Thus demonstrating that “the classroom” can occur anywhere that a communicative learning process takes place for the students.

In the clinical environment it is often not possible to explain fully what is happening in real time, as the interests of the patient must come first. This is different from the classroom where a lecturer is able to explain and, if necessary, repeat explanations:

I think another thing for me that I picked up especially with [Practitioner 3] giving the tutorial was that she speaks very slowly and that makes it actually nice to keep up-to-date with what is being said or taught... (S9, 03/08/2006, C1).

Events that occurred in the clinical domain can be brought into the classroom for discussion and explanation – particularly when there were constraints on such discussion and explanation in the clinical environment because of lack of privacy or limited time to ask questions:

...whatever questions we have from upstairs [i.e., the clinical environment] ... you can always come and ask your lecturer and ask what is it?...they always explain well (S8, 23/06/2006, D1)

The classroom is an important learning space for students to debrief their learning experiences of the workplace. The physical classroom can provide a ‘safe’ place for students to discuss and debate questions about the clinical domain. Students should be reminded and taught that events discussed in the classroom where they involve particular individuals from the integrated treatment team or a specific patient must remain confidential within the confines of that ‘teaching space’ and its participants. The work integrated learning environment can at times be stressful for the students, and although rich with its combination of theory and applied practice, students frequently need the place and time to debrief, to discuss and then ponder and reflect in the classroom what they have learnt and experienced in the workplace. This is an important aspect for educators to consider and to remember to allow classroom time for ‘de-briefing’ sessions for students returning from clinical experiential practice. This aspect of the classroom as a ‘thinking space’ is addressed by Student 2 who comments on the terminology used in the graphic planning lecture in the classroom and notes that:

[lecture in classroom] it could also make us think of it [the terminology] when we go upstairs in clinical and actually do the work upstairs on the computers in planning (S2, 22/08/2006, B2).

Practitioner 3 explained some of the practical difficulties with explaining in the clinical environment, as well as the benefits of students being able to experience the real situation in the clinical context:

It's very difficult because...for instance not having the simulator there and being able to show them what you mean...because when I set the field size on the control panel outside they could see...what happens when I actually set that field size outside...If you teach them in class you can draw a picture on the board but it won't have the same effect as to what really happens when you've got the patient there (P3, 01/08/2006, C2).

With regard to teaching in the clinical environment, Practitioner 4 expanded on the terminology and appropriate professional communication practices when teaching and claimed that:

If I think that they're not understanding a term I'll talk around it and try [to] approach it from a different way to make them understand...do a diagram...bring in a different way of looking at it...to try and make them understand what I'm talking about so that they do understand the different terms and what they mean so that they can become more comfortable at using and really know what it is that we're meaning by them...but of course...within our department it probably changes to other departments but they need to know what happens in ours...and then they can relate it to others...I mean that's also part of...professional communication...for example I talked about the normalization point and stressed that in this department this is what our doctors opted to do but in another department one needs to know the norm of that department...so you know to make them understand I quite often find myself saying to students 'you need to know that different departments may do things differently but they get to pretty much the same answer in the end'...and they need to know that doing it here is not therefore gospel...the way we do it is our way of doing it, but its not necessarily someone else's way and one needs to respect that (P4, 22/07/2006, D2).

Practitioner 4 emphasised the need to deconstruct terminology and use a variety of stratagems to help students learn a concept and student 8 reflects this in her discussion of her experience of the same tutorial with practitioner 4.

Student 8 explains some of the complexities, as well as benefits, of learning in the clinical environment:

If [Practitioner 4] asks me something...maybe she was just thinking that I'm not giving the correct answer or maybe not understanding the question...she would like simplify it and from there just carry on... For example when...I was putting the wedges...she would ask why...am I putting...a certain wedge in this direction and one thing about me for this tut...I was planning for Linac 2 and for Linac 2...she said to me why is the wedge going in this direction and not the other direction...and in my mind I was just thinking about Linac 2 only and not Linac 1 as well...and the fact that she wanted me to think about was the fact the collimator rotates and its very important when you are planning that you have all the facts with you...not only focus on one thing only because that is what I was doing there...focusing on one machine only...but she actually took me to another direction where I had to think about both machines...like if I was in the other machine...what would I do?(S8, 23/06/2006, D1)

Informal jargon in teaching

All practitioners and students commented on the interesting process of watching themselves on the video footage taken of the various teaching interactions observed. Most commented, particularly the practitioners, that they found it enlightening. Some also felt they had learnt something about themselves and their respective performances and knowledge base in the process of watching the video footage and then the reflective process involved in discussing the interactions depicted at the post-observation interviews. The extensive use of jargon was something that took many participants by surprise as many of the interviewees were not aware that they used different language forms and registers in their different areas of expertise, but after watching video-

recordings of themselves teaching students, they became more aware of these practices. Practitioner 1 described his experiences as follows:

...it's something that a person doesn't really think about until you go through something like this [i.e., watching a video of oneself] and start talking about it...because I personally don't really think about communication...it's something I sort of do naturally if I [am] dealing with those kinds of students I speak like that...if I'm dealing with friends in the mould room I speak in a different way...you know that kind of thing...[if the professors come in]...yes definitely then you try and speak perfect English...because that's the way it is...but...I don't consciously think about that...(P1, 22/06/2008, A2).

Practitioner 2, after observing herself on video, noted that she also slipped between formal terms and informal jargon as she answered students' questions and explained procedures. She was worried that she should be more consistent in use of more formal technical terminology. This practitioner went on to note that she explained in this way both in the classroom and the clinical department and was a bit shocked that she had used informal language (such as "open up the angles") when explaining. On referring back to the video footage, she noted that her diagrams and her pointing to them were very useful in demonstrating the plan angles. She noted that the classroom lecture on plan analysis "needed to be reviewed at the planning work stations" (P2, 17/07/2006, B2) as the aspects of the plan could be physically demonstrated on the graphic planning computer. She expressed the difficulty of teaching a concept in the classroom that also needed to be illustrated in the clinical environment in the following comment:

...but if you are sitting in front of a terminal and at the end of a session where we talk about the weightings of the that one plan we analysed...they just [have] to believe me when I say that if you [are] weighting it less...it will push the dose up...more anterior...I say push dose up...I don't sit down and explain...I say push [the] dose up...what does that mean? (P2: 17/07/2006, B2).

The students, at their corresponding interview, felt that the lecturer (P2) was clear and they understood the concepts explained.

I think she did it quite professionally because the terminology she used and her explanations were quite good also because she did it in a professional way but yet she explained it quite simply also...the way she explained it was in a way...that we could understand...because she knows what we used to like by now...and I think I noticed that because she would repeat and reiterate...again (S7, 22/08/2006, B1).

The students felt that her use of diagrams helped their understanding of the lecture on plan analysis:

I would say one of the terminologies I heard was the 'beam's eye view' which is a terminology in...radiotherapy only...but to a layman it would...be...the way you look at the tumour itself when you are looking at it directly...when you talk to radiotherapy...we would know exactly what you mean (S3, 22/08/2006, B1)

According to Practitioner 3, it is important to understand the contextual nature of communication in the clinical field of practice and its effect on the required professional language. For this purpose, it was important:

To make the students aware that they might come across [specific] terminology used in the [clinical] department but as the lecturer...you would also teach them the professional language...the correct word to use...so that when they come in the department and they read maybe that same piece that they were taught practically...then to correlate the words and to see the words in the text, the same way they try to convey that word into practice...in some literature and some manufacturers will refer to the collimator setting the field size as 'blades'...but then...they in the same sense...some other manufacturer might see the 'blades' as the 'wires'...actually those collimators that set your primary field size so

depending on the piece of equipment that you're using and also the terminology used in the department...it might have a whole different meaning in another department...you must conform in your department and as to what you would use ...[in the treatment unit]... we would say...move the field size...because we want to use that...bit of the field size...we would refer to that specific line as the jaw because you can move it independently...we also say the 'leaf' like in multileaf collimators...but that is specific again to that treatment unit having that facility (P3, 01/08/2006, C2).

Practitioner 3 described particular radiotherapy communication practices that involved talking about the patient, in a way that would not unduly distress the patient:

I think it's...because you [are] taking charge of it...you...are busy doing it and like it's yours and then you would personalise it by...making an object out of the patient but from what we doing and that's why we referring to it as 'I'm on my height'... 'what you're doing on your side?'...we're...making it ours...I would say...it's part of what we doing and if I must refer to 'go to the patient's midline' then immediately the patient would think 'what are they doing?' and its also maybe a language that we form between us...not to exclude the patient but not to make the patient so much alert to what we are doing...while we...because we need to talk to each other...and while we're talking to each other that we always use the patient or the patient's name and then alerting the patient as to 'what's happening, what're they're doing?' and then bringing about movement from the patient's side maybe...(P3, 01/08/2006, C2).

In this section the informal technical communication practices between practitioners and senior students was discussed within the varied communicative teaching interactions that occurred. The way these communicative practices are used within the workplace and across into the classroom and then vice-versa was highlighted and their significance in various contexts commented upon and this moves into the following discussion of the formal and informal continuum of communicative practice.

5.3 The continuum of formal/informal communication

The continuum between formal and informal communication experiences was discussed in Chapter 4 as part of the workplace practice learning experience. In this section a similar discussion is reflected as part of the ‘classroom’ and pedagogic experience. The same exemplar is used to illustrate the pathway between the informal communication and the formal communication and a more detailed format is shown in Figures 4.1, 4.3 and 4.4 which reflect the detail of the technical communication involving a series of typical exchanges between the different role-players and audiences within the radiotherapy clinical environment. A simplified, shortened version of these figures is shown in Figure 5.1.

In the practical demonstration where students were learning to make an immobilisation device, both formal and informal technical jargon was demonstrated and the practitioner (P1) was observed to be meticulous in using the formal technical terms in his initial detailed exposition and demonstration of the task. Once the students started to perform the task, both he and the students started to use the more informal terms. While performing the task they then discussed what would be suitable layman’s terms to use when explaining to their patients in order that the patient would understand. The progression of the term in professional language and how it was used, is as follows:

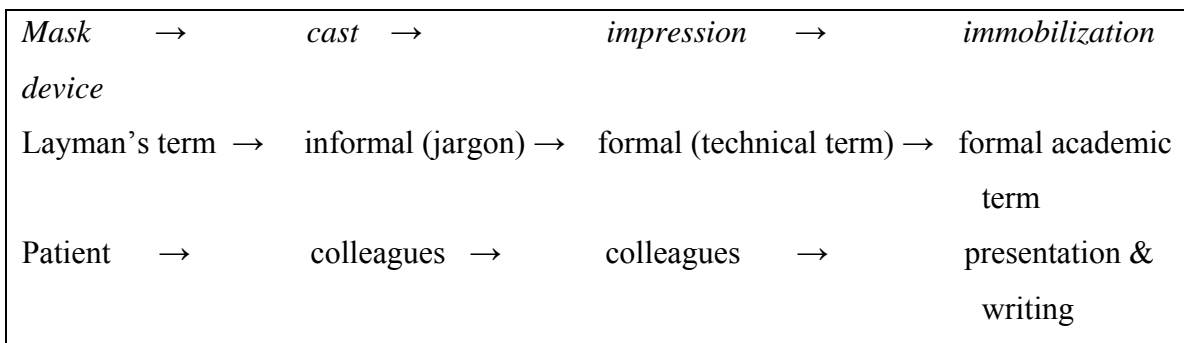


Figure 5.1: A continuum of formal/informal technical communication

The students were aware of the continuum of formal and informal communication, and that “the level of professional language” (S9, 13/06/2006)) used would be dependent on

the context. Student 9 claimed, for example, that he would not use the terms “cast” or “impression” when talking to patients, but “would probably use the word mask...I mean everyone knows what that means and that is simple and it explains” (S9, 13/06/2006, A1). Attempting to define the nature of this form of communication, the same student described it as “a bit informal to formal...its not really formal” (S9, 13/06/2006, A1). An informal, yet professional, language would thus be used on “the treatment floor” [i.e., where the patients receive their radiotherapy treatment] (S6, 13/06/2006, A1).

Students were familiar with the informal jargon used between radiotherapists, and equally aware of the inappropriateness of using this with patients, as shown in this comment:

We as radiographers use it[i.e., jargon] a lot because I think we have an understanding of each other...we know exactly what we [are] talking about...what we're referring to so in that aspect I suppose its fine but [when] you [are] amongst people that...aren't too clued up on the workings of the department and everything the way it should be...then you should be careful of how and what you say...(S9, 13/06/2006, A1).

The students also understood that if they were required to write an assignment on the procedure with regard to the making of an impression, their language would naturally be more ‘academic’ in its tone and the formal technical terms, for example, “impression” and “immobilisation device” would need to be used.

Several additional examples emerged from the interviews, such as the use of the term “tolerance of cord” in place of the more formal “the actual dose tolerance of the spinal cord” (S7, 22/08/2006, B1); “your external” for “the external contour of the patient” (S6, 22/08/2006, B1); “beam’s eye view” for “putting your eye at the target looking through the collimator at the patient” (P4, 22/06/2006, D2); “up or down” instead of the more correct “superior or inferior” (S5, 03/08/2006, C1), or, with reference to practice on the simulator, the use of terms such as “wires” and “blades”, where the wires are indicative of the field size and the blades show the exposure area. A student explained the

commonly used shorthand terms “large volume” and “small volume” as follows: “the large volume will be including all the lymph nodes...the regional lymph nodes and the small volume will be exactly going to the tumour...without including the lymph nodes...”(S3, 22/08/2006, B1).

Another student explained that:

I think someone who doesn't understand anything about the simulator, would not understand [terms such as 'hit the anode' or 'merge the picture'...because she was...talking about...localisations...moving lateral...then the person won't...understand(S5, 03/08/2006, C1).

The students, in their interviews, were thus able to demonstrate that they understood the full meaning of the “shorthand” that they were using. In their interviews, both practitioners and students also demonstrated their understanding of the continuum of radiographic communication and its use in different contexts. Clinical radiotherapy makes use of communication practices that are context-specific and, as illustrated above, understood only by its members in the performance of their respective tasks.

5.4 The multilingual classroom

In the clinical and teaching environment, the students are likely to hear English, Xhosa and Afrikaans spoken amongst colleagues and in patient communication. Students who do not speak, or are not fluent in, either Xhosa or Afrikaans may lose certain of the transactions occurring between staff and patient unless the practitioner remembers to keep translating into English for those students' benefit. Xhosa speaking students are frequently asked to translate the interactions between an English- or Afrikaans-speaking radiotherapist and a Xhosa- speaking patient. Similar situations arise when Afrikaans-speaking staff radiographers need to translate interactions with Afrikaans-speaking patients into English for the benefit of students who are not familiar with Afrikaans. Because the university is an international resource, some radiotherapy students are from countries such as Ghana, Tanzania, Ethiopia and Eritrea. English is therefore their

primary means of communication and the main language of learning in their new learning environment and temporary 'home' in Cape Town. These international students are not familiar with the regional languages of Afrikaans and Xhosa and are thus liable not to understand certain of the transactions occurring between staff and patients unless practitioners remember to keep translating into English for their benefit. The linguistic reality experienced by practitioners and students therefore contributes to the language environment that each student experiences. The language environment thus comprises a multiplicity of factors.

A further aspect to the 'language of learning' arises when one considers the need for academic literacy teaching to become part of the learning experience of the students. Although the student participants of this study were senior students, and therefore had achieved a measure of academic success, several of the students, like many South African learners (Makhubela, 2000), had initially been under prepared for the challenges of higher education due to the past inequitable and inferior education system that was a feature of the apartheid government. The school educational experience and preparation of students varies greatly according to the resources available within the school system (NACWC, 2001). The acquisition of professional communication practices are also dependent upon factors such as the students' and teachers' previous life experiences, cultural context and value systems (Bazerman, 1994; Geisler, 1994; Katz, 2000).

Practitioners in this study had the challenge of facilitating student learning in a language that was not their home language and in a context which was not an entirely familiar one. Practitioners needed to be sensitive to this and needed to pursue strategies of academic literacy teaching as well as the radiotherapy-specific professional communication practices.

5.4.1 Technical communication in a multilingual context

Several students felt that in a situation in which the staff member could be Xhosa-speaking and the student working with them could be Xhosa-speaking, communication did not have to take place exclusively in English. However, there were a number of issues raised by students regarding the complexities of translating or developing technical terms in an African language and the need for commonality with regard to terminology in order to facilitate cooperative work across contexts – or as Student 7 put it “a universal language...so wherever you go...you use the terms and the next person will know what you’re talking about” (S7, 03/08/2006, C1).

Student 5 felt that using one’s home language would enhance learning and this was confirmed by Student 6, who explained that:

if we speak in...mother language to one another...explain it to each other...then you understand it better than say in English and [if] your first language is Afrikaans...then if you explain to each other in Afrikaans you will be able to understand it clearer I think (S6, 03/08/2006, C1).

One of the students claimed that “as we talk in our own languages the terminologies will become as the terminologies in English since we all know them” (S3, 22/08/2006, C1). He felt however, that the technical and scientific terminology of many African languages had not yet developed precise terms for medical conditions. He explained that “but if [I] explain it as a sunburn it would appear very much well demonstrated to the patient than using our own languages...because those languages sometimes mean ‘fire that is burning’ and the patient might be scared (S3, 22/08/2006,C1).

Students all concurred on the difficulties with regard to translation of technical terms from English into other regional languages used and Student 7 made the pragmatic point that as “the actual controls” and “the instructions of the machine [are] in English” it makes sense for the educator to do the explanation in English too (S7, 03/08/2006, C1).

The question of the multilingual environment of learning was something that practitioners and students related to with interest as they had all experienced variations of the benefits and challenges of the multilingual classroom and the workplace.

5.4.2 Inclusive pedagogical communication

Practitioner 1 felt that being able to facilitate learning in students' home languages would "definitely...make a big difference" (P1, 22/06/2006, A2). However, the reality is that most clinical educators and lecturers do not speak African languages (although the demographics of both higher education and the teaching hospital are changing):

Unfortunately...we only know English and Afrikaans ... if I know Xhosa it would actually be even better...especially...most of the Xhosa students we have are quite *au fait* with English and there's not a problem...but there are some of them that struggle a bit and then you've got to remember not to use terms like *au fait* because they don't understand what it means...so that something that I have to think about on occasion when I speak to the African students...because knowing ...that English is probably their third language...so it's just something I've got to take note of sometimes...remember not to speak in words that people don't understand (P1, 22/06/2006, A2)

Practitioner 4 explained that people tend to teach in the way they were themselves taught, including their choice of medium of instruction. In response to an interview question with regard to whether she would use languages other than English in the classroom, she replied:

You mean bringing different languages? You could for the outline but once one gets into the actual plan...joining isodoses or whatever...certainly having worked for this department for many years... we use English...whether other people use Afrikaans or Xhosa or whatever...in their dealings with students...I don't know...I always use English because it's the way I was taught and I've kind of carried it on...I must admit it didn't strike me probably because I wouldn't know

what the terminology is in anything else...so I use the terminology that I know and expect...that they will repeat it...when they're studying (P4,22/06/2006,D2)

The issue of “what you are used to” was similar for the students, as Student 7 explains:

I think that you would tend to stick to the language you studied in because if you studied in English...you only know the terms in English...so you would stick to English...most of the staff members who are Afrikaans they maybe did everything in Afrikaans so they would find it more comfortable explaining in Afrikaans (S7, 22/08/2006, B1).

Practitioner 4 understood that the acquisition of technical language proficiency was akin to learning a new language, and that it was difficult for English speakers as well as for speakers of other languages:

... regardless of how familiar that someone is with English...some of our students are not that proficient in English necessarily but they need to pick up the terminology anyway so I think its kind of the same...pretty much for all of them ...I'm finding that all of the tuts that I'm doing [are] essentially run the same because of the terminology needs to be brought in and maybe I need a bit more of an explanation sometimes but they end up...using the terminology as one would wish...by the time they've had their time there (P4, 22/06 /2006, D2).

The practitioner does concede though, that technical terms in Afrikaans are different from those used in English:

I just know for example if someone...like [a previous student] who has gone to [a hospital where Afrikaans is used] says she's got to learn the terminology again because it's now Afrikaans medium of instruction there...and obviously the majority of people who work there are Afrikaans so it's a whole new thing for her (P4, 22/06/2006, D2).

For similar reasons, Xhosa-speaking students felt that it was easier to explain a technical matter to a Xhosa-speaking colleague in English:

I would prefer...to stick to English because if you try to change it in Xhosa ... you could be changing everything and its very important...especially if you are explaining it to a first or a second year student...that it would be...the exact thing...they will not think its something else...so...I always try to stick to English ...not change it...because I don't even know how would I change it (S8, 23/06/2006, D1).

Student 4, reflecting on a lesson, makes the point that if the explanatory language used by the practitioner is inclusive or “student-friendly” then it is not difficult for students who do not have English as a first language to understand the procedure being explained. Thus they can learn the required formal technical terminology or how the equipment must be operated:

I actually think that...it was so much simplified that if it was in another language we would still understand because she [P3] says this...and then she does it...then she shows us how its done...I mean I don't think that I would need to understand then what she was saying...if she said...in Afrikaans for instance...I'm going to move the bed...this is how you move the bed on the control or on the bed...longitudinally...and she moves the bed longitudinally...now I see...okay...that it moves the bed...that button moves the bed longitudinally ... and that's what its called in Afrikaans... for instance...I mean I wouldn't know what to call it in English...now I know that button is for a lateral movement or a long movement...that button does this...press this...this will happen...so ... because the tut[orial] was simplified [the language of learning] would not...have been that much of an issue (S4, 03/08/2006, C1).

This position was supported by Student 7 who claimed that “if you explain clearly enough in any language its just the terms that’s the problem” (S7, 03/08/2006, C1).

The ‘language of learning’ can be seen as a social practice: English as a medium of instruction, while supporting emergent multilingual practices and facilitating the acquisition of professional communication practices within the learning environment as described above, does show itself as an example of language as a social practice operating in support of other educational and professional practices. Wyrley-Birch (2006) notes that the linguistic reality experienced by radiotherapy practitioners and their students contributes to this ‘language of learning’ that each student experiences. A further aspect to this ‘language of learning’ arises when considering the need for academic literacy teaching to become part of the learning experience for the students. Goduka argues that it is essential for lectures to “recognise that language is one of the most powerful transmitters of culture” (1999:108) and, as such, is essential to the success of students and their emergent professional identities. For the practitioners in this case study, the experience of practising in a cultural and linguistically diverse learning environment, has repositioned their expertise in terms of language and content as the learning dynamic between educator and student shifts to incorporate the multilingual environment for the benefit of both patients and the facilitation of students’ learning.

5.5 The radiotherapist and senior student as colleagues

The communication that takes place between colleagues – the radiotherapy practitioner, student and other colleagues within the multidisciplinary team – comprises a discourse specific to that team or group. Thus, the radiotherapy practitioner and student have a specific practice unique to their task and competency within the radiotherapy profession and a commitment to their role within the multidisciplinary team, their working community, in order to provide maximum benefit to the patient. They have a common purpose and professional practice and thus form a particular professional identity.

Wenger's (1998) communities of practice describes the practice of the radiotherapy practitioner and the multidisciplinary team within which this 'slice of life' of radiotherapy practice is studied and illuminated.

For example, in the graphic planning teaching interaction taking place in the clinical situation at an appropriate computer terminal, the practitioner involved (P4) identified "speaking to the student as if to a colleague" (i.e. qualified practitioner) as a strategy to enhance the student's sense of identification with radiotherapy as a profession.

The question of identity is explored by Gee (2000 – 2001: 100-102) where he defines four ways to view identity: Nature-identity, Institution-identity, Discourse-identity and Affinity-identity. He notes that these four identities can be interrelated dependent on the context of the identity viewed. Radiotherapy professional practice seems to be within the context of the institutional identity (I-identity) but as Gee notes (2000 – 2001: 103) "that institutions have to rely on discursive practices to construct and sustain I-identities". Thus the professional communication of radiotherapy practice could be said to be part of the professional identity of the radiotherapy practitioner.

I was speaking to her as I would to a colleague...not as someone who's still new...in other words...not as an inferior person...but trying to draw her in...make her feel equal so that she will communicate better and hopefully feel comfortable to do that...because she would learn better that way as far I'm concerned (P4, 22/07/2006, D2).

5.6 The radiography lecturer as role model

The use of positive role-modelling in professional communication as a teaching strategy to instil and demonstrate correct professional behaviour and practices emerged as a strategy used by educators. Practitioner P4 felt that a certain amount of professional terminology was learned by the students in the classroom but she felt that 90 to 95% was probably acquired in the practical workplace situation where it was used and applied daily. She felt that the workplace was where students learned the practice of professional

communication effectively. The link between professional communication practices and identity and the workplace was echoed in all the student interviews in explicit comments, such as “that is how we talk in the department”. The ‘we’ referring to themselves, the novice radiotherapists. They thus took ownership of their future professional identity in the workplace. In response to whether communication was part of professional expertise, a student explained as follows:

...there are certain levels of communication that [are] different from communicating with a colleague...a colleague...will understand you guys your talk...you use the terminology you’ll understand...but if you use that same work or department language with the patient it’s...not going to work...the patient’s going to look at you with blank eyes and they’re not going to totally understand what you’re saying so you need to be able distinguish as well when it’s the appropriate time to use the appropriate language (S9, 13/06/2006, A2).

In the choice of the words “work or department language” and “colleague”, the student has taken ownership of his professional expertise, identity and practice within his workplace.

The lecturers and practitioners interviewed identify closely with their chosen profession and the different forms of professional communication described in Chapter 4 had become second nature to them. Their knowledge of communication was tacit, although they were made more aware of their own practices through the video-recordings and interview processes. Their knowledge of communication practice was passed on to students both consciously and unconsciously by means of role-modelling. Practitioners become more aware of their own communication practices when teaching and tried to model appropriate professional communication practices and tried to sustain these, where possible, and pass them on to the students.

Practitioner 1, for example, explains the importance of being a positive role-model for radiotherapy students in their encounters with cancer patients:

We are the first people that normally see [the patients] after they've been diagnosed so...we've got handle them...with kid gloves as it were...and ... be cognisant of the fact they that the are going to be nervous and that they not sure what's going on...they've just been told that they've got a lesion...or normally a day or two before...[they have been told to] quickly go to the mould room and have an impression done...and they have got no idea why...its being done...that's why in this instance I didn't explain to [Student 9] when I did the initial one...why we were doing it...but with an actual patient after explaining...the actual procedure and what were we are going to do...I would take actually take out a cast and show them...this the reason we're doing it...immobilization, this is how we strapping it to the table...and these are the marks that we're putting on for your fields...so that they know exactly why the cast is being made...because a lot of them if you don't explain that to them...they actually don't know why its being made...they've got no idea...even the doctor might have told them that... they've got so much information at once now...all of a sudden...'you've got cancer...this is what must happen...you've got thousands of procedures to go through'...so...just to refresh them as to why you are doing it...because a lot of them will then ask you afterwards...'what...is the procedure next?'...'Why a CT scan?'...'How long before we start?'...'Why is it six weeks long?'...that kind of thing...then you can go into a bit more detail...obviously if there are things that are...related to what a doctor should answer and not myself...then I would actually tell them...'rather ask your doctor that question because I can't give you an accurate answer on that because I don't have your folder' or whatever the reason is (P1, 22/06/2006, A2).

Student 1 confirmed that Practitioner 1 had acted as a positive role-model when she explains that:

... a very good thing that [Practitioner 1] did...as soon as we walked into the mould room...where the tutorial was held...[the] emphasis was on patient

care...which was very important ... it was like a role play...we take one of the students and then show us exactly what we are supposed to do...greet the patient...if the patient's uncomfortable how to make the patient at ease...explain everything to the patient...he was very...very clear on that...100% for him because he was very clear with that...even when like he said...you get the patients who has the tracheostomies and things...which we must always make sure as radiographers that we know...how to handle the situation...because, like in the instances where the patient is maybe claustrophobic...he always says you mustn't close the patient's eyes...because the patient is more nervous...he does it at the end just before he covers the face...which was actually very clear...which was actually a good point...because when I [lay] there personally...its not the easiest thing to do with this plaster all over your face...now imagine what the patient must feel...who is just diagnosed with cancer and still being here right now (S6, 13/06/2006, A1).

5.7 Conclusion: pedagogical communication

Academic radiographers thus have multiple roles to perform within the range of their work, and each of these roles has an associated communication practice (Geisler, 1994; Bazerman, 1994; Norgaard, 1999). Traditionally, lecturers are expected to have mastery of their respective subjects. That is what society expects of an engineer, doctor, mathematician or radiotherapist who teaches in a higher education context. In this educational context, lecturers would be required to have postgraduate qualifications within their discipline. They would also (probably) have some years of experience within their discipline, either within academia as a researcher, or within their chosen profession in the health sciences. Once within the academic world of the higher education institution, the pressure is on lecturers to enhance their professional qualifications, to obtain higher degrees, and thus become 'more expert' (Geisler, 1994). The level of their expertise thus increases and could become more and more focused until a certain point of expertise is reached, such that a 'pyramid of expertise' is formed with the levels of expertise linked to qualifications within the profession, for example, the diploma student

compared to the degree student as compared to the postgraduate candidate, culminating in the doctorate.

Three of the five educators interviewed in this study had achieved further postgraduate qualifications within radiotherapy. One of the three had also achieved a further post graduate qualification in education. Another was engaged in studying towards a further post graduate qualification in education. Two of educators were qualified with the standard clinical qualification, one diploma in radiotherapy and the other in radiotherapy laboratory technology. All were expected to have a mastery of their field of radiotherapy practice, the academic subjects that make up the field, and the pedagogies related to the clinical field of practice. They also have to master the different communication practices that are related to their professional expertise as radiotherapists, as lecturers of academic subjects and as facilitators of student learning in academic disciplines and the clinical environment (the workplace).

When entering the classroom or lecture room, radiotherapy lecturers face the initial challenge of helping students to learn to access the content knowledge of that discipline. There are, however, additional challenges to these lecturers, for example the way in which the content knowledge is presented to the students, particularly when the majority of the students are learning in a language (English) that is not their mother tongue and they may, in addition, be under-prepared for higher education due to the legacy of an unequal school system. As undergraduate students, even senior students, they are relatively new to the profession and are intending to gain expertise in a specific programme or profession (Norgaard, 1999). The lecturer is in the position of expertise relative to those listening, learning or reading the content in question i.e. the students.

How the lecturer approaches an audience of senior students is the next point to ponder – what communicative practice is appropriate? What will the audience understand and which contexts are appropriate? It is here that the different communication practices related to the different aspects of radiotherapy come into play – whether in the learning context of the classroom, clinical environment, or something in between the two contexts.

An important way of enabling students to access the knowledge bases of radiotherapy is for the HE practitioner to help students to understand and access the discourse of their chosen profession.

The findings described above explain the various strategies used to induct students into radiotherapy-specific professional communication practices, including academic and technical terms, ways of talking and interacting in the clinical environment amongst colleagues, as well as interacting with patients. It was clear that the senior students had developed an understanding of the continuum of professional communication practices. Educators and students also engage to negotiate a language of learning, and to develop multilingual communication practices that will benefit patients and enhance their work as radiotherapists.

The professional communication practices of radiotherapy educators can thus be seen to include a pedagogical dimension which has written, spoken, unspoken and oral forms (Bazerman, 1994). The student of the discipline has to learn to effectively use the communication practices of the broad field of radiotherapy practice in order to be regarded as a professional. The role of the radiotherapy educators is to facilitate learning and help the student to access the communication practices of the profession at the required level of expertise. Norgaard (1999) refers to this language learning as a process of “negotiation” between the domain of practice and the communication strategies available to its practitioners. These findings lead into the final conclusions in chapter six where the research question is addressed and discussed.

CHAPTER SIX

THE NATURE OF PROFESSIONAL COMMUNICATION IN RADIOTHERAPY

Definitely...definitely...definitely...how to communicate...there are certain levels of communication [that are] different from communicating with a colleague...with a colleague they will understand you guys ... you use the terminology you'll understand... but if you use that same...work or department language with the patient it's...not going to work...the patient is going to look at you with blank eyes and they not going to totally understand what you're saying so you need to be able distinguish as well when it's the appropriate time to use the appropriate language (S9, 22/08/2006, A1).

6.1 Introduction

This chapter concludes the thesis by presenting, firstly, a multi-layered model of communication practices in professional and educational radiotherapy. The first layer of the model was previously presented in Figure 4.2. This chapter then makes recommendations from the findings; identifies areas for further research; and explains the particular knowledge and practice-related contributions made by this research. Finally the four research sub-questions are revisited and the salient points discussed in answer to each question.

6.2 A model of communication practices in professional and educational radiotherapy

The findings indicate that the professional communication practices of radiotherapists have three dimensions: intraprofessional, interprofessional and extraprofessional (or patient) communication. Each of these aspects has a formal and informal register. A further layer is added to the model by means of pedagogic communication which in turn feeds into intra-, inter- and extraprofessional communication. Again each aspect of pedagogic communication has a formal and informal register.

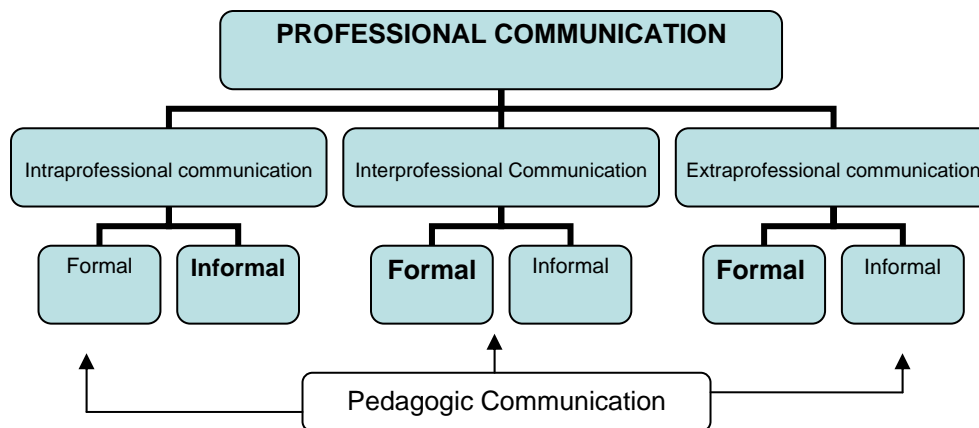


Figure 6.1: A schematic representation of professional communication, showing genres and registers

A constant theme that emerged from the findings of both the practitioners and the novice radiotherapists interviewed, was the issue of the multiplicities of the ‘language of learning’ within the clinical workplace. Wyrley-Birch (2006) identified these multiple facets as: medium of instruction (English), required academic discourses and literacies, and the multilingual workplace and classroom. A substantial portion of the participants’ reflections on their clinical radiotherapy practice focused on issues around language of the medium of instruction (MOI) and the use of the multilingual workplace in order to better achieve their goal of professional expert practice. A common theme was the need for both practitioners and students to decode the formal and informal technical terminology used in practice and when (in which contexts) it was to be appropriately used. This technical communication, using both the formal terms and informal jargonized terms, was thus perceived essentially as the discourse of the radiotherapy workplace and was found to occur predominately in the intraprofessional and interprofessional genres of professional communication as illustrated in Figure 6.2 .

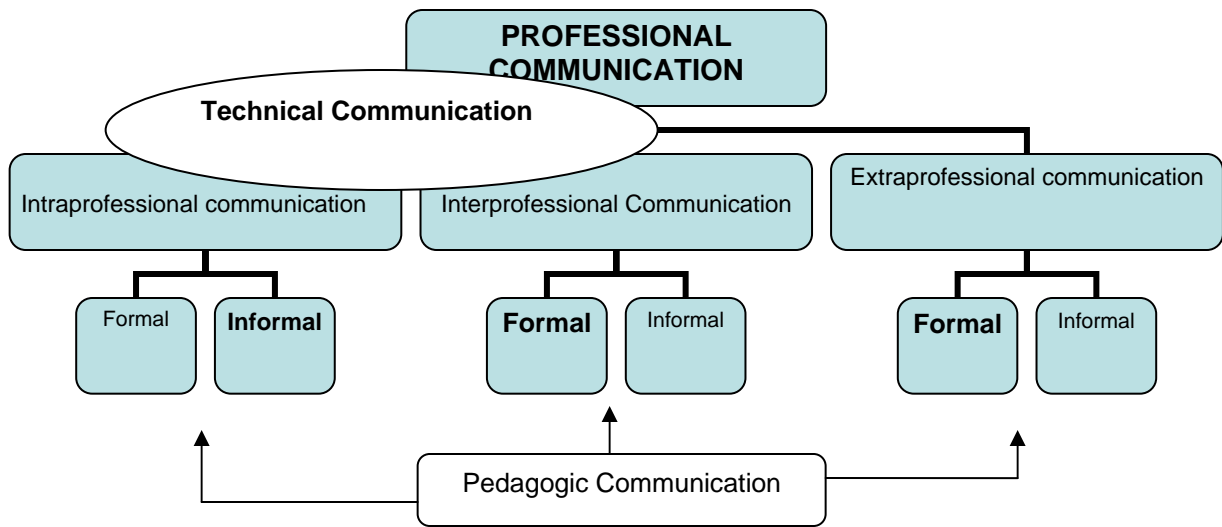


Figure 6.2: Technical communication as a sub-set of professional communication

Technical communication was found to occur predominantly in the intraprofessional (intra-radiotherapist i.e. radiotherapist/student communication) and interprofessional (radiotherapists communicating with other health professionals in the integrated treatment team) genres of professional communication in both the radiotherapy workplace practice and the educational practice. The ability to ‘talk technical’ was identified as being part of the radiotherapists’ professional practice abilities, clinical competence and professional identity. Niemi and Paasivaara (2007) identified “technical discourse” as an aspect of radiographer’s professional identity. This required ability to ‘talk technical’ is well illustrated by the quote given at the chapter head, where the student participant S9 refers to “work or department language” and that “you need to be able to distinguish ... when it’s the appropriate time to use appropriate language” where he notes the importance of choosing the correct audience to ‘talk technical’ to and that ‘talking technical’ to a patient (the extraprofessional genre) is not appropriate as they will not necessarily understand the technical ‘talk’. That is not to say that patient-practitioner communication interactions will never have technical terminology used as it was suggested that this was dependent on patients’ understanding of their medical condition and general educational awareness of medical matters and indeed, level of education. This sensitivity to patient needs is

reflective of Niemi and Paasivaara (2007) who identified “professional discourse” as an aspect of the radiographer’s professional identity whereby the radiographer focuses predominately on patient communication issues. The ability to ‘talk technical’ and therefore, technical communication can be seen as a subset of the professional communication of radiotherapy clinical and educational practice.

The registers (formal and informal) depicted in the models, Figures 6.1 and 6.2, illustrate where formal and informal language predominates in each genre of professional communication. The reader should note that in both figures (Figures 6.1 and 6.2) the formal and informal aspect of each genre is differently highlighted and emphasised, or not, with larger or smaller font size. This difference in emphasis is to illustrate that in intraprofessional communication between radiotherapy practitioners, the formal terminology is less used in communicative interactions than is technical jargon, the informal genre. Whereas when interacting with the integrated treatment team (doctors, physicists etc) formal terminology predominates in the communicative interactions with technical jargon used less. Overlapping of genres occurs when colleagues in the team work closely together and are used to doing so. They use technical jargon in exchanges more typical of intraprofessional interactions. Technical jargon was found to be used amongst the team for ease of communication within the confines of the required work performance in the clinical environment.

In extraprofessional communication, where communication with patients was the dominant interaction commented on by all participants, the formal everyday language register predominates as informal everyday language would not necessarily be appropriate. Professional communication as a continuum of genres and registers is discussed in more detail in the last section of this chapter and is illustrated very clearly in Figure 6.4 and details the journey of the novice radiotherapist in finding their “professional voice”.

The professional communication model (Figure 6.2) depicts pedagogical communication as being reciprocal to the professional communication practice of radiotherapy. This is

reflective of the work integrated learning environment of radiotherapy clinical practice and training of the novice radiotherapist. In an academic hospital there is a symbiotic relationship between workplace (clinical practice) and the classroom (the theoretical knowledge base) from which issues forth the students, the novice radiotherapists, into the clinical workplace in order to ‘practice’ the theory learnt and to learn the clinical applications in the real-life situation. Thus each identified genre of professional communication (intra-, inter- and extraprofessional) has its counterpart in educational pedagogic communication because they are taking place in the work integrated learning context, therefore the workplace is, in this case, the classroom too. The workplace is thus a place of pedagogy for the novice radiotherapist where the communication practices for the various situations and applications are embedded and tacit and as such, are imbibed by the novice radiotherapist. The technical communication practices identified by this study, particularly the informal jargon used, is very contextual and ‘situated’ within specific tasks and practice. Barnett (2006: 146 -148) describes ‘situated knowledge’ as vocational knowledge that is applied within the workplace, and that knowledge that is so contextualized can be tacit knowledge and difficult to ‘codify’. This is true for the technical informal jargon that arises within the radiotherapy workplace. The learning of the communication practice making use of this technical jargon, for example, ‘sup’ instead of ‘superior’, is largely tacit. Students and radiotherapists both commented in the study on intraprofessional and interprofessional communication practices and the way they are learnt predominately tacitly within the workplace.

Participants/students identified the link between what they learnt theoretically, the formal technical terminology in the classroom, with how this was applied in the workplace. It was found that in the workplace the formal terminology moved into the informal technical (jargon) format, the jargon of radiotherapy practice. It was felt by most participants that the technical jargon (the informal register) was predominately learnt in the workplace and then used in the classroom situation and then became the common practice of the novice radiotherapist. It was also found that the technical communications, particularly the informal genre – the jargon – was learnt by the novice radiotherapist by modelling from the radiotherapy practitioners. It was found that the extraprofessional

communication happening between radiotherapist and patient was learnt predominantly through clinical experience and working within the integrated treatment team with the patients. Thus, the link participants identified between the disciplinary knowledge (the formal terminology), formal academic pedagogy (in the classroom) and the subsequent transformation of the communication practice (into technical jargon) within workplace application (the vocational classroom), is that of vocational pedagogy. Barnett (2006: 148) describes how disciplinary knowledge is ‘reclassified’ for use within the workplace and then for pedagogic purposes, is ‘recontextualised’ to function within the workplace (the vocation). Thus, as he notes that ‘vocational pedagogy’ makes use of the disciplinary knowledge, in this case academic and technical terminology in radiotherapy, and in addition the contextual specific ‘situated knowledge’, in this case the radiotherapy context (e.g ‘sup’), is added to the learning process within the workplace.

It was found that certain technical jargon had very specific professional jargon for particular tasks and sites and when using this jargon, a practitioner commented that “everyone will immediately know what you [the radiotherapist] are talking about“ (P3, 01/08/2006, C2). This communication that takes place between colleagues – the radiotherapy practitioner, student and other colleagues within the multidisciplinary team – is often specific to that team or group. Thus, the radiotherapy practitioner and student have communication practices that are unique to their task and competency within the radiotherapy profession (intraprofessional communication), as well as communication practices that enable communication across the integrated treatment team (interprofessional communication) in their working community, in order to provide maximum benefit to the patient.

Thus being able to talk in the appropriate or required professional language allowed students to enter the work environment and occupy a specific purpose and practice. It is suggested that this allows them to form a particular professional identity within their community of practice. Lave and Wenger (1991) have suggested that students learn the discourse of the discipline while working within the specific context of the discipline, in this case radiotherapy communication practice. This means that the learning of

professional language is probably mostly tacit learning (Lave & Wenger, 1991). Wenger (1998) notes that a community of practice is “a shared domain of human endeavour”; therefore the students enter into the radiotherapy communication practices by either modeling their professional language on their radiotherapist colleagues and educators, or learning from the explicit professional language used in the classroom and the radiotherapy workplace. Radiotherapists, as professionals and working as a part of an intra- and interprofessional team, aspire to learn and do better within their community of practice. This is illustrated by a student reflection on the patient care and communication issues given at the head of chapter 4 which ends with “so it’s our responsibility to find that out...that is what I feel...it will make us better radiographers” (S6, 13/06/2006:A1).

Thus it is suggested that in order to attain professional expertise and become a practitioner, the student has to attain mastery of the disciplinary knowledge (content domain) and the disciplinary discourse (rhetorical process) (Geisler, 1994; Norgaard, 1999). The rhetorical process or discourse can be further defined as the professional communication practices of radiotherapy. Thus professional communication is a component of the development of professional expertise for the radiotherapy practitioner. Furthermore, the practitioner educator/lecturer (expert) has the students as a target audience and has the task of inculcating the students into the professional knowledge and discourse required by the profession (Geisler, 1994; Norgaard, 1999). Thus the rhetorical process of the discipline comes into play – and in this particular learning context, both in the classroom and in clinical workplace (Geisler, 1994 ; Bazerman, 1994; Norgaard,1999).

6.3 Recommendations emerging from the findings

In this section the recommendations from the findings will be outlined with brief discussion. The recommendations are presented firstly for the clinical workplace and secondly for the training of radiotherapists. There are areas of the recommendations that overlap, such as multilingual practice in the workplace and classroom which include the use of multilingual glossaries and increased multilingual access for all role-players.

6.3.1 Recommendations for the workplace

A number of areas of communication practice were highlighted by the study participants and these form the basis of the recommendations for the workplace. The areas highlighted are: communicating within the patient's understanding of the interaction, ensuring patient's comfort by ensuring respect and dignity for patient, and using patient's home language to explain treatment procedures.

The particular excerpt given below, is reflective of the study participants' discussion and comments on workplace communication practice with a patient. It brings to the fore all the areas of recommendation mentioned above:

...to be on the patient's level...because if the patient is Xhosa-speaking its our duty to make the patient comfortable as well...so what...commonly happens on the treatment floor if you have a new patient starting and if the patient is Xhosa-speaking we would find somebody on the treatment floor who is Xhosa-speaking to explain to the patient clearly what is going to happen and if the patient understands...the same will work in the mould room...because...the patient is already a bit uncomfortable and so that makes the patient more at ease when you are speaking to the patient in their home language and coming with English or something that the patient doesn't understand makes it bit more difficult (S6, 13/06/2006, A1).

Communication with patients has the following functions: to ensure that they understand the treatment; that they are comfortable; that they are treated with respect and dignity (which involves sensitivity to language and cultural issues); and that there is empathy between the patient and radiotherapist, as is illustrated in the above student excerpt.

The study findings suggest that trained interpreters may be needed to translate treatment details accurately for patients dependent on their home language, for example Xhosa where the hospital environment may be English. Accordingly, there are three sets of recommendations that derive from these workplace findings. These are presented below:

Patient communication for novice radiotherapists

Sensitivity to language and cultural issues was a point raised relative to effective patient communication and important for patient comfort and ethical practice. Thus, it is recommended that the following may be useful to the clinical radiotherapy workplace:

- Patient communication guide/manual for novice radiotherapists;
- Trained interpreters as part of the integrated treatment team;
- Trained language practitioners to intervene and teach staff the regional indigenous languages and cultural practices.

Ellis (1999) addresses these issues of language and culture in the medical workplace. He recommends in his pocket size book (for staff information and use) that it is essential to learn the language and culture of patients in order to deliver effective medical and psychological help. He refers particularly to his experience with Zulu and Xhosa. He notes that the terminology has to be interpreted with the use of metaphor and this requires more detailed knowledge of cultural norms. This could also be problematic for those interpreting and the patients need to understand and be sufficiently informed. The South African and African contexts respectively have many regional and indigenous languages so that the multilingual body of patients could feel overwhelmed by the medical procedures and health workers and vice-versa. Shams-Avari (2004) in U.S.A similarly addresses the need and importance for linguistic competency and cultural sensitivity by health care workers such as radiation therapists. He recommends that linguistic and cultural competency be part of the training, professional development, ethical clinical practice and policy standards of radiation therapists (Shams-Avari, 2004).

It is in this context that it is recommended that a patient communication guide would be useful to radiotherapists. The communication guide could be used along with support by language practitioners who can intervene and teach the regional indigenous languages and cultural practices to the radiotherapists and their students within the workplace context. A further recommendation is that within the research site's multilingual context, trained interpreters may be needed to translate treatment details accurately for patients

who are dependent on their home language, for example Xhosa or Afrikaans, as the environment is predominately English or on occasion, Afrikaans.

Dissemination of findings on professional communication

It is recommended that easily accessible (practitioner-friendly) materials and information brochures, including the findings of this study on professional communication, be collated and distributed for use and further comment within the workplace that this study took place. Bakker et al. (1999) conducted a questionnaire survey to patients during and after treatment in order to establish the effectiveness of both oral and written information sources for patients and what patients regarded as optimal in terms of information received and understood. Their survey allowed further informational materials to be developed successfully for their radiation oncology department.

One of the findings of this study, was that of extraprofessional communication (radiotherapist-patient communication) and this can be further developed and explored within this particular workplace.

Development of technical glossaries/wordlists

The findings highlighted:

- the difficulty of translating terminology from English into another language where there was not an equivalent word or concept;
- the need to establish standard technical terminology wordlists
- the need for increased multilingual access and use within the clinical workplace for the radiotherapist, other clinical staff and the patients.

It is recommended that work commence on compiling appropriate technical word lists in the regional languages (English-Afrikaans-Xhosa) that would be relevant for the clinical workplace. This would contribute to South African language development. This study site does host students from all over Africa so the idea of clinical terminology wordlists could be extended and perhaps used to support indigenous language development in their own clinical departments, thus adding to African language development.

In this regard, Alexander (2003: 15 -16) notes that although mother tongue or first languages are used preferentially in “primary contexts” such as home and family, church, community etc., there is resistance to using indigenous languages in the so called “high-status or secondary domains such as science and technology” and he attributes this resistance to perceptions that the indigenous languages may not be able to incorporate the required vocabulary and discourse of the specific discipline. Furthermore Alexander (2003) suggests that higher education should take steps to intellectualize indigenous languages and that bilingual mother tongue education should be considered where English could be a partner language of the learning process.

Therefore the recommendation to compile technical wordlists speaks to the need to intellectualize regional languages appropriately for use in the health sciences, and specifically in this instance, the radiation oncology clinical workplace.

6.3.2 Recommendations for the training of radiotherapists

It was found that the professional language of radiotherapy practice has both context dependent and context independent aspects. The context dependent language proved to be the radiotherapy-specific language that was predominately the technical jargon. Terms and phrases such as ‘wires’, ‘blade’, ‘merging the picture’, ‘ant’, ‘post’ etc were found to be jargon specific to both site and task and a participant described the challenges posed by this specificity succinctly with the comment:

I think over here we would understand each other but it would be a different situation if you go to another [clinical] department because each department uses their own slang...like as you would say jargon...so it's where [jargon] becomes a problem (S7, 22/08/2006, B2).

Two aspects are highlighted by the above quote: the importance of students’ having access to and learning the appropriate technical jargon and also, the necessity for learning when to use the jargon appropriately. From the comments and discussion of participants in the study, it becomes apparent that within the clinical workplace there are sites where

using the context specific jargon would not be appropriate and would exclude other healthcare colleagues from understanding the interaction. In these cases the context non-specific jargon, along with formal professional terminology common to multiple health science disciplines, is used. Terms belonging to the generic health sciences knowledge bases such as anatomy, physics and mathematics to list a few e.g. ‘inner canthus’, ‘nasion’, ‘superior’, ‘anterior’ would be appropriate for use. From the above excerpt and other participant comments, the question also arises as to when informal jargon and formal technical jargon is appropriate in teaching for ease of contextual explanation and thus increased learning; and when is it inappropriate for use in the pedagogical setting. Student participants particularly commented on the inappropriate use of jargon in various contexts and examples such as jargon use for written texts, such as in a test, was quoted as an example.

In assessing the findings from the pedagogical (vocational) workplace and classroom recommendations are made pertinent to certain areas. These areas of recommendations are: Curriculum development, educator awareness of communication practices, developing teacher-student relationships, role modeling and mentoring, institutional language policies and multilingual issues.

Curriculum development

From both the pedagogical (vocational) workplace and classroom findings, curriculum development in the following areas are recommended as appropriate:

- Spoken communication in professional contexts
- Delivery of verbal presentations on the results of radiotherapy research
- Written communication in professional contexts
- Use of appropriate referencing, summarizing and other language skills
- Participation and contribution to the professional discussion and analysis of radiotherapy case studies or research
- The appropriate use of language in specific contexts with varied audiences

These areas apply to both the academic classroom and the workplace (vocational) classroom. The curricular development would entail an integrated approach between the academia (the theoretical component) and the clinical learning and application thereof in the workplace (vocational classroom).

A first level communication skills workbook/manual for students in health sciences was developed for use (Wyrley-Birch & Wright, 2003). It is argued that the ability to communicate effectively within the clinical team and with the patient, in the work environment, is a core clinical competence in radiotherapy practice. SAQA has expressed communication as a critical cross-field outcome and the areas recommended could enhance the radiotherapy curriculum in this respect. On implementation of the workbook, this research site looked more specifically at communication skills for the complex, multilingual environment of regional South African hospitals and academic institutions (Wyrley-Birch, 2004; Wyrley-Birch, 2006). It is recommended that the communication practice workbook/manual should be revised and reformulated to cater for first level students through to final year students, or a follow up manual be developed incorporating the areas listed above.

Radiotherapy students are required to have specific academic subjects as entrance criteria to the course, for example Mathematics, Physical Science or Biology, English and/or home language. At the institution of this research site the students have also undergone panel interviews and psychometric tests which include numeracy, language and cognitive reasoning and three-dimensional reasoning. Thus the students are considered to have a basic science and language expertise with which they approach their chosen profession, radiotherapy. However, as previously discussed in 1.4.2, the students come from varied educational experiences and their academic skills may need to be supplemented for success at the higher education level. It is recommended that first year students have access to basic glossaries of technical terminology and a manual of health science communication practices as recommended would be beneficial for all levels of students. The senior students, such as the participants in this study, have had two years of radiotherapy clinical experience and thus work closely with the staff in the clinical

department so would need help with a more technical glossary. Leaver and Washington (1994) conducted a survey to establish the need for a comprehensive radiotherapy textbook and in their findings they highlighted the value of technical glossaries, keywords and definitions when designing textbook material for radiation therapy education. Wingfield et al. (1994) in an educational standards survey for radiation therapists (as called in the U.S.A.) identified the development of technical writing, problem solving skills and communication as areas needing attention in the curriculum. Shanahan (2006) proposes that increased support in information literacy needs to be given to undergraduate radiography students as this would equip them effectively for further study and learning, such as post graduate studies. Rose *et al.* (2008) further advocates the need for ‘scaffolded academic literacy’ support in reading and writing academic skills for undergraduate students in order for them to enhance their learning of the academic discipline.

Practitioner/Educator awareness of communication practices

Practitioners interviewed for the study all expressed keen awareness of communication issues in the workplace and in pedagogic practice. They also commented on the components of what constituted professional communication in radiotherapy practice. All commented on the required level of pedagogic communication practice and this is well illustrated in this comment by an educator rendering complex terminology explicit:

More by explaining the terms that I used I felt that you can’t just give the students a phrase or a term and expect them to know what you mean. By explaining that term and breaking it down into more understandable language and also to a language that they can relate to and then bringing it into context and explaining the more medical term (P3, 01/08/2006, C2).

The findings suggest the following pedagogic communication practices to be made explicit and concentrated upon:

- Instructing and demonstrating the digital imaging equipment and graphic planning software and highlighting the formatted terminology that occurs in communicative interactions;
- Maintaining professional pedagogic communicative practice when instruction on graphic software may require an informal as well as formal approach;
- Training of radiotherapy educators in communication best practices and best pedagogic practices.
- Classroom-based modelling of formal communication practice.
- The awareness of the significance of being a communication role model for the student and thus explaining and modelling the professional communication practices to students.

Developing teacher-student relationships

The relationship between teacher and student was emphasized by both student and educator/radiotherapist as being important for creating mutual understanding in teaching interactions and tasks. Students tended to focus on the teaching interactions being relaxed and not intimidating and therefore an atmosphere was created that allowed ease of discussion and asking of questions. This, they said, improved concentration and performance of the task. The importance of the lead taken by the educator in using technical language and ‘talking technical’ in the teacher-student relationship was also commented on:

I think she did it quite professionally because the terminology she used and her explanations were quite good also because she did it in a professional way but yet she explained it quite simply also...the way she explained it was in a way...that we could understand”(S7, 22/08/2006, B1).

The educator and radiotherapist participants emphasized, in turn, the need to create a relaxed and un-intimidating teaching interaction and yet, maintain the required professional communication practice. This is illustrated by this radiotherapist’s use of informal everyday language such as “upside down” or “okay, that’s fine” when guiding a

student through a task step-by-step on the graphic planning software and then immediately switching to formal technical terminology such as “anteriorly”, “posteriorly” and “90 degree”. This switch between the informal everyday and the formal technical language was explained by the practitioner as “I was doing [that] because at that point she needed to be clear on what it was that she was looking at and trying to do, and for that it needed to be more formal because that’s part and parcel of the teaching of the terminology” (P4, 22/07/2006:D2). Another important point made by educator and radiotherapist participants was the importance of acknowledging and treating their students as potential colleagues, albeit novice radiotherapists while instructing and guiding the task. This was felt to be important in the development of professional behaviour and practice in the student/novice radiotherapist. Positive and inclusive body language was also noted by the researcher in observing teaching interactions and a particular instance, the importance of good eye contact, was mentioned by participants.

These findings suggest the following recommendations for developing teacher-student relationships:

- Establishing common understanding and mutual respect by using the required and appropriate professional communication practice;
- Establishing a relaxed, yet professional, teaching environment that is not intimidating for the students;
- Use of positive body language (e.g. facing students, arms relaxed, fingers to point at specific points required, eye contact) where the use of clear intonation and the use of formal and informal genres can help establish an environment that is conducive to students asking questions, discussing openly and practicing the required task without inhibition;
- Establishing good eye contact between teacher and student when discussing points in a teaching interaction;
- The teacher to acknowledge and be aware of being a significant role model for the student and thus be prepared to be a mentor and explain the professional communication practices to students.

Research into effective clinical instruction and consequent student success has identified communication skills, interpersonal skills, mentoring and professional behaviour as important to radiotherapy practice (Stone, 2002; Giordano, 2008; Hawking, 2005). Students' perceptions of effective clinical instruction experiences identified positive feedback mechanisms, approachability and the availability of clinical instructors (Mason, 2006; Chapman and Oultram, 2007). Further helpful behaviours identified for successful clinical instruction also included mentoring, professional acceptance, modelling and respect on the part of the clinical educator towards the students (Giordano, 2008).

Role models, mentors and colleagues: educators' roles in the development of students' professional identities

Both practitioners and students discussed their expectations of communicative practice which is part of their professional practice. They commented and made reference to what they had observed themselves doing in their respective interactions on video. What emerged strongly was the use of positive role-modeling in professional communication as a teaching strategy to instil and demonstrate correct professional behaviour in the field of practice.

A further finding was that of the importance of mentoring linked with the role modelling of the radiotherapist and/or educator. It was noted that the skills taught for technical expertise were self-evident. However, in terms of professional language terminology, a further clear conclusion drawn by practitioner P4 was that a certain amount was finally learnt by the students in the classroom. However she felt strongly that 90 to 95% of professional language terminology was probably learnt in the practical workplace situation where it was used and applied daily. She felt that the workplace was where students learnt the practice of professional technical communication effectively from the qualified practitioners. Thus she identified successful role modelling and mentoring behaviours.

These findings mirror those of Giordano (2008) who undertook a comparative literature review of undergraduate clinical education experience in radiography (radiologic

technology) and athletics training, and identified role modelling and mentoring as part of successful clinical instruction behaviours.

The educators' roles in the development of students' professional identities is illustrated in a teaching interaction where it was noted that a student used more formal language in her plan analysis explanation to the radiotherapist educator subsequent to more informal explanations of the task. The educator noted that "Yes [she did so] because she knew that that was what I was expecting [of her]" (P4, 22/07/2006, D2). She agreed that this was "modelling" behaviour and that an element of professional expertise is the ability to talk about the task using the correct professional terminology "so that someone else can understand what they're saying in the professional situation" (P4, 22/07/2006:D2). A possible corollary to this practitioner's thought is that this ability to 'talk technical' helps to establish the professional identity of the novice radiotherapist. As noted previously Niemi and Paasivaara (2007) identified "technical discourse" as an aspect of radiographer's professional identity. The question of identity is also explored by Gee (2000 – 2001: 100-102) where he defines four ways to view identity: Nature-identity, Institution-identity, Discourse-identity and Affinity-identity. Nature-identity (N-identity) is defined as identity being determined by nature, for example, a twin. Institution-identity (I-identity) is defined by means of an authority or hierarchy within an institution, such as professor in a hospital (Gee.2000 – 2001: 101 -104). Discourse-identity (D-identity) is seen, by Gee, as being an individual identity trait such as personality. Finally, Affinity-identity is defined as the identity of a group with a common interest and purpose, such as a fan club (Gee, 2000-2001: 105 – 106).

He notes that these four identities can be interrelated dependent on the context of the identity viewed. Radiotherapy professional practice seems to lie within the context of the institutional identity (I-identity) and with perhaps a little overlap with that of affinity-identity (A-identity). Gee notes (2000 – 2001: 103) "that institutions have to rely on discursive practices to construct and sustain I-identities" and also groups that are A-identity are those that have "allegiance to, access to and participation in specific practices". Both these may suggest that the professional communication of radiotherapy

practice could be said to be part of the professional identity of the radiotherapy practitioner.

Recommendations for developing students' professional identities are the following:

- The teacher (in the academy and the workplace) to acknowledge and be aware of being a significant role model for the student and thus be prepared to be a professional mentor
- Professional communication practices to be explained to students as part of their professional persona and ethos.

Institutional language policies

To enable students to access the discourse of their chosen discipline is to open the doors to the content knowledge of that discipline (Crandall, 1994; Jacobs, 2005; Jacobs, 2007c; Bolderston, Palmer *et al.*, 2008). The language of learning on most South African campuses is officially English and so it is at this particular research site. In practice, however, other regional languages such as Afrikaans and Xhosa are also used informally and formally in both the academic classroom environment and the clinical teaching environment (i.e. workplace environment). For example, in the classroom, the students very often use their mother tongues e.g. Xhosa and Afrikaans when explaining concepts to each other and in group discussion. They then revert to English during feedback sessions and in general class discussions. Most students at this research site are English second or third language speakers. The student primarily experiences English in the classroom and during experiential practice in the workplace but not necessarily in their social environment.

In practice, at this research site in the Western Cape, other regional languages are also used in both the academic and workplace environment. In the radiotherapy experiential work environment, clinical teaching takes place. Here, the student may use or experience constant use of English, Xhosa or Afrikaans in communicating with patients along with their supervising member of staff. Students not fluent in the language used at the time of engagement may misunderstand certain of the transactions occurring between staff and

patient, unless there are appropriate multi-lingual translations occurring between the clinical educators and students. The study participants all commented on this multilingual nature of their communication practices, particularly in the clinical workplace.

Therefore institutional language policies should take into account the language and cultural diversity within the student body and the language requirements of the clinical workplace. In the light of these requirements, the tertiary healthcare educator's required expertise must be repositioned in terms of communication practices and recommendations in this regard, and is as follows:

- institutional language policy should reflect the multilingual nature of the community which in this instance reflects three major language groups – English, Xhosa and Afrikaans;
- institutional language policy should designate one medium of instruction (MOI) such as English and then provide infrastructure to support the multilingual nature of the student community which in this instance reflects not only the three major language groups as a significant proportion of students may come from other regions of South Africa and other countries;
- educators should have sufficient access to infrastructure and language expertise that will allow translation of needed texts, assessments etc;

As stated earlier, there is an area of recommendation that overlap with 6.3.1, this is multilingual practices in the workplace and classroom which include the use of multilingual glossaries and increased multilingual access for all role-players.

Multilingualism as a resource

The participants all commented on their experiences of the multilingual classroom and workplace. A recommendation formulated from the various opinions expressed is that the presence of multiple languages could be used as a resource to provide better understanding of study material and learning opportunities for students where the medium of instruction (MOI) is their second or third spoken language. This illustrated by this student quote on multilingual use:

I think...that will also help because I mean when you are told something in your mother tongue you won't forget it but the thing is, for example, I don't know the simulator word for Xhosa. We will still need to...to use these words, those words...but okay, I understand the way you are asking...but the English will be there as, because they will be like words that we can' translate to Xhosa. But when you're told something in your mother tongue it will even...it will also help (S5, 03/08/2006, C1)

Alexander (2003) notes that, in practice, with English seen as a global language, it has been largely adopted as a convenient language of tuition in higher education. Thus many students use English as their second or third language and may use it in general communication with fellow students and in daily social contacts and in the workplace. In order to maximize the radiotherapists', educators' and students' required expertise in terms of communication practices in the light of these multilingual realities, recommendations in this regard, are as follows:

- educators should have access to and be allowed time to attend relevant language classes of their choice (e.g. Xhosa, English, Afrikaans) in order to improve their multilingual language skills and thus improve their professional communication practice with students and their workplace;
- likewise, students should have further regional languages as part of their curriculum in order to improve their multilingual language skills and thus improve their professional communication practice with patients, colleagues and their learning environment;
- multilingual peer teaching, which is a pedagogic strategy that incorporates the multilingual nature of the learning environment. This could facilitate learning for all language groups. Peer-teaching in which, for example, Xhosa-speaking students teach English-speaking students basic polite greetings in Xhosa can be fun and non-threatening, enabling students about each other's languages and customs of speech (Wyrley-Birch, 2006).

Multilingual glossaries

The use of multilingual glossaries to inform students and the use of mother tongue language in the classroom and workplace could serve to enhance students' learning experience and possible success. Students need to access the language of the profession in order to gain the required level of academic literacy (Crandall, 1998). As recommended in 6.3.1 there is need for higher education to take steps to develop or intellectualise indigenous languages as suggested by Alexander (2003). Further, Goduka feels that it is particularly important for all students to "be helped to find opportunities to engage in classroom dialogues and activities that permit them to explore the meaning of their lived experiences through the familiarity of their home language" (1999: 109).

6.4 Challenges and limitations of the research

Amongst the challenges and limitations of the research were: the positionality of the researcher; the possible bias of the researcher; and the difficulties of data collection and production within the confines of the day-to-day work and study programme of the novice radiotherapist and their clinical supervisors.

The positionality of the researcher and potential for subjectivity has been discussed in some detail in 3.6.5, however it deserves further mention in these concluding remarks. The research method chosen was that of a case study specifically to allow for a small and purposive sample in order to allow the exploration of a specific phenomenon, professional communication, within a defined context, radiation oncology education. Both Yin (2003) and Tellis (1997) argue that in case study research the investigator does not control the data collection environment as in other research strategies. This being the case, Yin (2003: 35) asserts that a case study investigator must be in a position of expertise within the context being researched and should be able to operate as a senior investigator during the course of data collection. This meant that the author of the thesis chose to be the principal researcher and the challenge in data collection was retaining observer status during the interactions while ensuring that research participants were relaxed and informed about the observation and video process.

A further challenge was that the researcher wanted all interactions observed to be part of the usual study programme of final year students and this meant that the researcher was at the mercy of the normal happenings of educational and clinical practice, for example: participants being away sick or called away on personal business just as lecture time was confirmed; machine breakdown in the clinical workplace; and the rescheduling of patient appointments in the clinical workplace. In terms of the interviews following the interactions, the researcher was reliant on the convenience of research participants and the general work and education timetables.

In order to reduce research bias, the research procedures and protocols adopted were of utmost importance. The consistent application of accepted methodologies, such as those described in sections 3.4 and 3.5 helped to limit researcher bias; while the researcher's expert knowledge of the context, and previous research, enabled the purposive sampling and ensured a high level of trust in the interviews.

Literature addresses the need for health science educators to be careful that their students are volunteers and are comfortable participants in research studies (Ferguson *et al.*, 2006, 705 -706). The researcher was acutely aware of this and ensured as far as possible that participants felt comfortable and were fully informed as to the process and that they knew that participation was not compulsory in the data production processes. In fact one student chose not to take part in one focus group interview. As noted in literature, the ethical issues of potential 'conflict of interest' and privacy of participants must be acknowledged and the trust between teacher and student needs to be maintained when in-house research is undertaken (Ferguson, Myrick & Yonge, 2006, 705 – 706). The ethical considerations are discussed further in section 3.8. The researcher discussed confidentiality and the purpose of the research with all research participants before written consent was given.

6.5 Areas for further research

Areas suggested for further research are in each of the three dimensions shown in the initial model, Figure 6.1: intraprofessional, interprofessional and extraprofessional (or patient) communication. Each of these forms has a formal and informal register and as

can be seen by Figure 6.2 and Figure 6.3 the initial model has evolved to show multiple layers.

6.5.1 Extraprofessional communication

Most of the literature surveyed for communication in the health sciences related to patient communication, information, informed consent and other interactions and thus was mostly grounded in the extraprofessional communication dimension. There is ongoing research globally that is grounded in patients' rights (World Medical Association, 2004), ethical practice (Scott, 2007; Abratt, 2001) and optimal clinical practice (Butler *et al.*, 2005; Bolderston, 2008). Most literature on radiotherapy patient care communication interactions (extraprofessional communication) found, was from the developed world: however there is a growing body of health sciences literature involving the developing world and the patient communication practices there which include the multilingual and multicultural nature of the communication interactions (Crawford, 1999; Gargan & Chianese, 2007). The findings of the research at this site suggest that fruitful areas of research would include coupling with certain of the recommendations previously discussed in 6.3 and doing ongoing research on the implementation and efficacy of the following:

- patient information booklets and audiovisuals;
- patient satisfaction surveys;
- optimal patient communication pathways, and, the use of trained interpreters.

Research into these fields would add to the knowledge base of radiotherapy and that leads into the next point for research.

6.5.2 Intraprofessional communication

Research into intra-radiotherapist communication and its significance is not that common as yet but there have appeared in literature in the last few years a number of 'voices' looking at professional discourse (professional language) as a component of professional identity and expertise and personal and professional development (Boyes, 2004; Niemi and Paasivaara, 2007). Further research into the intraprofessional communication would

enhance prospects for academic development and CPD (Boyes, 2004), an increase in publications would grow the radiotherapy knowledge base and build the academic practice of radiotherapists (Bolderston *et al*, 2008) and in this way grow the prestige of the profession (Harnett *et al*, 2008; Hardy & Snaith, 2007; Lipman & Powers, 2006). Further research into intraprofessional communication practices could promote more awareness of good clinical practice. It would also increase research and consequently academic opportunities for radiotherapists.

6.5.3 Interprofessional communication

The reasons behind further research into the intraprofessional communication apply equally to interprofessional communication research opportunities. This study's findings suggest that there is a further dimension: that of increased cooperation within the integrated treatment team and better clinical practice if these areas are researched. Recent literature comments on the need for increased emphasis in the curriculum on interprofessional cooperation and communication (Carlise, Cooper & Watkins, 2004). Communication practices within the integrated team have been commented on peripherally in this study's findings but they could be looked at in detail with possible good effect to clinical practice and good team work. Issues of multilingualism were aspects of findings of this study and that is worthy of further research and is addressed in 6.4.4.

6.5.4 Multilingual communication practices – interpretation, technical terminology in African languages

Further research into the multilingual communication practices that cover all three genres, intra-, inter and extraprofessional communication, would be exceptionally valuable to the site of the research and to the wider health workplace regionally and nationally and within higher educational practices as previously discussed (Wyrley-Birch, 2006). Education within the health sciences and the health services in the workplace would benefit from the multilingual use of technical terminology and conversation as previously discussed in 6.3.2 for the need for multilingual resources and glossaries (Alexander, 2003; Crawford, 1999). Suggested areas to start with would align with the

research areas suggested in 6.4.1. and these would include doing ongoing research on the implementation and efficacy of the following:

- appropriate multilingual patient information booklets and audiovisuals;
- patient satisfaction surveys;
- optimal patient communication pathways, and, the use of trained interpreters;

Further research topics could include the multilingual intra- and inter-professional communication practices within the workplace and higher education. Some interesting research in radiotherapy education in Canada has recently been published that addresses English as the medium of instruction and its efficacy with English second language speakers (Bolderston *et al*, 2008). Medium of instruction and academic literacy are both a challenge and an opportunity within the multilingual and multicultural South African higher education milieu (Jacobs, 2007a; Wyrley-Birch, 2006). The findings of this study suggest the opportunity of further research as suggested above and within the classroom and the workplace. Suggested research areas could include:

- perceptions of the multilingual workplace by both radiotherapist and student;
- the multilingual workplace practice and teaching and learning;
- collective teamwork in a multilingual environment.

6.6 Contribution of this research

6.6.1 Contribution to knowledge

The contribution of this research is the development of a professional communication model which is multi-layered and describes three genres of professional communication, namely: intra-, inter- and extra-professional communication. This model (see Figure 6.1 and 6.2) is also able to integrate pedagogic communication in relation to professional communication and thus an understanding between work and academic practice emerges. The informal and formal registers of communication are identified and incorporated into the model and technical communication (formal and informal) is positioned within the ambit of the professional communication practice of radiotherapy (see Figure 6.2).

6.6.2 *Contribution to practice*

Raising awareness

The research raised awareness among some student and practitioner participants in the research site. Through this study they had the opportunity to participate and reflect on their own practice or skills as evidenced by the following comments:

...thank you so much...for the opportunity – I really learnt a lot...by watching [the video] for myself...[I found] the things that I know and the things that I don't know...thank you (S8, 23/06/2006: D1)

I wouldn't say it made me feel more formalized [watching the video] ... it was actually very nice for me to see it because as I said I had spoken to the students when they had seen it and they said they enjoyed it, and they had thought that I had given a good tutorial and you had said that to me as well. So it was nice for me to see it now. And as you say bringing up certain points and sort of analysing it where I wouldn't normally analyse something like ...but now being forced to analyse it , I think you take note of your good points. Like explaining all the way through and that kind of thing ... I was quite chuffed with that I was impressed with that ... ja (P1, 22/06/2006:A2).

One of the beneficial effects that this research has had is to allow practitioners to be aware of their pedagogic communication practices when watching themselves on the video footage and in the interview they were interested in reflecting upon the experience as evidenced by the comment above.

Curricular changes

This research was conducted in a work integrated learning space and the findings are valuable as they show the level of integration necessary within the academic classroom and the clinical workplace. The genres of professional communication show how the radiotherapist-educator and novice radiotherapist have to constantly position themselves in relation to the intra- or interprofessional team and then in relation to the patient and

general public. Boyes (2004) notes that research into the discourse of the radiography profession can provide groundwork for personal and professional development as important themes are identified and made explicit and thus there is a contribution of the discourse analysis towards continuous professional development (CPD). Engel-Hills *et al.* (2005) in their study of reflections post qualification and in employment, noted that the novice practitioners identified communication skills for participation in the workplace as a weakness of their programme thus suggesting the need for curriculum development. The findings of this study agree that curricular expansion and development into broader communication skills such as writing, analysing and problem solving would be of benefit.

One of the findings of the study was the raising of awareness of the radiotherapist educators regarding their pedagogic practices both in the classroom and the workplace. Once the educators and radiotherapist-educators become aware of the need for further expertise other than that of mastery of the field of practice and their academic subjects, they are likely to take a more integrated approach to the curriculum in which the language and discourse of the field of practice and the academic subjects become more transparent to lecturers themselves and to their students (Crandall, 1998; Engel-Hills, 2007, 2006; Jacobs, 2007a; Winberg, 2005).

Jacobs (2007a, 2007b, 2007c, 2005) in working with discipline –specific discourses and academic literacies notes: the need for a community of practice group of educators to address both the literacy and discipline-specific discourse needs of the students; the need for a coordinated approach to academic development issues for students and for a combined literacy approach from discipline-specific educators and the language and communication educators. Jacobs' (2007a) thoughts meld with the work integrated learning workplace such as, radiotherapy, where there could be a multidisciplinary and multilingual team.

6.7. Addressing the research questions

The over-arching research question of this study was: “What are the communication practices of radiotherapists in their professional practice and as higher education teachers?” This question was addressed in the development of the model of professional communication practices. This overall question was broken down into four sub-questions, as follows:

1. What constitutes communication in clinical radiotherapy practice?

From the analysis of the research findings a model of professional communication in clinical radiotherapy practice with three main genres that are as follows: intraprofessional, interprofessional and extraprofessional communication (see Figure 4.2) was developed. The intra-professional communication genre refers to communication between radiotherapists. The inter-professional genre refers to communication between radiotherapists and the integrated treatment team and other health professionals. The extra-professional communication genre refers to communication between the radiotherapist and patient. This last genre could also include communication between the radiotherapist and the general lay public.

This communication model evolved to include a formal and informal register in each genre as is seen in Figure 6.1, with either register dominating or not as appropriate within the genre. Technical communication was further identified as a sub-set to professional communication in clinical radiotherapy practice and it was found to occur predominantly in the intraprofessional and interprofessional communication in both the radiotherapy workplace practice and the educational practice happening in clinical department and the formal classroom (Figure 6.2). Technical communication was found to possess a formal (technical terminology) and informal (technical jargon) register which again dominate or not dependent on the target interaction. As has been previously noted in 6.2, technical communication does not usually take place within the extraprofessional genre as this genre relies more on everyday or lay language with regard to medical terminology within the extra-professional communication interaction. That is, unless the radiotherapist is

interacting and communicating with a patient or member of the public who is well informed as to the medical discourse being used.

2. What constitutes communication in radiotherapy educational practice?

The model of professional communication in clinical radiotherapy (see Figure 4.2) was found to include radiotherapy educational practice with pedagogic versions of the three identified genres as seen in Figure 6.2. The research findings show that: as the nature of the radiotherapy educational experience is work integrated, the student and then, novice radiotherapist, integrates the formal classroom experience with the clinical workplace. As noted previously, the workplace becomes a ‘virtual’ classroom and the educational practice of radiotherapy professional communication thus has the same three genres, with the same formal and informal registers (see Figure 6.2).

As discussed in Chapter 4 and 5, technical communication was identified as a sub-set of professional communication in clinical radiotherapy practice and it was found to occur predominantly in the intraprofessional and interprofessional communication in both the radiotherapy workplace practice and the educational practice happening in the clinical department and the formal classroom. Professional communication, was found to be dependent on the target audience and intended interaction and it has the ability to constantly evolve and has multiple layers of meaning dependent on the listener and user of the radiotherapy discourse.

One interesting example of the evolution of technical terminology has already happened within the workplace site of the study since the data collection. In event A (see 3.3.1), the plaster of paris facial impression process (cast) was being taught to the students preparatory to it being used to manufacture a perspex or plastic immobilization device, called a ‘mask’ in more informal layman’s terms. Increasingly at this workplace the facial immobilization devices are now also being manufactured from a thermoplastic material with the trade name “Orfit”. At the time of writing both ‘mask’ manufacturing processes are now equally current. Already in the short space of time the technical terms and jargon are expanding and evolving to include the different production process. For

example, referring back to Figure 4.3, the terminology around the “Orfit” mask is as follows:

Layman’s term → informal technical jargon → formal technical term → formal academic term

Mask → ‘Orfit’ mask/ ‘Orfit’ → thermoplastic mask → immobilisation device

Here it can be seen that ‘mask’, which was essentially being used as a layman’s term in the extraprofessional genre and at times very informally within technical intraprofessional talk, has now become a more jargonized technical term or formalised when coupled with ‘orfit’ and ‘thermoplastic’ respectively. As the research findings show, informal technical jargon can be very department and workplace specific however basic formal technical terminology can be shared by means of the technical knowledge base established in educational texts. This extra layer of the radiotherapy knowledge base and communication and its relationship to the developing professional communication model is discussed further in the fourth research question following and is illustrated in Figure 6.3.

3. What communication strategies do practitioners use to induct novice radiotherapists into professional practice?

From the research findings it became apparent that several communication strategies were used and that there was educator and student awareness. The common communication strategies used to induct novice radiotherapists into professional practice were found to be:

- Awareness of the appropriate communication practices used in radiotherapy practice and constant repetition and demonstration thereof;
- Developing an approachable teaching demeanour and body language for the teacher-student interaction in order for two-way communication to occur and thus to enable more learning for the novice radiotherapist;

- Positive role-modelling of radiotherapist, educator and colleagues in the clinical workplace such that professional identity is apparent and professionalism emerges;
- Treating the student as a colleague, thus novice radiotherapist, that allows student to demonstrate professionalism and develop a professional identity.
- Multilingualism in the classroom and the workplace.

These have been discussed in the recommendations in 6.3 and related to relevant literature. These three questions then all coalesce and integrate into the fourth aspect: the relationship of professional communication and professional expertise in radiotherapy clinical and educational practice.

4. What is the relationship between professional communication and professional expertise in radiotherapy clinical and educational practice?

Radiotherapists draw on a range of knowledge bases in order to accomplish professional communication. There is, firstly the “hard” knowledge (Biglan, 1973; Schommer-Aikins, Duell & Barker, 2003) that comprises the base knowledge of radiotherapy, namely Physics, Mathematics, Anatomy and Radiation Science. These knowledge bases are “applied” in clinical radiation practice. Radiographers also need a range of “soft” skills, such as inter-personal skills, inter-cultural competence, and team work. Skills such as problem solving, which are drawn on particularly in the integrated treatment team, combine the hard and soft skills. The relationship between professional expertise (i.e., knowledge and skills) and professional communication practices are shown in the model below:

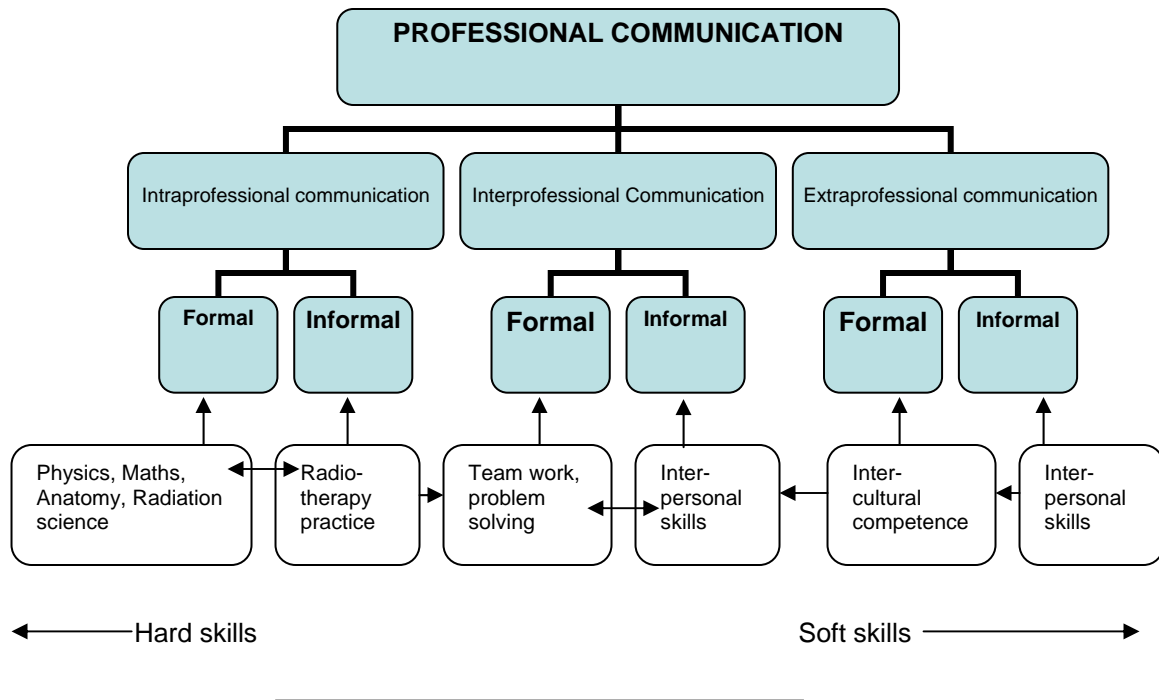


Figure 6.3: A schematic representation of the knowledge bases of professional communication

In the training of students, it is clearly necessary to build the knowledge bases to enable professional levels of practice and related communication competence. The language and cultural diversity within the student body and within the clinical workplace is rich and varied and, as such, offers the practitioner and radiotherapy educator a challenge in both the communication and learning dynamic in the educative relationship with the students. The ability to communicate effectively within the clinical team and with the patient, in the learning and work environment, is seen as a fundamental core clinical competence in the radiotherapy disciplinary outcomes. Thus, professional communication skills are increasingly seen as an integral part in the radiotherapy scope of practice as they allow the discourse of the discipline to be assimilated and used appropriately and competently as required.

6.8 In search of the professional “voice”

The communication practices of radiotherapists contain features that are unique to their work and interactions. Their communication practices are not static, but change, depending upon whether the practitioner is experienced or a novice, and whether the radiotherapist is talking to fellow radiotherapists, other professionals in the integrated treatment team, their students, or their patients. The different audiences mark their communication practices with certain specific features which can be represented along the continuum of technical/everyday genres and formal/informal registers, as in Figure 6.4:

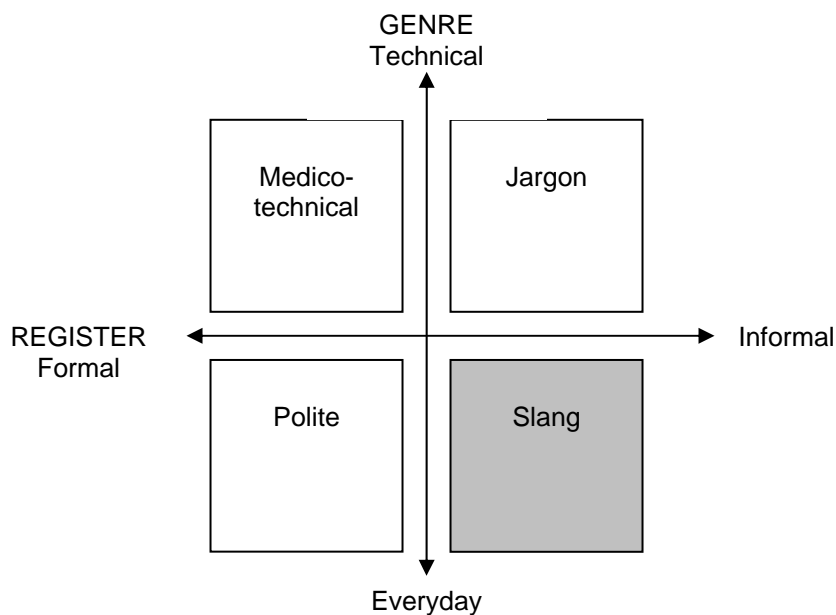


Figure 6.4: Professional communication as a continuum of genres and registers

The quadrants represent the main types of communication, although many more combinations, for example greater or lesser formality, is possible. The communicating radiotherapist would locate him/herself in, for example, the “medico-technical” quadrant when communicating with other health care professionals. When communicating within the profession, it is likely that the radiotherapist will position him/herself in the “jargon” quadrant (which could assume a more or less “medico-technical” or formal/informal version, depending on the familiarity of the group). In communicating with patients, the radiotherapist will position him/herself in the “polite” quadrant – with some “medico-

technical” usage, depending on the language ability and educational level of the patient. The “slang” quadrant will be avoided, as it is not part of the professional communication range. While slang might be part of the students’ communication repertoire, they would soon understand that it is not appropriate in either the classroom or the clinical environment.

Gee (1996) notes that there is a continuum between primary and secondary discourses (in the model above the secondary discourse is represented by “medico-technical” and “jargon” quadrants and the primary is represented by the “polite” and “slang” quadrants). Dependent on the context of their interactions, radiotherapists would position themselves in the most appropriate place on that continuum. In doing so, they establish their professional communication practice and thus their professional voice.

Students implicitly understand the quadrants, and how to position themselves appropriately:

Another thing that I think is important is...even though you are professional its always good to keep in mind that the language that you use with the patient won't always be appropriate...they might not understand what you mean by your terminology...keep as basic but yet to the point...keep it very simple and for the patient to understand what you are saying (Student S9, 13/06/2006, A1).

In conclusion, radiotherapists, students and the treatment team acquire their communication skills through their varied interactions in clinical and learning situations. Each member of the profession is an individual who needs to find how to position him/herself appropriately in the continuum of professional communication, between primary and secondary discourses as Gee (1996) suggests, in order to communicate most effectively. Variety is a necessary feature of professional communication because professionals communicate with multiple audiences. The students in learning their technical professional expertise, should also learn how to communicate professionally, and be encouraged to find their own “professional voice”. This “voice” will enable them

to identify themselves as professional radiotherapists. It will also allow them to communicate effectively and appropriately with their colleagues and fellow professionals in the multidisciplinary workplace.

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APPENDIX A: Observation schedule

OBSERVATION SCHEDULE

The following is a observation schedule that is intended for use in non-participant observation situations.

Date.....
Course:
Level of students.....
Number of students present.....
Venue.....
Lecturer/other.....
Length of observationhrsmins

Description of Radiography session being observed:
Stated purpose/Outcomes
AV support used by lecturer
Other equipment used.....
Student activities
Mode of language support provided for students

OBSERVATION OF PROFESSIONAL EXPERTISE LEARNED AND LANGUAGE INTEGRATION USED DURING SESSION

Observation focus	x or ✓	Comments/descriptions
Reference to language by lecturer		
Explicit explanation of language aspect		
Explicit explanation of practical proposed		
Medium of instruction used - English		
Medium of instruction used – other		
Student language use heard – English		
Student language use heard – other		
Written documents in use – for lecturer		
Written documents in use – for student		
Language level used: formal/semi-formal		
Language level used: professional terminology		
Language level used: informal/acceptable		
Language level used: professional jargon used		
Language level used: informal/unprofessional/slang		

Language oral		
Language written		
Purpose of language – response explanation to student question/comment		
Purpose of language – exposition – clear explanation of steps of task		
Purpose of language – questioning the student’s understanding of task in hand		
Purpose of language – consolidation of concepts/vocabulary – clarify terminology and steps of task		
Student listening patterns – attentive		
Student listening patterns – unfocused – attention elsewhere		
Listening patterns – fatigued/uninterested but partially attending		
Listening patterns – attentive		

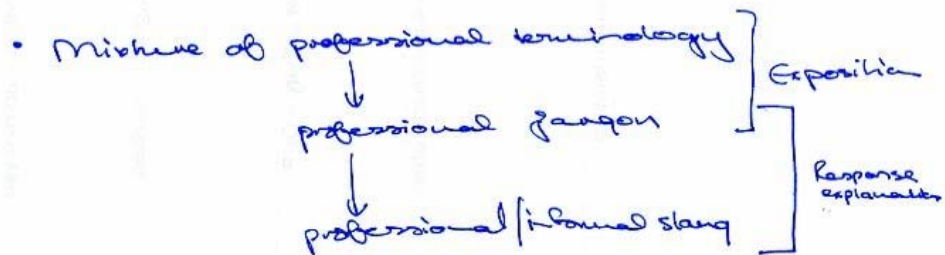
Student involvement with activities – enthusiastic		
Student involvement with activities – needing monitoring to action		
Student involvement with activities – uninvolved		
Visual support for activity being demonstrated language – OHP		
Visual support for language of activity – OHP		
Visual support for language – walls/charts/other		
Visual support for task – walls/charts/other		

APPENDIX B: Examples of field notes. There are included several examples of hand written field notes of researcher taken while observing Tasks A and E.

TASK A. Handwritten field note by researcher.

Issues noticed -

- Video could make students a bit shy of having impression esp. in group & both males + females, also remote seat in front of men may not be feasible for purposes of a practical (+ Ramadan) → all students participated
- Group generally divided into pairs - male + female to assist each other & marks.



- Excellent reinforcement + encouragement of good practices - i.e. 'taking cast off forwards', 'ridge or not'
- Groupwork + group assistance more + more as practical progressed esp. when tutor left the room @ 2.45 to take call.

Professional aspects emphasized

- Patient care aspects - comfort
- emotional well being
- Professional expertise - talking to pt during procedure
'got it right first time' - explanation to pt about procedure
- Technical aspects of task - plaster of paris as a material
- posⁿ of POP (pillars - wet + hand + banding or not)
- handling aspect
- taking off cast
- getting best impression

TASK B . Observation schedule page of researcher.

3

②

Language level used: informal/acceptable	✓	✓	possible field assignments 'our externals' external contour	CR4
Language level used: professional jargon used			Plans beams IOTW. (box) 'dark and AW' heavy volume. (hot spot) 'large volume' (small volume)	JD2
Language level used: informal/unprofessional/slang			'possible fields' ? box. 'steering in the dark'	
Language oral	✓			
Language written			Plans on whiteboard/ Graphic plans + plan if format	
Purpose of language – response explanation to student question/comment			Clear explanations to	
Purpose of language – exposition – clear explanation of steps of task			Very clear – revision session Clear purpose. From previous year to this year.	
Purpose of language – questioning the student's understanding of task in hand	✓	✓	Used a lot	
Purpose of language – consolidation of concepts/vocabulary – clarify terminology and steps of task	✓	✓	Wedges primary beam Weighting target volume Boosting	


TASK B. Participant (P2) notes written while watching video teaching interaction.

- ① Instances that make tut. work for me
- why?
 - students willingness to participate & learn from mistakes
 - why not?
 - lack of student understanding terminology
 - questions not phrased clearly.
 - basic terminology is crucial when doing plan analysis tutorials.
 - lack of understanding → manual planning (very NB)
- * - quality of ones teaching is only as good as ones own knowledge on topic!

② Instances of conn. that are egs of professional conn.?
(professional expertise)

- exposure to clinical environment enable students to better understand what is expected.
 - telling students: "when planning: your first beam that you position is called your 'primary' beam & that this needs to follow the shape of your volume."
- * → I should avoid using words such as: coming in; like this / that & use better language eg entry point of beam;

③ Instances of professional language?

- 'isodose curves'; 'wedges'; 'plan analysis'; 'field arrangement'; 'primary beam'; 'beam placement'
- 'photon'; orientation of plan: posterior; anterior. large volume; boost; small volumes; cord tolerance
- mention angles eg 45° angle & not say 'over here..' etc. "open angle up" 
- 'push' dose 'up' !!

Comments: plan analysis needs to be reviewed at a planning workstation
manual planning very important

TASK C. Handwritten field notes

(2)

Anterior on this side
always 1 on each side.

'second lateral laser height'
midline - go to your midline.

'make nice + straight + that
as well'

exposure
imaging area →
field size →
Blades + wires → explain difference
+ significance.
field size → wires - area that
you actually
treat

'When will you use asymmetric
jaws?'

'For what setup will you use?'

You see what's nice or here.

(Medially, laterally, superior)

Another important thing - can't
set field size cont setting distance

'beam divergence'

TASK D. Handwritten field notes

peak

What do you think of the coverage of the target volume — the coverage of this plan.?

(secret of this you've got to make it cover

interpolate — given matrix

Note movement between informal language
→ slang + jargon → formal language
when asking to analyse plan
'anteriorly'
'posteriorly'
cover 95%

Student consequently used more formal language.

Beam's eye view — make sure that you orientated.

'putting your eye at the target looking thro' the collimator ... at the patient

Okay --- right ----

What is that figure that is going
a point

Well ---- we can see by looking

Remember we talked about significant
hot spots - how we defined them

$2 \times 1 \times 1$ - approximately

Let's put in another isodose, let's put
in 102 + see what happens
with it. - not seeing it so it's
not there --- - put in 101.

it's seen it as red - interesting
- blue


- we've got a

- we've got a big open space there
put in 70 - how? - just told
you to take it out

Remove reads - 60 + 70

Here we've got a bit of gap as
well -

TASK E. Observation schedule.

Language level used: informal/acaptable	Quiet discussion as professional task eg. 'calling Rudi - coming just now for straps', 'instructions from consultant to practitioner.'
Language level used: professional jargon used	Strapline, midline  inferior, superior, cast.
Language level used: informal/unprofessional/slang	None was used.
Language oral	Clear instructions
Language written	Pt post format.
Purpose of language - response explanation to student question/comment	Quiet response to student's comment + request for confirmation
Purpose of language - exposition - clear explanation of steps of task	Exposition of task - talking student thru' steps of positioning patient, fitting cast, positioning of ref line
Purpose of language - questioning the student's understanding of task in hand	Not really used - as senior student so assumption of understanding of task is high.
Purpose of language - consolidation of concepts/vocabulary - clarify terminology and steps of task	Not so much - general assumption - senior student - so understands terms used

**APPENDIX C:
ETHICS PERMISSION FROM RESEARCH COMMITTEES OF HIGHER
EDUCATION INSTITUTION AND ACADEMIC HOSPITAL INVOLVED**



OFFICE OF THE CHAIRPERSON: HEATH SCIENCE RESEARCH ETHICS COMMITTEE

Ethics approval has been re-issued to Bridget WYRELY-BIRCH for research activities related to the M Tech (Radiography) degree at the Cape Peninsula University of Technology.

TITLE: Professional expertise in radiotherapy educational practice in a South African tertiary institution.

Comment:

Research activities are restricted to sites in the Groote Schuur Hospital environment where clinical teaching takes place. Consent of all participants is a requirement and all data will be confidentially and sensitively managed.

This ethics approval is reissued with the knowledge that the UCT/GSH Research Ethics Committee has approved this study. Approval for data collection activities will not extend beyond November 2006.



Dr Penelope ENGEL-HILLS
CHAIRPERSON: HEATH SCIENCE RESEARCH ETHICS COMMITTEE

e-mail: engelhillsp@cput.ac.za

APPENDIX C cont'd

UNIVERSITY OF CAPE TOWN



Research Ethics Committee
E53 Room 44.1, Old Main Building
Groote Schuur Hospital, Observatory,
7925
Queries : Xolile Fula
Tel : (021) 406-6492 Fax: 406-6411
E-mail : Xfula@curie.uct.ac.za

03 January 2005

REC REF: 460/2004

Ms BD Wyrley- Birch
Peninsula Technikon
Radiation Oncology
Department of Health Sciences

Dear Ms Wyrley - Birch


PROFESSIONAL EXPERTISE IN RADIOGRAPHY EDUCATIONAL PRACTICE IN A SOUTH AFRICAN INSTITUTION

Thank you for submitting your study to the Research Ethics Committee for approval.

It is a pleasure to inform you that the Research Ethics Committee has formally approved the above mentioned study.

Please quote the REC. REF in all your correspondence

Yours sincerely


PROF. T. ZABOW
CHAIRPERSON

APPENDIX D: Written consent forms D1 – D4 in English.

D1 - Informed consent form for participants in Master of Tech (Rad) research project.

Participants: Radiotherapy practitioners and radiotherapy students

Title of research: Professional expertise in radiotherapy educational practice in a South African tertiary institution.

Overall aim: The overall aim is to illustrate the reflections and teaching practices of radiography educators in both the academic and clinical teaching environments, where educators have the role of inducting their students into the discourse of their chosen discipline and profession, in this case, radiotherapy radiography. This illustrative process may develop deeper understandings of the educators’ journey towards expertise within their teaching discipline.

<p>Researcher: Bridget Wyrley-Birch. Radiography Education, E45 OMB, Groote Schuur Hospital, Observatory, 7925</p>	<p>Ph: (021) 404-2192/6333 Fax: (021) 447-2963 wyrleybirchb@cput.ac.za bidy@curie.uct.ac.za cell: 082 200 6752</p>
---	--

Radiotherapy lecturer @ Cape Peninsula University of Technology/ Groote Schuur Hospital

Teaching event/interaction:

I,(participant) consent to take part in the above research project.

I understand that – (tick each item)

- the researcher will have the teaching event described above, videoed
- the researcher will observe the teaching event described above
- the researcher will require a 15 minute individual debriefing interview within a few days of the above teaching event taking place
- the researcher may require, dependent on the ongoing analysis of data gathered, to do a follow-up group interview where all staff participants could be asked to participate to clarify points if necessary.
- confidentiality and anonymity of all data gathered and participants will be maintained as appropriate to the research analysis. Videos will be used for research analysis purposes only and not for illustrative purposes as in conference presentations.
- the data will only be used for the purposes of this master’s degree and for any publications resulting from it and all material generated will be used with discretion.
- all data generated will be stored safely while in use and then destroyed at the end of the project.
- I will have a copy of this consent agreement.

Participant:.....	Position:
Signature:	Date:
Bridget Wyrley-Birch	Position: Principal researcher
Signature:	Date:
Witness:	Position:
Signature:.....	Date:

APPENDIX D.

D2 - Informed consent form for participants in Master of Tech (Rad) research project.

Participants: Radiotherapy practitioner/s and radiotherapy student/s.

Title of research: Professional expertise in radiotherapy educational practice in a South African tertiary institution.

Overall aim: The overall aim is to illustrate the reflections and teaching practices of radiography educators in both the academic and clinical teaching environments, where educators have the role of inducting their students into the discourse of their chosen discipline and profession, in this case, radiotherapy radiography. This illustrative process may develop deeper understandings of the educators’ journey towards expertise within their teaching discipline.

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Radiotherapy lecturer @ Cape Peninsula University of Technology/ Groote Schuur Hospital

Events: Patient/radiotherapy practitioner interactions –The localization of the head and neck area
.....

Professional interactions with treatment planning team colleague/s – Target volume

I,(participant) consent to take part in the above research project.

I understand that -

- the researcher will have the teaching event described above, audio-taped and transcribed
- the researcher will observe the event/s described above
- the researcher will require a 15 minute individual debriefing interview within a few days of the above event/s taking place
- the researcher may require, dependent on the ongoing analysis of data gathered, to do a follow-up group interview where all staff participants could be asked to participate to clarify points if necessary.
- confidentiality and anonymity of all data gathered and participants will be maintained as appropriate to the research analysis. Audiotape and transcripts will be used for research analysis purposes only and not for illustrative purposes as in conference presentations.
- the data will only be used for the purposes of this master’s degree and for any publications resulting from it and all material generated will be used with discretion
- all data generated will be stored safely while in use and then destroyed at the end of the project.
- I will have a copy of this consent agreement.

Participant:.....
Signature:

Position:
Date:

Bridget Wyrley-Birch
Signature:

Position: Principal researcher
Date:

Witness:
Signature:.....

Position:
Date:

APPENDIX D.

D3 - Informed consent form for participants in Master of Tech (Rad) research project.

Participants: Radiation oncology consultant and registrars.

Title of research: Professional expertise in radiotherapy educational practice in a South African tertiary institution.

Overall aim: The overall aim is to illustrate the reflections and teaching practices of radiography educators in both the academic and clinical teaching environments, where educators have the role of inducting their students into the discourse of their chosen discipline and profession, in this case, radiotherapy radiography. This illustrative process may develop deeper understandings of the educators’ journey towards expertise within their teaching discipline.

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Events: Patient/radiotherapy practitioner interactions –The localization of the head and neck area

.....

Professional interactions with treatment planning team colleague/s – Target volume

I,(participant) consent to take part in the above research project.

I understand that -

- the researcher will have the teaching event described above, audio-taped and transcribed
- the researcher will observe the event/s described above
- the researcher may require, dependent on the ongoing analysis of data gathered, to do a follow-up group interview where all staff participants could be asked to participate to clarify points if necessary.
- confidentiality and anonymity of all data gathered and participants will be maintained as appropriate to the research analysis. Audiotape and transcripts will be used for research analysis purposes only and not for illustrative purposes as in conference presentations.
- the data will only be used for the purposes of this master’s degree and for any publications resulting from it and all material generated will be used with discretion.
- all data generated will be stored safely while in use and then destroyed at the end of the project.
- I will have a copy of this consent agreement.

Participant:..... Position:
Signature: Date:

Bridget Wyrley-Birch Position: Principal researcher
Signature: Date:

Witness: Position:
Signature:..... Date:

APPENDIX D.

D4 - Informed consent form for participants in Master of Tech (Rad) research project.

Participant: Patient undergoing localisation planning process in preparation for radiotherapy treatment to head and neck area.

Title of research: Professional expertise in radiotherapy educational practice in a South African tertiary institution.

Overall aim: The overall aim is to illustrate the thoughts and teaching practices of radiotherapy staff radiographers who are involved in teaching radiotherapy students in the workplace. These staff members have the responsibility of teaching their students the details of their chosen profession, radiotherapy radiography. This research is to gain deeper understandings of the radiotherapy staff member’s teaching practices.

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Events: Patient/radiotherapy practitioner interactions –The localization of the head and neck area

.....
Professional interactions with treatment planning team colleague/s – Target volume

I,(participant) consent to take part in the above research project.

I understand that -

- the researcher will have be present during the x-ray and CT scan planning process which is in preparation for my radiotherapy treatment. The researcher will be present in order to observe the radiographer staff member and student who will be involved in the preparation of my treatment.
- the researcher will organise to tape this treatment preparation process using a tape recorder and this will be written up.
- the research will not change any of the planning and preparations for my radiotherapy treatment.
- confidentiality and anonymity of all the information gathered by the researcher will be kept as appropriate to the research. Audiotape and transcripts will be used for research analysis purposes only.
- the information will only be used for the purposes of this master’s degree and for any publications resulting from it and all material generated will be used with discretion.
- all information gathered will be stored safely while in use and then destroyed at the end of the project.
- I will have a copy of this consent agreement.

Participant:.....
Signature:

Position:
Date:

Bridget Wyrley-Birch
Signature:

Position: Principal researcher
Date:

Witness:
Signature:.....

Position:
Date:

APPENDIX E.

Practitioner demonstrating in the theory lecture of the principles of radiotherapy planning. On viewing the lecture, she commented on her use of informal language jargon in terms of 'open up the angles' compared to formal technical language such as '45 degree angle' when explaining and demonstrating while teaching. See discussion on page 78 and 79.



APPENDIX F

Task A was the making of a plaster of paris facial impression and these comments by the practitioner and student participants are illustrated by the following snapshots taken from the video footage of the activity showing the process. See the discussion on page 121 and 122.

...it can be a fun thing making an impression...so...I guided the students through the procedure...seeing that watching a procedure and actually doing it ... the students would feel...a little pressure being that the lecturer...was there and in this case it was video taped [in a research context]...and so they would feel a bit of pressure to actually get it right and not make a mistake in front of everybody...(P1, 22/06/2006, A2).

...during the entire practical all information was clearly delivered...[there] was humour which made the practical so much easier...everything was very...clearly demonstrated...we were allowed...to ask questions...we were always answered...and if we didn't understand something he would then demonstrate it again (S6,13/06/2006, A2).

...as far as I'm concerned the whole method in which in which this whole tutorial was done...was...excellent I think because first of all...like [Student 1] said...you didn't feel intimidated...it was a very relaxed environment...relaxed...but yet professional (S9, 13/06/2006, A2).





APPENDIX G – Practitioner discussed in interview how she used hand signals and non-verbal ‘pointing’ during task D – graphic planning tutorial. The following snapshots taken from the video footage illustrate the practitioner using a hand signal to explain beam direction and also, pointing while explaining the meaning of a particular icon of graphic planning software programme. See discussion on page 78 and 79.



