

**HUMAN RESOURCE DEVELOPMENT
IN RADIOGRAPHY EDUCATION: A SEARCH FOR EXCELLENCE IN A TIME
OF CHANGE**

by

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Submitted in partial fulfilment of the requirements for the degree of
Magister Educationis in Maximising Potential

In
Education and Training

**Department of Curriculum Studies
Faculty of Education
At the**

UNIVERSITY OF PRETORIA

PROMOTER: PROFESSOR W. FRASER

NOVEMBER 2005

ACKNOWLEDGEMENTS

I am greatly indebted to the following individuals and departments for their tremendous support in completing this study:

- Prof W Fraser for being more than my supervisor but a pillar of support during the course of this study
- The department of radiography of Medunsa, Nazeema, Ish, Puleng and Mabatho for their endless assistance and support from the beginning to the end of this study
- Mr T Moalusi – the HOD in the department of Radiography for always responding positively to my needs
- Mrs I Cooper for tirelessly editing the report
- The Centre for Academic Staff Development Services at Medunsa, Dr M Naidoo, for availing her staff to participate in the interviews, despite their very tight schedule and Mrs K Nkhambule for her participation.
- Mr S Aphane, the director in the department of Radiology at Dr George Mukhari hospital for availing his staff members to participate in the interviews and my biggest gratitude goes to those staff members who participated, Mavis, Eton and Sefako, many thanks.
- Ms. Ioma Cooper for editing this document
- Ms. Elmie van Wyk for her endless assistance in typing the report
- My husband, Peter, my son Marang and daughter Naledi, for their constant love and support, encouragement and patience. Without this, this study might not have materialised. Thank you.
- My father, Ramolemane, brothers Mmusetsi and Archie and their families for their confidence in me and for always being there when I needed them most.
- All my friends for their encouragement, understanding and a much-needed support.
- Above all, my greatest thanks to the Almighty for giving me the endurance to study and spiritual guidance throughout.

DEDICATION

To:

Ramolemane, my father

Peter, my husband

Marang and Naledi, my wonderful children

TABLE OF CONTENTS

CHAPTER 1	ORIENTATION: PROBLEM STATEMENT, RESEARCH QUESTIONS AND RESEARCH METHODS	1
1.1	INTRODUCTION	1
1.2	PROBLEM STATEMENT	2
1.3	RESEARCH QUESTIONS	5
	1.3.1 Primary question	5
	1.3.2 Secondary questions	
1.4	THE AIM OF THE INVESTIGATION	5
1.5	THE OBJECTIVES OF THE INVESTIGATION	6
1.6	SIGNIFICANCE OF THE INVESTIGATION	6
1.7	DELIMITATIONS OF THE INVESTIGATION	7
1.8	RESEARCH DESIGN AND METHODOLOGY	7
	1.8.1 Literature review	8
	1.8.2 Empirical investigation	8
	1.8.2.1 Focus group interviews	8
	1.8.2.2 Individual face-to-face interviews	9
1.9	DEFINITION OF TERMS	9
1.10	OUTLINE OF THE RESEARCH	13
1.11	CONCLUSION	14
CHAPTER 2	RADIOGRAPHY AS A SCIENCE AND ITS IMPACT ON CURRICULUM DEVELOPMENT AND IMPLEMENTATION	15
2.1	INTRODUCTION	15
2.2	RADIOGRAPHY AS A SCIENCE	16
	2.2.1 Contribution of physics to radiography	16
	2.2.2 The radiographer's role in the development of radiography	20

2.3	THE RADIOGRAPHER'S ROLE IN PRACTICE	26
	2.3.1 Radiography education and training	26
	2.3.2 The standard of practice for radiographers	27
	2.3.3 The role of professional bodies in radiography	29
2.4	THE CHANGING ROLE OF THE RADIOGRAPHER	30
	2.4.1 Changing healthcare environment	30
	2.4.2 Technological innovations	31
	2.4.3 Shortages of staff	32
	2.4.4 Teaching by non-academic staff	32
	2.4.5 Use of imaging in areas beyond medicine	33
2.5	RADIOGRAPHY AS AN ACADEMIC CAREER	33
	2.5.1 Teaching and learning in radiography	34
	2.5.2 Research in radiography	36
	2.5.3 Learner supervision in radiography	37
	2.5.4 Community service and service learning in radiography	37
	2.5.5 Achieving academic excellence in the teaching and practice of radiography	38
2.6	CONCLUSION	39
CHAPTER 3	HUMAN RESOURCE DEVELOPMENT (HRD) AND THE PROFESSIONALISATION OF EDUCATORS AT HIGHER EDUCATION INSTITUTIONS	40
3.1	INTRODUCTION	40
3.2	CHALLENGES FACING HIGHER EDUCATION IN SOUTH AFRICA	41
3.3	TRANSFORMATION OF HIGHER EDUCATION (HE)	41
3.4	IMPLICATIONS OF CHANGE TO ACADEME: THE NEED FOR HRD	45
	3.4.1 Curricular transformation	45
	3.4.2 Teaching and learning	46

	3.4.3 Research	47
	3.4.4 Community service and service learning	49
	3.4.5 Learner supervision	51
3.5	HUMAN RESOURCE DEVELOPMENT (HRD) OF ACADEME	52
	3.5.1 Policy provisions for HRD of academe in South Africa	52
	3.5.2 Competences, knowledge and skills required to transform HE	53
	3.5.3 Creating Learning Communities as a strategy for development	54
	3.5.4 Adopting a Total Quality Management (TQM) approach to development	55
3.6	CONSTRAINTS TO HRD IN AN ACADEMIC DEPARTMENT	56
	3.6.1 The effects of change	56
	3.6.2 Departmental Leadership	56
	3.6.3 Transfer of learning	59
	3.6.4 Mindset of academe	61
3.7	DEPARTMENTAL INITIATIVES FOR PROFESSIONAL DEVELOPMENT	62
	3.7.1 Models for staff development	63
	3.7.1.1 Readiness, Planning, Training, Implementation and Maintenance (RPTM) model	64
	3.7.1.2 Individually guided model	64
	3.7.1.3 Problem-based learning model	64
	3.7.1.4 Study Group or cluster model	65
	3.7.1.5 Action research model	65
	3.7.2 Processes that enhance staff development	66
	3.7.3 Activities that facilitate development	68
	3.7.4 Improving the core functions of academe	68

	3.7.4.1 Improving the teaching function of academe	68
	3.7.4.2 Improving the research function of academe	70
	3.7.4.3 Improving the community service function of academe	72
	3.7.4.4 Improving learner supervision as a function of academe	72
3.8	CONCLUSION	73
CHAPTER 4	DATA ANALYSIS AND FINDINGS	74
4.1	INTRODUCTION	74
4.2	RESEARCH QUESTIONS	74
4.3	RESEARCH DESIGN	75
4.4	DATA COLLECTION METHODS	76
	4.4.1 Selection and description of participants	76
	4.4.2 Conducting the interviews	77
	4.4.3 Ensuring reliability and validity of the procedures	77
	4.4.4 Content and construct validity of the interview schedules	78
4.5	DATA ANALYSIS	82
4.6	DATA INTERPRETATION AND FINDINGS	83
4.7	CONCLUSION	106
CHAPTER 5	SUMMARY, RECOMMENDATIONS AND CONCLUSIONS	107
5.1	INTRODUCTION	107
5.2	OVERVIEW OF THE RESEARCH REPORT	107
5.3	SUMMARY AND CONCLUSIONS	109
	5.3.1 Summary and conclusions drawn from the literature review	109
	5.3.2 Summary and conclusions drawn from the empirical investigation	111
	5.3.2.1 Individual face-to-face interviews	111

	5.3.2.2 Focus group interviews	113
5.4	CONCLUSIONS FROM THE INVESTIGATION	114
5.5	ACHIEVEMENT OF THE AIM AND OBJECTIVES	115
5.6	RECOMMENDATIONS AND IMPLICATIONS	117
	5.6.1 Personal development	118
	5.6.2 Dealing with obstacles that hinder development and effective performance	119
	5.6.3 Overall departmental improvement	120
	5.6.3.1 The high impact training model	121
	5.6.3.2 Improving the primary functions of academe	123
5.7	RECOMMENDATIONS FOR FUTURE RESEARCH	125
5.8	EPILOGUE	126
5.9	REFERENCES AND SOURCES	128
	ADDENDA	142

LIST OF FIGURES

FIGURE	DESCRIPTION	PAGE
2.1	Images related to CT-scanners (from google x-ray images)	18
2.2	Images related to Magnetic Resonance Imaging (MRI) (from google x-ray images)	19
2.3	Images related to Nuclear Medicine (NM) (from google x-ray images)	20
2.4	A four-quadrant model of the nature of academic knowledge of radiographers	22
2.5	Radiography curriculum framework	25
3.1	Learning experience in the new paradigm	47
3.2	Lenses for viewing research capacity development	49
4.1	Responses on the perceptions of the drivers of change in radiography	84
4.2	Lecturers' perceptions on their teaching role	86
4.3	Lecturers' perceptions on CS function	88
4.4	Lecturers' opinions regarding their own development	97
4.5	Lecturers' opinions on the role of CADS in staff development	98
5.1	The high impact training model	123

LIST OF TABLES

TABLE	DESCRIPTION	PAGE
3.1	Principles guiding higher education transformation in South Africa	42
3.2	SAQA's critical cross-field outcomes	44
3.3	Policy guidelines for HRD of academe	52
3.4	Constraints to transfer of learning	61
4.1	Face-to-face interview schedule	78
4.2	Focus group interview schedule	80
4.3	Lecturers' perceptions on their teaching role	87
4.4	Responses on individual and departmental research involvement	87
4.5	Lecturers' perceptions on CS function	88
4.6	Focus group's stumbling blocks to effective performance	90
4.7	Lecturers' responses to stumbling blocks to effective performance	90
4.8	Lecturers' responses to constraints to CS.	93
4.9	Lecturers' opinions on their own professional development	98
4.10	Responses regarding the role of CADS in staff development	99

ADDENDA

- ADDENDUM A: ETHICAL STATEMENT
- ADDENDUM B: CORRESPONDENCES
- ADDENDUM C: INTERVIEW SCHEDULES
- ADDENDUM D: CODED TRANSCRIPTS FOR THE INTERVIEWS

ABSTRACT

Globalisation is affecting all social sectors, including education in ways that was never thought of before. In South Africa the most changing environment is probably the education sector. Higher education institutions in particular are constantly forging ways to develop the human resource capital for the country despite the shrinking financial resources.

The increased demand for quality education, greater efficiency, accountability and national viability constantly challenge academics such that they can no longer wait for management to provide them with the necessary skills and competences. The times are calling for academics to take initiatives to develop themselves for improved performance in their primary roles and in the education of the learners.

This study was undertaken to determine the changing nature of radiography as a profession and field of specialization, the development needs of radiography educators and the preferred strategies that could be used to develop the necessary skills and competences. A qualitative research design was employed and data collected through the literature review and interviews. Unstructured questions were used in the interviews to obtain an in-depth understanding of the situation.

Challenges faced by academic radiographers in South Africa were explored and new competences required by academe during the time of change explained. Focus was put on the primary functions of academe and that includes teaching, research, community service/service learning and learner supervision strategies that can be used to improve the role of academe were described.

Conclusions and recommendations regarding human resource development of academe were drawn from the literature review and the empirical investigation.

KEY CONCEPTS

1. Human resource development (of academe)
2. Radiography
3. Higher education
4. Academe
5. Change
6. Higher education transformation
7. Learning communities
8. Improved performance
9. Personal development
10. Quality and excellence

CHAPTER 1

Orientation: Problem statement, research questions and research methods

What lies behind us and what lies before us are tiny matters compared to what lies within us

Oliver Wendell Holmes

1.1 INTRODUCTION

Societies all over the world are faced with challenges as a result of the increased demand for knowledge, economic fluctuation, technological innovations and globalisation. The impact of these changes on all social sectors is unprecedented, especially in developing countries where resources are shrinking and population growth is exponential.

The current transformation in South Africa, aimed at reconstructing the entire social order created by years of colonialism and subsequent apartheid, has left the majority of the population without skills and living under poor conditions. Ramphela (1999:146) refers to this as the most devastating aspect of the legacy of apartheid, the criminal neglect of human resource development particularly for the African majority. This necessitated the new political order having to radically think about education, its purpose and philosophy and quality maintenance. According to Myers (1997:4), this stems from the belief that education, especially higher education, can be an instrument for attaining sustainable human development

In the foreword to the *National Plan for Higher Education* (NPHE), the former Minister of Education, Professor Kader Asmal states that the people of South Africa deserve nothing less than a quality education, which responds to the equity and development challenges that are critical to improve the quality of life of our people (Department of Education 2001:1). This is evident in the policies, including the Constitution of the Republic of South Africa Act, 108 of 1996, aimed at redressing past imbalances to bring about prosperity for all South Africans.

This study therefore explores human resource development (HRD) in radiography education in an academic department at the University of Limpopo, Medunsa Campus. HRD for academe is critical especially at this time of change in society in general and higher education in particular. Weber (1999:5) states that universities and academics in particular require skills, competences and knowledge to enable them to respond positively to the current challenges facing higher education. Mofokeng (2002:5) emphasises that the quality of the university, teaching, research and community service is mainly dependent on the quality of the lecturers. Mofokeng (2002:5) states further that the knowledge, skills and competencies of academic personnel are proportional to the educational quality of the institution.

Radiography is one of the most dynamic professions because of its technological and scientific nature. Hence training of practitioners should ensure that they could fully adapt to new situations in life and their careers

1.2 PROBLEM STATEMENT

Redressing past imbalances in South African higher education required that educational opportunities be made available to more previously marginalized groups. This led to a more diverse learner population with multivariate needs in higher education. The majority of these learners are from schools that suffered the apartheid legacy of insufficiently qualified teachers, dilapidated infrastructure and inadequate resources, humble family backgrounds and, generally, a demotivated culture of learning. As a result, they are ill prepared for the demands of higher education.

New developments in education, involving a change to outcomes-based education (OBE), which is focused on the learner's achievement of specific knowledge, skills and attitudes at the end of a learning experience, require new ways of teaching and assessments. This impacts on the educators, as their traditional roles are challenged to meet the demands in learning to ensure quality education. Kane, Sandretto and Heath (2004:305) emphasise that teaching is the heart of the university and hence educators need to develop new competences to facilitate and assess the quality of learning. One way to ensure achievement of new skills and competences for academe

is through continued professional development (CPD) or continued education (CE) in all professions.

The University of Limpopo is a new institution that resulted from the merger between the University of the North and the Medical University of Southern Africa (Medunsa). The two institutions were established to serve the marginalized communities of South Africa. These historically Black institutions (HBI's) were signified by sub-minimum resources, not well qualified staff and leadership that were at times not committed to good governance.

Currently Medunsa, a satellite campus of the University of Limpopo, has made efforts to improve the quality of their staff by establishing an on-site academic development centre, the Centre for Academic Development Services (CADS), to help both academics and learners with the challenges they face in higher education. The most significant challenges educators in higher education and at Medunsa face include

- A paradigm shift in education
- Curriculum development in an Outcomes-Based Education format
- Creative teaching and learning strategies and experiences
- Quality maintenance
- Technological innovations
- Accommodating learner diversity
- The scholarship of teaching and research

These challenges, because of their enormity especially to the mostly unprepared educators, often result in feelings of uncertainty and resistance.

According to Hassan (2003:8), most academics at Medunsa have little knowledge of the process of educational transformation because this information is exclusive to management, who do not disseminate it to relevant staff members. Furthermore, this results in academics being ignorant about their role in the transformation process and, as such, feeling uncertain and lacking confidence. The increased emphasis on quality and accountability necessitates a quality assurance

policy for programmes offered as well as teaching and learning. Therefore, the academic needs of the educators need to be dealt with as a matter of urgency to improve their professional performance.

Radiography is one of the programmes offered at Medunsa. It is a highly technological and scientific profession, which is greatly affected by changes in technology and communication. The changes in healthcare influenced by service improvement to patients demand highly skilled radiographers to cope with the challenges of their new roles.

University teaching staff is urged to engage in research that will improve their teaching and community service. Research output in the Department of Radiography is sub-minimal, requiring practitioners to find ways for improvement especially at the time when its importance in effective teaching is imperative.

Another core function of academic staff is learner supervision during clinical placements. Even though clinical radiographers are mandated to perform this task, the contribution of educators should not be underestimated. To ensure that theory translates into practice, new ways of collaboration need to be forged, especially in assessments to ensure that the learners' competences, skills and attitudes are relevant in radiographic practice.

Community service and service learning are other functions of academics. Waghid (2003:96) states that schools and universities in South Africa can be reorganised to become effective "seedbeds of civic virtues". Academics and learners alike need to engage in some sort of community service to remind them of their civil responsibilities. There should be greater acknowledgement that relevance of HE is best expressed through a variety of (academic) services rendered to society (Mofokeng; 2002:138)

The Department of Radiography has attempted to meet the demands of higher education, through curriculum development, departmental quality assurance and performance assessments during clinical placements. However, it is equally important to indicate that striving for excellence is a process. At any point during the process there are areas that still need to be improved. It is for

this reason that this study was undertaken, to improve the most vital resource, human resources in an academic department.

1.3 RESEARCH QUESTIONS

This investigation seeks to answer the following main question:

1.3.1 Primary question

How has radiography as a profession and a field of specialisation changed in the last twenty years and what are the demands of these changes on academe at institutions of higher learning in terms of new skills and competences, and what strategies could be used to improve the skills and competences of radiography educators to ensure quality and excellence during the time of change?

1.3.2 Secondary questions

The following sub questions will help to answer the main one:

- How has the substance and syntax of the radiographic practice changed in the last twenty years and what demands are made on practitioners?
- What new skills and competences do these developments demand of academics in training institutions in terms of teaching and learning, research, community service and learner supervision?
- What strategies can be used to develop the necessary skills and competences of trainers to better prepare practitioners?

1.4 THE AIM OF THE INVESTIGATION

This study aims to provide an insight into the changing environment in radiography in which academic radiographers at Medunsa find themselves. This will enable them to better determine their personal and professional development needs, to effectively improve their performance as educators, researchers and community servants in order to prepare learners effectively.

This approach to human resource development stems from the researcher's belief that for any development initiative to succeed, a proper needs analysis of the beneficiaries should be done, through their cooperation and involvement. In so doing, the development initiatives adopted will meet their needs. It is also an alternative approach to the current top-down, mandatory approach offered at the institution, which more often leads to lack of transfer of learning. In this sense, the staff will be custodians of the initiatives and hence plan, implement and monitor the initiatives to ensure their success.

1.5 THE OBJECTIVES OF THE INVESTIGATION

The objectives of the study are to

- determine how radiography as a profession and field of specialisation has changed in the past twenty years
- establish the new skills and competences demanded of academics in training institutions in their teaching and learning, research and community service roles
- determine strategies that can be used to develop these skills and competences of academics to better prepare practitioners.

1.6 SIGNIFICANCE OF THE INVESTIGATION

This study is important for the academics in the radiography department to perform their functions confidently and realise job satisfaction. Secondly, other educators in Medunsa and elsewhere could adopt the strategies to improve their own practices. Thirdly, learners will benefit from the skills and competences of the staff in terms of teaching and learning that is based on proven research, assessments and community service.

Medunsa as an institution will benefit as its academic quality improves. Communities and patients will receive service from well-qualified staff. The nation will enjoy citizens who are well qualified and contribute to the socio-economic development of the country.

1.7 DELIMITATIONS OF THE INVESTIGATION

The study is restricted to the human resource development of academic staff in the Radiography Department at the University of Limpopo, Medunsa Campus. It will also include specific clinical radiographers involved with learner supervision at the **DR** George Mukhari Hospital.

Human resource development of the staff members will include personal development, skills and competences required for effective clinical practice, research and academic development in all aspects of teaching and learning. The limited number of participants, especially in clinical practice and management of the institution, might affect the results, but time and financial constraints limit participation.

1.8 RESEARCH DESIGN AND METHODOLOGY

A qualitative research design was used during the course of the investigation. According to Wiersma (1991:218), ethnographic research in education is “a process of providing scientific descriptions of educational systems, processes and phenomena within their specific contexts”. A qualitative research design enabled the researcher to gain an insight into the reasons behind human resource development in an academic department. Schurink (1998:253) states that qualitative designs are used to “gain a better understanding of the real-life world of participants”. These include the development needs of the staff, strategies for development and implementation and monitoring of the programmes or activities.

According to Merriam (1998:17), a qualitative study is based on “the assumption that there are multiple realities because there is no objectivity in the world, but subjectivity due to differences in perceptions and orientations. Hence there is a need for interpretation rather than meaning.”

Research methods used for the study include a literature review and empirical investigation.

1.8.1 Literature review

Relevant literature from books, journal articles and policy documents was carefully selected and analysed to determine the changes affecting radiographic practice, the changing role of the radiographer as well as the impact that these changes have on educators involved in training in higher education institutions in South Africa. Attention was also given to the new skills and competences required of these practitioners to better prepare radiographers. New trends in human resource development of educators were explored to determine strategies that could be adopted to develop the necessary competences.

1.8.2 Empirical investigation

Focus group and face-to-face interviews were used. Both interviews used semi-structured questionnaires to determine the needs for development for radiography educators at Medunsa Campus, the respondents' views on the changes in radiography as well as radiographic practice and its impact on educators. Human resource development strategies, which could be adopted, were determined (see chapter 4, sections 4.3 and 4.4).

1.8.2.1 Focus group interviews

A focus group interview is “a collective interview of members who have a specific knowledge, experience or interest in the subject under investigation” (Myers, 1997:11). According to Gibbs (1997:1), the focus group's key characteristic is “the insight and data produced by the interaction between participants, and this distinguishes it from any group interview”.

In this study, educators in the department of radiography, a member of CADS, clinical staff and students were interviewed. According to Tashakkari and Teddlie (2003:280), sampling of participants is based on “convenience for the researcher, and availability and willingness of members to participate”. This method was chosen because all interviewees were interviewed simultaneously to save time. The internal dynamics of the group was observed as it also provides

valuable information. Questions for these interviews were semi-structured to allow for expression of opinions.

1.8.2.2 Individual face-to-face interviews

Individual interviews involve one-to-one interaction of the respondent and the researcher. According to McMillan and Schumacher (1998:32), an interview is the interpersonal interaction in which one person (the interviewer) asks the other (the interviewee) questions relevant to the investigation. According to Thomas (1998:12), the advantage of this data-collection method is that it “permits the researcher to rephrase questions that respondents do not understand, and allows respondents to elaborate their ideas at length”.

Sampling was based on participants’ expert knowledge or experience in a particular area of radiography education as well their availability at the time scheduled for the interviews. The interviews involved semi-structured questions that enabled exploration of the respondents’ subjective knowledge, opinions and beliefs regarding radiography education, human resource development and educational quality and excellence. This method was preferred because in-depth information could be obtained from the participants. Interviews using semi-structured questions are considered holistic because specific aspects can be explored to seek clarification. Participants’ trust is encouraged as well as confidentiality of the information as it is a one-on-one interaction. All information from respondents provides a big picture, which transcends any single bit of information.

1.9 DEFINITIONS OF TERMS

For the purposes of this study, the following terms are used as defined below.

- **Human resource development**

In this study human resource development or professional development involves the planning, organisation, or evaluation of programmes designed to develop employees and manage learning in the organisation. According to Holmes (1998:15) human resource development is a systematic

process that includes training and development, organisation development and career development to enhance individual and organisational effectiveness. So the focus is on learning for personal and professional excellence. People's potential can be developed through training and capacity building, access to opportunities.

In higher education, professional development, staff development and academic staff development are used interchangeably with human resource development of academics.

Mofokeng (2002:103) states that professional development refers to "the in-service education and training (INSET) of university lecturers". The purpose of professional development in higher education is to develop the skills and competences required by academics in performing their daily functions. According to Mofokeng (2002:104), professional development implies "development, self-development and institutional management of competences required by university lecturers at all levels, who have teaching, research and community service responsibilities".

Despite differences in the conceptualisation of the term "professional development", certain characteristics emerge as common with professional development, staff development and INSET, including

- institutional policy
- programmes and procedures to facilitate and support staff to fully serve individual and institutional needs.

In this study, human resource development of academic staff refers to all activities aimed at improving the personal and professional development of staff members to enhance their skills and competencies to optimally perform their daily functions.

- **Higher education**

According to Gnanam (2000:317), higher education is "essentially an extension of secondary education in providing knowledge, skills and competences, except that it aims at providing higher levels of these outcomes and a variety of them". In South Africa, higher education is on level 5-8

of the National Qualifications Framework (NQF) and a person can enter its lowest level after Grade 12 or the Further Education and Training (FET) band.

The African National Congress (ANC) (1995:127) describes higher education as “all organised learning activities which take place in colleges, technikons and universities or under their academic supervision”. Mofokeng (2002:147) regards higher education as closely related to the concept of a university

Reddy (2004:1) states that in South Africa “higher education is demanded to contribute to economic development and socio-political transformation, but also to raise the concern whether institutions will rise to the challenge posed to them or remain reticent to change, and that remains to be seen”.

In this study, higher education means all institutions involved with the education and training of adult learners who have achieved a Further Education and Training certificate.

- **Radiography**

Radiography is a health science profession and is divided into four specialities, namely Diagnostics, Radiation Therapy, Nuclear Medicine and Ultra Sound. According to Bentley (2004:48), radiography is concerned with the practice and art of producing images of anatomical structures for medical diagnosis (except for radiation therapy which is concerned with cancer treatment).

Diagnostic radiography deals with the production of images of anatomical structures and recording them on special materials or a computer reconstructs them for diagnostic purposes. The science of radiography has been evolving for a long time, impacting on the traditional role the radiographers play, hence necessitating role development in areas normally performed by radiologists.

- **Transformation of higher education**

Collins English Dictionary (1991:1635) defines transformation as “1. a change or alteration, esp. a radical one. 2. the act of transforming or the state of being transformed”. According to Hassan (2003:30), the transformation of higher education in South Africa has been influenced by political and socio-economic factors as well as global trends. This fundamental change or paradigm shift is aimed at redressing past imbalances created by apartheid to a democratic, enabling and prosperous society. Ramose (2003:140) cites Makgoba, who states that transformation is a “blue-print for change”, but adds that this definition of transformation is misleading because it is deterministic and hence undermines human freedom. According to Ramose (2003:140), transformation in the sphere of human relations means, “the deliberate entry into dialogue with another in order to construct mutually agreed forms or shapes out of already existing material”.

Blunt and Cunningham (2002:127) emphasise that South African universities need to reflectively reconstruct their institutions to move away from the ideologies of the past and develop an appreciation of diverse philosophies, perspectives, values and experiences.

In this study, the transformation of higher education refers to a collaborative process of reconstructing higher education to ensure that it is responsive to the social and economic needs of the South African population.

- **Quality and excellence**

Quality means different things to different people. Freed, Klugman and Fife (1997:1) state that institutions have always held academic excellence and quality as their highest goal.

According to Pretorius (2003:129), quality in higher education was traditionally associated with excellence and striving for perfection and was subsequently replaced by quality as “fitness for purpose and/or as value for money”. Furthermore, the transformative view is currently stressed and is about adding value for learners and empowering them as life-long learners. Pretorius (2003:129) cites Poole, Herman and Deden who indicate that there is growing pressure to

interpret quality in higher education in terms of a “multi-customer focus that implies tailoring higher education to meet the needs of all its customers”.

The Academic Excellence Planning Group (1996:1) regards academic excellence as a characteristic of an institution, where members perform to their fullest within the expectation of the institution, and the institution is a place where this is demanded and nurtured. Moreover, academic excellence is the behaviour that emerges within an institution whose objective is to bring all its members within the frame of mutually agreed upon standards.

Ramphela (1999:151) describes excellence as “striving for performance at a level that exceeds the ordinary. It also implies a constant focus on performance at a higher level than those attained to date. Excellence in academia entails originality of mind, creativity and a track record that stands the test of time in world-class terms and not being satisfied with being the best in a given limited contest”. Rubin and Inguagiato (1991:58) describe striving for excellence as “stretching oneself beyond normal limits, uncovering possible weak spots and learning from experience how to increase the quality of the final version”.

1.10 OUTLINE OF THE RESEARCH

Chapter 1 is an orientation and outlines the background, purpose and limitations of the study as well as the research methodology.

Chapter 2 discusses radiography as a science and field of specialisation, the changes taking place in radiographic practice, and their implications for academic radiographers in higher education institutions. Hence the role of the academic radiographer is explored in terms of competences required in the areas of practice, namely teaching and learning, research, and community service and learner supervision.

Chapter 3 discusses education transformation and the implications for academics, emphasising the need for human resource development for educators in higher education

Chapter 4 presents the data analysis and findings, an overview of human resource development in the department of radiography, and strategies to improve the work of educators.

Chapter 5 concludes the study and makes recommendations for practice and further research.

1.11 CONCLUSION

This chapter introduced the study and explained the research problem, the rationale for the study, and its aim and objectives. The research design and methodology were described briefly.

Human resource development for academics in radiography education should be a priority. Without a committed and well-planned effort to exploit this capital, radiographers will remain ill prepared for their work.

Chapter 2 discusses radiography as a science and its impact on curriculum design and implementation.

CHAPTER 2

RADIOGRAPHY AS A SCIENCE AND ITS IMPACT ON CURRICULUM DEVELOPMENT AND IMPLEMENTATION

*Our deepest fear is not that we are inadequate. Our deepest fear is that we are
powerful beyond measure*

Marianne Williamson

2.1 INTRODUCTION

Chapter 1 introduced the study. This chapter forms part of the theoretical and conceptual framework for the study. In addition to guiding the study, theory provides a perspective from which the researcher understands the problem.

Radiography is a health science profession that involves the use of ionising radiation to help locate, identify, diagnose and treat diseases. It consists of four specialisations: Diagnostics (producing images of anatomical structures and recording them on special materials), Ultra sound (imaging of structures, using sound waves), Nuclear medicine (introducing radio nuclides into body organs and systems and recording their activity) and Radiotherapy (which has to do with cancer treatment using high energy gamma rays).

In a report on radiography grades, the Services Industrial Professional and Technical Union (SIPTU) (2001:1) states that the responsibility of the radiographer is to undertake a range of techniques in imaging, using ionising radiation conservatively and providing optimum care for the patient. Today it involves much more due to the changes that impact on the profession. There is a need to understand patient psychology for optimum care provision, the characteristics of ionising radiation for patient safety and image manipulation to produce images of high diagnostic value. According to SIPTU (2001:2), the development of new services, new forms of treatment and the trend towards specialisation will result in the expansion of scope for radiographic

practice. White (2004:16) stresses that these expansion will require radiographers to possess specific skills and competences to work effectively and efficiently.

This chapter, then, explores radiography as a science and a profession as well as the role of the radiographer in a time of change, with special attention on the implications of these changes for the education and training of radiographers. The focus is on the role of the academic radiographer as influenced by these changes in diagnostic practice. Hence the role of an academic in radiography is explored in terms of teaching and learning, clinical practice, research and community service.

2.2 RADIOGRAPHY AS A SCIENCE

There has been little fundamental change in the principles of radiography since the discovery of x-rays in the late 1800s. The image is still captured using similar techniques and processes (Non-destructive Testing Resource [NDT] 2004:3). There have been some development changes in practice due to technological innovations and x-ray usage, which has expanded beyond medicine.

Over the years there have been significant changes in quality improvement of the images due to improved film quality and equipment. Films are much faster and enable the practitioner to capture images of better quality in half the time and using much less radiation to patients. There have also been developments in imaging modalities like computerised tomography (CT), magnetic resonance imaging (MRI), ultrasound and nuclear medicine.

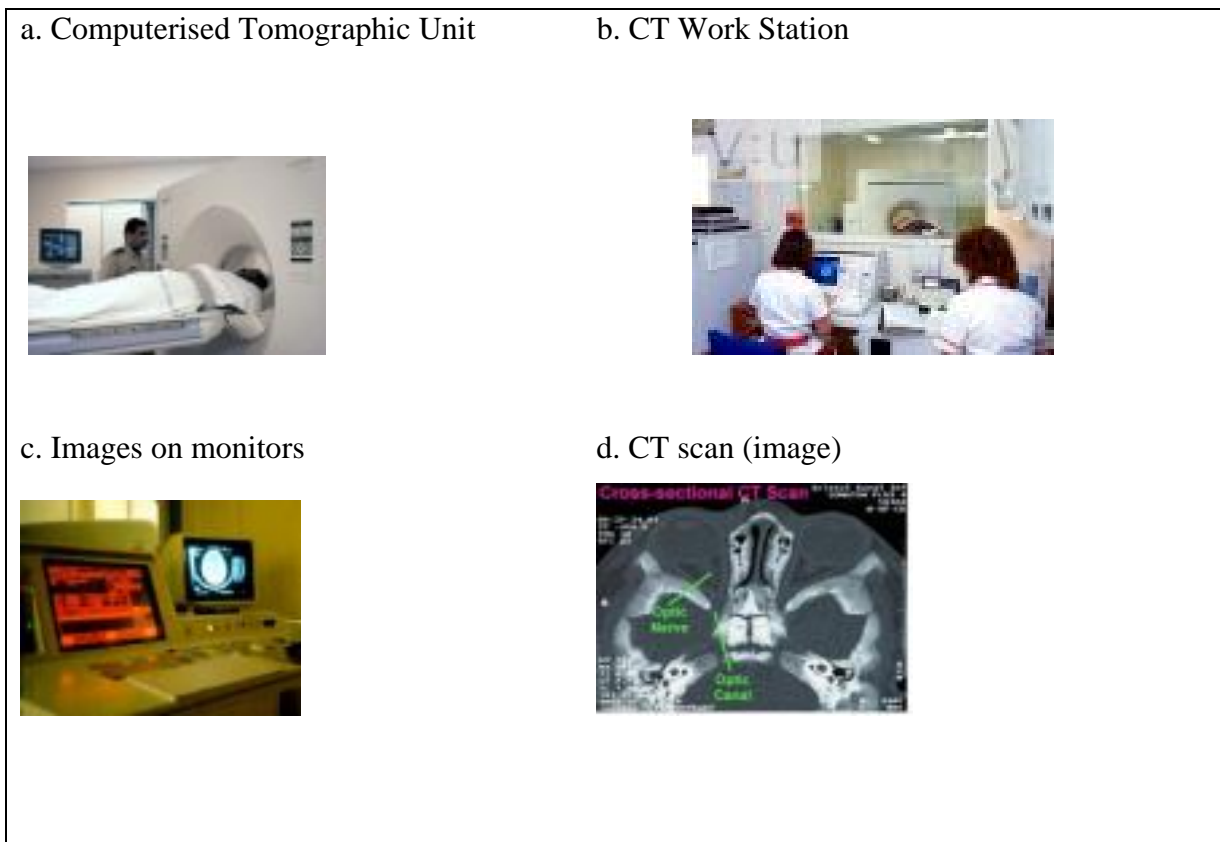
2.2.1 Contribution of physics to radiography

The development of radiography owes much to physics in the development of x-rays and its biological application. Mould (1995:1752) points out that physics contributed significantly to the development of x-rays the early years after their discovery. Physics-based radiographic experiments were performed in laboratories, which were poorly equipped but produced significant knowledge that helped to advance mankind.

The evolution of radiography as a science began with the discovery of x-rays and the use of a cathode-ray tube (CRT) to produce a penetrating beam (Webster 1995:621). Subsequent developments include the use of high atomic number targets and rotating anodes, and diagnostic radiology physics, which dealt with manipulation of factors to improve x-ray quality and the theory behind their biological effects on living tissues (Mould 1995:1753). Later, the use of fluoroscopy enabled visualisation of anatomical structure and function of organs visualised on a television monitor.

According to Mould (1995:1754), more recent innovations in diagnostic radiography include the development and use of more improved imaging especially those incorporating computers, as in computerised tomography (CT) and spiral CT. Computed tomography is a special technique used to produce cross-sectional images of body parts where a computer is used to assist in the reconstruction of images with one- or two-dimensional detectors rotating around the patient. Spiral CT is a newer, faster machine that essentially works like a normal CT. Figure 2.1 depicts CT scanners and figure 2.2 represents MRI equipment.

Figure 2.1: Images related to CT scanners (from google x-ray images)



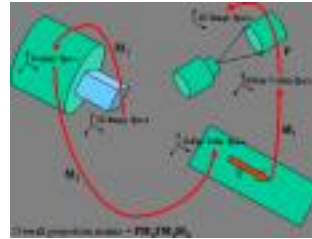
Magnetic resonance imaging (MRI) is another new modality in radiographic imaging that uses strong magnetic fields, pulsed radio waves and nuclei of hydrogen atoms in the body to construct cross-sectional images using a computer.

Figure 2.2: Images related to Magnetic Resonance Imaging (MRI) (from google x-ray images)

a. MRI Scanner



b. MRI: Tube-detector assembly

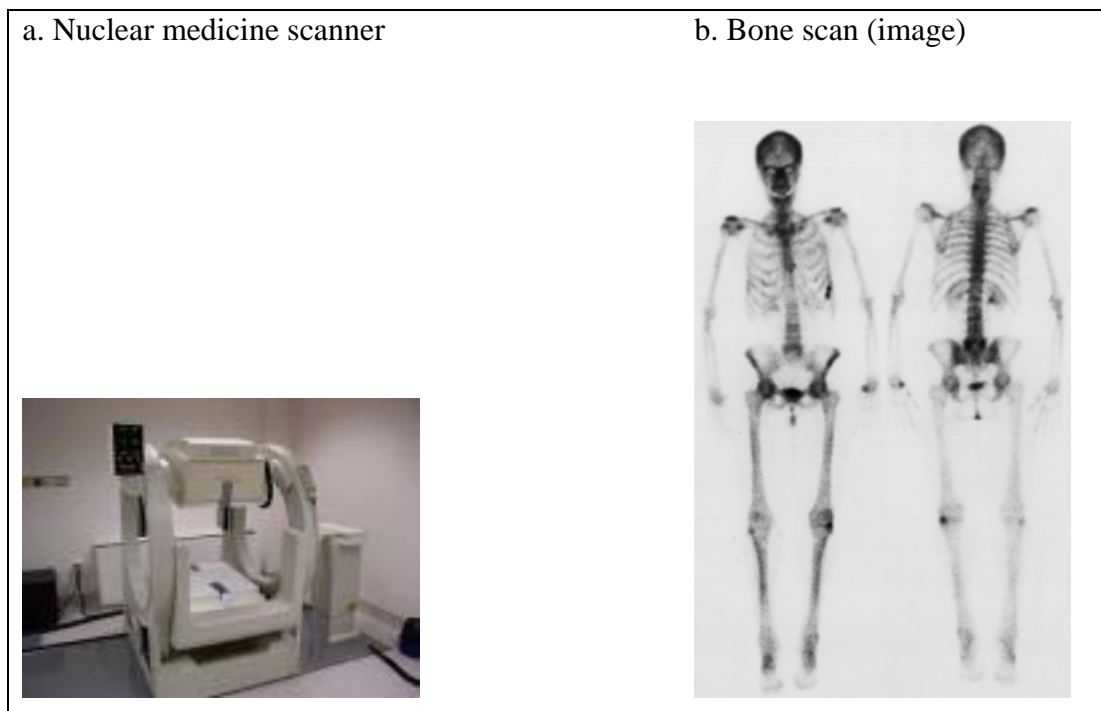


c. MRI scan (image)



Nuclear medicine has seen the development and use of emission tomography, including positron emission computerised tomography (PECT) and single photon emission computerised tomography (SPECT). These are used to record and then reconstruct radioactive distribution patterns in the body (Coatriex & Roux 1997:7). Figure 2.3 shows images related to Nuclear medicine equipment and scans.

Figure 2.3: Images related to Nuclear medicine (NM) (from google x-ray images)



Film processing has also evolved from manual to automatic then to daylight and currently to digital reconstruction of images and storage

For a long time radiography was regarded as only technical because of its focus on the production of images using x-rays and was therefore referred to as a semi-profession (Bentley 2005:45; Nixon 2001:31). This was mainly due to the fact that medical practitioners and scientists rather than radiographers contributed more to the development of the body of knowledge in radiography because much of the research was built on knowledge developed by them (Nixon 2001:31; Torres, Norcutt & Dutton 2003:3).

2.2.2 Radiographers' role in the development of radiography

Gradually radiographers became actively involved in generating the body of knowledge for the profession. This is evident abroad although in South Africa the contribution is minimal. Radiographers' commitment and experience in practice enabled them to provide ways of

improving their practice by creating a knowledge resource for all users. This is evidenced in an array of articles including peer-reviewed ones in accredited journals. It should be noted that knowledge developed in other fields is still used by radiographers (Nixon 2001:30). Today, in addition to a good understanding of the scientific nature of their profession, they are able to provide optimum care for patients' welfare and safety and take part in scientific debates in the medical arena regarding their profession based on their own experiences.

Bentley (2005:45) cites Furbey who indicates that radiographic imaging is seen as an art and a science. Its artistic character is demonstrated in the ability of a competent radiographer to produce perfect images of anatomical structures in a way that abnormalities can be located and identified and proper treatment administered. This is achieved through decision making for proper patient positioning and exposure factors to achieve a radiograph of diagnostic value. Walton (1985:44) states that managerial decisions about patient management in medicine are considered an art. This can be equated to decisions in radiography about producing radiographs of good diagnostic quality.

As a science, radiography requires extensive study and theoretical understanding of practice. Kuni (1998:2) points out that its scientific nature is based on the study and theoretical explanations of natural phenomena, hence involves knowledge gained through experience. Walton (1985:44) warns that improved medical and radiographic education calls for a clearer definition of the methods used for the decision-making process to determine in radiography, the best position and exposure factors to demonstrate a specific condition in a patient.

In a study to determine the nature of radiographic knowledge, Castle (2000:268) found that radiographic knowledge spans both the natural sciences and humanities. Castle (2000:261) developed a four-quadrant model representing four categories of knowledge and included the hard-pure, which encompass the natural sciences and mathematics, the hard-applied representing science-based professions, the soft-pure representing humanities and social science as well as the soft-applied to comprise the social professions like education and law. Castle (2000:268) reported that radiographic knowledge shares characteristics related to mechanical engineering (hard-

applied) and sociology (soft-pure) because radiography is a profession that combines science and technology. Figure 2.4 illustrates Castle’s model.

Figure 2.4: Four-quadrant model of the nature of the academic knowledge of radiographers

<p>HARD PURE Natural sciences e g Biology -Steady cumulative knowledge growth -Precision of measurement -Concerned with universals</p>	<p>SOFT PURE E g Sociology -Covers ground already covered -No well-marked boundaries -Personal values are important</p> <p>RADIOGRAPHY</p>
<p>HARD APPLIED Science-based professions E g mechanical engineering -Externally defined problems -No unique solutions -Concerned with ways of mastering the physical world</p> <p>RADIOGRAPHY</p>	<p>SOFT APPLIED Social professions e g education, law -Absence of certainty -No clear-cut rules -Allows for shades of opinions</p>

Source: Adapted from Castle (2000:261)

According to Castle (2000:268), classification of knowledge is important in studying the structure of subjects and their relationships with neighbouring fields. Hence core subjects studied in radiography are the hard sciences including mathematics, physical science, anatomy, physiology, radiation science and techniques as well as the soft humanities including sociology or psychology and patient care. With the advancement in technology courses like computer, statistics and other appropriate electives for articulation are included.

In their *Professional standards for the education of radiographers*, the International Society of Radiographers (1995:6) state that a formal curriculum is required to develop the level of understanding and skills necessary for the technology and its application in radiography. According to the Society (1995:6), the conceptual framework of the curriculum for radiography enables the curriculum developers to see the thematic relationships between various courses as follows:

- Clinical education

It takes place in the hospital's radiography department, provides the practical integration of all courses and enables the learner to develop a full range of competences (see section 2.3.2)

- Core courses

These are fundamental courses and include all elements or courses which the learner must undertake to satisfy the educational aims and competences in radiography. These may include radiation safety, quality assurance and imaging techniques.

- Related courses

These are courses that provide the learner with the level of understanding and skills required to undertake the core courses and may include

Medical sciences

Physical sciences

Radiobiology

Mathematics and statistics

Electronics

Management

Research methodology

Patient management

- General education courses

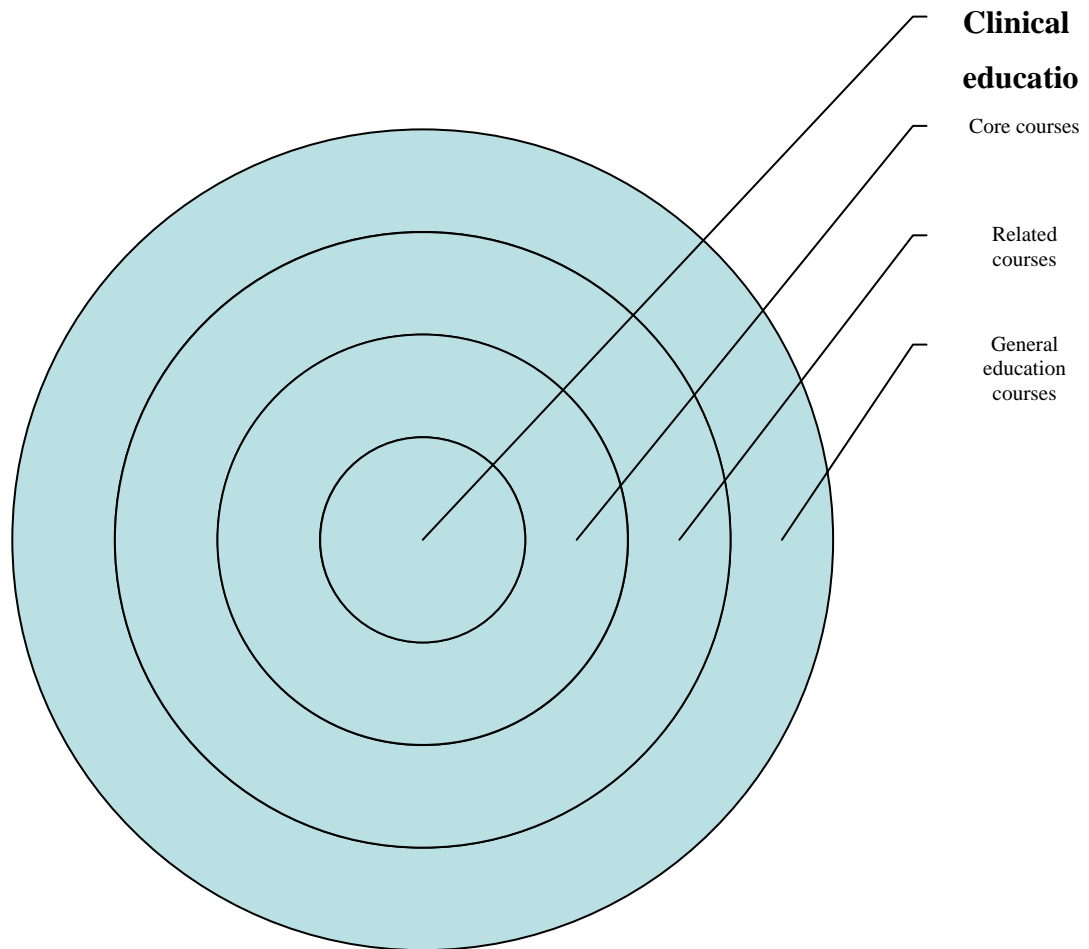
These courses are aimed at improving communication, progression and a holistic development of a learner and may include courses like behavioural sciences, communication, and computers.

- Electives

These are courses that enable the learner to pursue other interests and may include economics, philosophy, health and fitness

Figure 2.5 illustrates the radiography curriculum framework. Clinical education is in the centre of the circle where all courses are integrated for clinical competency. As the circle grows outward, the courses become less fundamental to radiography but are aimed at holistic learner development.

Figure 2.5: Radiography curriculum framework



Source: Adapted from the International Society of Radiographers (1995:6)

2.3 THE RADIOGRAPHER'S ROLE IN PRACTICE

Due to the changing nature of radiographic practice, the radiographer's role has also been debated for some time now. Paterson (2000:5) states that at the turn of the century radiographers were employed to produce radiographs and give their medical opinion of the results and this was done without medical supervision, a practice not entirely preferred by medical practitioners. They felt that certain competences needed to be in place to be able to perform such a task. According to Paterson (2000:5), they felt that to undertake such responsibility, training must be provided to enable the intelligent use of apparatus, sound medical training and experience to control and interpret the results.

In a study on the learning needs of radiographers, Dickson (2004:14) found that they needed new skills and competences primarily to keep up with new innovations, but also as a means for personal development. Finch (1997:11) emphasises that radiographers' education and training should prepare them for new roles and provide them with skills to cope and manage change.

2.3.1 Radiography education and training

The identification of the need for specific skills in radiography led to the development of a standardised programme for the training of radiographers, and started in 1917 in the United Kingdom (UK) (Bentley 2005:45). For almost seventy years this standard of education and training continued with some changes necessitated by changes in clinical practice (Price, High & Miller 1997:2). Currently it has been transferred to higher education where degrees are offered.

Radiography, then, was the first in the allied health professions to offer the Fellowship examinations. This qualification involved the achievement of ordinary and special examinations as well as a thesis (Bentley 2005:46). A thesis was an indication of the need for research scholarship required or an acknowledgement of a body of knowledge to be developed by all Fellow members. This practice started in the UK and was subsequently adopted by South Africa, with the exception of the Fellowship examination and thesis. This explains the similarities in the

standard of practice as well as of education and training between the two countries that still exists today.

Initially, the education and training of radiographers was performed by hospitals and currently the task has been transferred to higher education institutions, specifically Universities and Universities of Technology around the country. The transfer in the U.K was largely influenced by the changes in health care and education sectors. Price et.al (1997:3), as well as the desire to improve the status of radiographers. This is also true for South Africa, where an adoption of the new political dispensation and the subsequent change in health care focus as well as education transformation highly influenced the changes. Ruscheniko (1997:8) states that radiography only recently acquired a recognised academic qualification and progression. It should be noted that other changes occurred against the background of practice improvement and availability of new technologies and techniques.

The scope of radiographic practice is extensive because radiographers perform a variety of tasks and hence provide a highly flexible workforce. The traditional role of the radiographer in a diagnostic department is centered on seven areas of patient care, use of technology, optimisation of dose, clinical responsibility, organisation and management, quality assurance and education and training.

2.3.2 The standard of practice for radiographers

The International Society of Radiographers (1995:2) outlines seven areas for professional competence in radiography (which are also applicable in the South African context):

- **Patient care**

This applies both directly and in their capacity as supervisors and relates to radiographers' responsibility to ensure that the welfare of patients in their care is maintained.

- **Use of imaging technology**

The radiographer is the only recognised expert in the production of a range of diagnostic images using ionising radiation.

- **Optimisation of dose**

The radiographer is in a key position to ensure that patients, staff and the general public are protected from ionising radiation.

- **Clinical responsibility**

The radiographer's prime expertise and responsibility is to employ a variety of techniques in diagnostic imaging to produce images that will be assessed in terms of quality and know corrective measures if the required standard is not achieved

- **Organisation and management**

Radiographers need to be able to organise work, use resources responsibly and apply departmental policies and protocols.

- **Quality assurance**

The radiographer should be an active team member in developing, maintaining and monitoring the quality standards of the department

- **Education and training**

A professional practitioner has a duty to update and maintain practice in line with new developments, apply proven research results to improve practice, and supervise junior members and students in clinical practice.

Finch (1997:7) and Payne and Nixon (2001:250) identify nine attributes that a newly qualified radiographer should have:

- ❖ professional competences
- ❖ health and safety
- ❖ clinical competences

- ❖ interpersonal competences
- ❖ professional knowledge
- ❖ providing a caring and safe environment
- ❖ continuous education and training
- ❖ management and quality assurance
- ❖ contributing to the development of the profession through teaching and learning

2.3.3 The role of professional bodies in radiography

Keenan and Cuthbertson (2001:686) point out that professional bodies are critical in providing accreditation for education and training programmes. They ensure that qualified radiographers satisfy the highest professional standards with associated levels of competence. This, in turn, assures radiographers, employers and most importantly patients, that they are getting the highest standard of service, as well as offering protection in times of litigation. They provide guidelines for standards and ethical behaviour in practice.

In South Africa professional bodies involved with radiography include the Health Professions Council of South Africa (HPCSA), whose role is to

- ❖ Promote the health of the population
- ❖ Determine the standard of professional education and training
- ❖ Set and maintain excellent standards of ethical and professional practice

Hence all practitioners, including qualified staff and students, need to be registered with the HPCSA. For radiography, the responsible body within the HPCSA is the Professional Board of Radiographers and Clinical Technologists.

The Society of Radiographers of South Africa (SORSA) is a professional association for radiographers in South Africa and affiliates with the International Society of Radiographers and Radiation Technologists (ISRRT), whose role is to:

- ❖ Act in the interest of practitioners
- ❖ Deal with all professional matters relating to the profession, including practice arrangements and fee structures for services rendered

The Standard Generating Body (SGB) is responsible for setting the standards for different qualifications within radiography by determining that their exit level outcome (ELO) is in-line with the South African Qualifications Framework (SAQA).

2.4 THE CHANGING ROLE OF THE RADIOGRAPHER

The political change to a new democratic order in South Africa in 1994 necessitated major changes in all aspects of life. The Bill of Rights in the Constitution of the Republic of South Africa Act, 108 of 1996 protects all. Section 27 (1) makes provision for the right of access to health care and Section 9 stipulates that all have the right to equality. The White Paper on the transformation of health care indicates to the government's responsibility to develop a unified health care system capable of delivering quality service efficiently and effectively. This responsibility is to be realised through health care professionals. Improved access to all services is a basic human right. The increasing knowledge levels of society demands that service delivery be improved for the benefit of all.

2.4.1 Changing health care environment

In the new political order, health care is a basic right for all South Africans based mainly on a primary health care delivery. Because of staff shortages and shrinking resources, health care providers are adopting a multidisciplinary approach. In this case, a health professional will perform duties that other members of the health team would traditionally perform, such as radiologists in pattern recognition. Paterson (2000:5) states that with the shortage of doctors in radiology departments, there is only one group of staff with the education, expertise and experience to undertake radiological procedures, namely the radiographers. They often need to provide nursing care, provide counseling for patients with particular needs and have knowledge of pharmacology to provide assistance in the provision of this service.

Paterson (2000:6) emphasises that in the UK the role of radiographers is diverse, involving significant and independent use of high-level skills of assessment, problem solving, decision-making, evaluation and judgment in the management of their patients. Hence they need to possess knowledge, skills and competences to deliver a good quality service to patients. Failure to deliver minimum standards of performance is a serious offence. This is why their education and training should be of high quality and take cognisance of the regulations governing their practice.

2.4.2 Technological innovations

Radiography is a highly technological profession and with technology leading the innovation arena, radiographic practice is constantly and rapidly changing. Existing equipment and procedures are constantly being developed to provide improved service for patients. Older machines were slower and image quality was not so good. Given this scenario, practitioners constantly needed to upgrade their knowledge and skills to keep abreast of innovations. Nowadays computers are used extensively, and some departments are completely computerised thereby enabling manipulation of images to the desired quality and storage with easy retrieval. Fielden (1998:3) points out that “the shelf life of knowledge in some disciplines doubles every five to ten years”.

To be able to manipulate, store and retrieve images with ease inevitably requires some knowledge of computers and electronic devices. Hence radiographers and educators need to upgrade their knowledge in this regard through on-the-job continued development, organised continuing professional development (CPD) as well as continued education (CE) to cope with these changes. According to the International Society of Radiographers (1996:12), professional radiographers have a responsibility to update and maintain their practice in line with new developments and apply proven research for the benefit of the patient.

2.4.3 Shortages of staff

Radiography is one of the scarce skills in the country, especially in rural areas where unqualified people at times perform radiographic procedures (Tshabalala-Msimang 2004:32). There is also a shortage of doctors and radiologists mainly in public health institutions. The situation is worst in rural areas. This is primarily due to the growing demand for radiological services nationally; government efforts to improve service delivery at primary health care centres, role extension for radiologists in certain areas as well as the unattractiveness of working conditions for highly qualified people in such areas.

Legislation still confines the role of the radiographer to only producing radiographs (Medical and Dental Professions Board 2002:5). This calls for further research to establish the possibility of role extension in radiography in this country and why is there no movement in that regard.

Increasing workloads resulting from staff shortages are common in radiographic practices around the world. In the UK, Keenan and Cuthbertson (2001:685) found that many departments reported a 5% annual increase in their activity. This could possibly be true for South Africa as well and indicates the need in this country for role development into areas traditionally performed by radiologists.

2.4.4 Teaching by non-academic staff

In many institutions, teaching is extending to non-academic staff. This is partly due to the multidisciplinary nature of health care delivery, where radiographers need to educate other health professionals and learners about procedures and equipment. In addition, newly qualified personnel (doing community service) are introduced to the world of work and learners in training are sent to these institutions for their clinical practice. In academic hospitals teaching is mandated as a function for a clinical radiographer.

Involvement in research is encouraged because of radiographers' wealth of experience and knowledge about practice. However, this practice is not yet adequate in South Africa. This

provides sound evidence-based knowledge, which is useful when considering improvement. There is also growing participation of clinical staff in continued professional development (CPD) initiatives in an effort to improve practice.

2.4.5 Use of imaging in areas beyond medicine

Radiographic imaging is currently used in areas outside medicine. According to Bentley (2005:48), its use has expanded to industry for welds and casting, to inspect items like airbags and canned food products. It has also been found useful in metallurgical material identification and security systems at airports and other facilities to detect bombs. This provides career opportunities and growth for practitioners.

In addition, expansion of radiographic services to areas outside medicine poses a challenge for educators on how well to prepare the learners to cope with different demands in the working environment, especially at undergraduate level where generic skills of critical thinking, problem solving, communication and interpersonal skills need to be inculcated through the curriculum.

2.5 RADIOGRAPHY AS AN ACADEMIC CAREER

The academic career is complex, exciting and sometimes frustrating, particularly in times of change. It involves diverse functions that are at times very demanding to fulfil simultaneously. Mofokeng (2002:154) maintains that, despite the dilemmas of choice they face, the academic staff remains an essential component of the entire university's performance. They are the determinants of quality in higher education. They very often have to deal with the choice between their own needs and conflicting demands placed on them by the university, the community and legislation.

The core task of an academic radiographer in higher education is to achieve personal and professional growth as well as realise institutional objectives. These tasks include production of a knowledgeable, skilled and competent graduate through a high standard of teaching quality and relevant curriculum, research output which culminates in good teaching, learner supervision and

multifaceted and includes teaching, curriculum development and assessment, supervision and administration and management. An academic radiographer's activities and behaviour are also directed at the achievement of personal, professional and institutional goals. Their primary functions include teaching and learning, research, clinical supervision, community service, administration and management.

2.5.1 Teaching and learning in radiography

Teaching and learning reflect one of the chief goals of higher education, namely the production of a highly competent workforce that contributes to the socio-economic development of the country. According to Brown and Atkins (1998:2), teaching is the provision of opportunities for students to learn. Slabbert (1997:12) refers to Bullough and Gitlin's statement that excellent teaching may be amongst the most difficult of human accomplishments.

For an academic to perform all these functions well, requires high order cognitive skills like problem solving, creativity collaboration and meta-learning. According to Slabbert (1997:99), meta-learning is a "high order of learning which controls the learning process or construction of meaning". Moreover, meta-learning strategies include planning, monitoring and evaluation.

Embedded in meta-learning is the process of reflection. Hall & Davis (1999:165) cites Boud, Keogh and Walker who define reflection in a context of learning as "a generic term for intellectual activities in which individuals engage to explore their experiences in order to lead to new understanding and appreciations". Hall & Davis (1999:165) also cite Atkins and Murphy in stating that reflection has the potential to address issues in practice in a way that a straight application of theory to practice cannot.

According to Garrison and Anderson (2004:24), the lecture evolved as the primary means of university teaching, but has proved to be less effective. Garrison and Anderson (2004:25) go on to say that for deep and meaningful learning, critical reflection and collaboration encourage learners to take responsibility for the construction of meaning and confirmation of understanding

through reflection. O'Connor (1996:54) maintains that reflection results in professionals realigning their performance in an effort to achieve excellence.

O'Connor (1996:54) adds that Gardner's multiple intelligence theory is appropriate for a practising radiographer in terms of reflection, because it encompasses both technical and interpersonal skills. Furthermore, unless the unity of a person's cognitive and affective domains is recognised, the reflective skill cannot be developed.

Teaching and learning also encompass assessment and curriculum development. Together, these processes culminate in effective teaching practice. So curriculum, with preset objectives can help the facilitator to plan learning opportunities that can better help learners to achieve the preset outcomes and use assessment strategies that will enable the learners and the facilitator to reflect on the learning process. Learners tend to attach more value to assessment as it carries marks that determine their success or failure. Curzon (1985:260) cites Brunner who emphasises that assessments can also be used as allies in the battle to improve curricular and teaching.

Academic radiographers face a challenge in developing a relevant curriculum for the programme in accordance with the vision of the institution and the South African society at large. According to Ruscheniko and Horak (1998:5), the curriculum used for radiography training is not as relevant as it ought to be in that it fails to acknowledge other factors about learners as they come to institutions of higher learning. The authors (1998:11) further state that the curriculum is overloaded but does not deal with the development of essential skills for success in higher education. This is indicative of the need for academic radiographers to collaborate to find what constitutes the scope of radiographic knowledge.

Related to the practice of teaching is research. In addition to being one of the core functions of academics, research-based teaching according to Walker (1992: 37) is indicative of the commitment to development and to effective learning.

2.5.2 Research in radiography

The current range of journals available indicates radiographers' participation in research (Nixon 2001:33). This participation was primarily influenced by the professionalisation of the programmes (being offered at higher education institutions), the development of postgraduate programmes and in the UK, the Fellowship examinations. In addition, the changing nature of radiographic practice with a strong focus on quality, technological innovations, and the changing higher education landscape, which encourages research activities by staff members as a prerequisite for promotion, foster needed participation in research.

In South Africa, the state of affairs is slightly different. According to Ruscheniko (1997:6), the potential for research in radiography is enormous even though it is currently not exploited. Ruscheniko (1997:8) refers to Challen who points out that radiographers have a dual ethical responsibility to be involved in research, firstly because it benefits the patients and secondly, because health care activity utilises research findings.

For research activities to improve within the profession, both clinical and academic radiographers need to discover ways to improve so that they can be judged internally and externally as a worthy research-based profession. Education needs to rigorously consider the curriculum and teaching methods because skills fundamental to research activity are not currently adequately developed in an average South African radiographer at undergraduate level (Ruscheniko 1997:8).

Brown and Atkins (1998:5) maintain that research should be regarded as "organised curiosity" and teaching as "organised communication". Practice-based research can be conducted with relative ease and is both cost effective and relevant. Moreover, it has the potential for professional development of practitioners to improve practice. Both clinical personnel and academic staff can establish collaborative networks and teams to encourage the development of the scholarship of research.

2.5.3 Learner supervision in radiography

There is a need for radiography learners to spend significant time in a clinical setting during their training. This ensures their effective training for the world of work and achieves the translation of theory into practice. For this reason, they need constant supervision to help them learn and be able to cope with challenges in practice.

In academic health care institutions like hospitals, the practising radiographer has a teaching responsibility to junior members and to students. This regulation is provided for in the standards of radiographic practice developed by the HPCSA. This implies that the clinical staff will primarily provide the supervision the learners need for their clinical training by virtue of the time they spend with these learners. According to ISRRT (1995:9), the academic radiographer's responsibility then becomes to collaborate with the clinical staff on issues of departmental protocols to align curriculum with practice. They also need to assess the progress of learning on a regular basis to ensure that practice reflects theory and that the overall education and training objectives are met.

According to Finch (1997:9) there is often conflict between clinical and academic radiographers over this supervisory role hence reference should be made to the standards of practice for radiographers. In such instances a common goal of producing competent graduates should be the overarching reason for a healthy partnership.

2.5.4 Community service and service learning in radiography

The community service function of the academic staff involves all activities performed by professionals in responding to the development needs of societies (Mofokeng 2002:140). This function by academic staff in higher education is also on the agenda for governments as it helps professionals to be relevant and improve practice. This stems from the fact that higher education institutions have the resources and capacity to help develop local and national communities (The World Bank 2002:17). In South Africa where the legacy of a separatist regime resulted in the underdevelopment of the majority of the population, community service in any form, whether

intellectual expertise, infrastructure or manual service, is important in realising the national aspiration for reconstruction and development, The World Bank (2002:19).

Mofokeng (2002:140) refers to UNESCO's report that many institutions are forging ways to strengthen their commitment to the needs of their communities. In some cases, however, insufficient resources make the task difficult. Not only will the community benefit, but the institution as well. According to Mofokeng (2002:141) who cites Perold and Omar in stating that among the opportunities opened are the potential financial benefits in terms of consultancy services to the private sector, international sponsors, networks with international partners for development and, most importantly, the quality and relevance of learning for learners in that they will appreciate the context in which their professions are embedded.

Mofokeng (2002:140) further adds that for community service activities to be successful, the commitment of academics needs to be encouraged because this function involves personal sacrifice in terms of time, convenience and money.

2.5.5 Achieving academic excellence in the teaching and practice of radiography

Academic departments and institutions able to strive for and achieve the standard of work they prescribe for themselves, based on their mission and vision, are said to be pursuing excellence. According to Ramphele (1999:150), excellence in academia entails doing ordinary things extraordinarily well hence involves originality, creativity and a track record that can stand the test of time. It is a commitment that individual staff members make in a concerted effort to finally produce world-class graduates.

According to the Academic Excellence Planning Group (1996:3), academic excellence should be "an institutional goal to be achieved through the thoughts, attitudes and actions of the university community in and off the campus". This indicates that academic excellence cannot be generalised since institutions differ in their purpose and objectives. Nevertheless, certain characteristics can be identified in ones striving for excellence, and according to Ramphele (1999: 152) they include individual commitment to a performance standard preset by members; an institutional culture that

nurtures and supports the pursuit of excellence through acknowledgement of personal achievement and performance, and high expectations of both staff and learners.

Academic radiographers at the University of Limpopo face the daunting challenge of achieving the quality of professional service expected by the institution and communities. This requires a close examination of what is presently done in order to determine ways of continually doing it better. Mofokeng (2002:143) cites Shea who states that professional competence takes precedence over attempts to prepare young people for their roles as informed, active participants in public life.

2.6 CONCLUSION

This chapter discussed the changes radiography has undergone since becoming a profession with reference to the literature reviewed for the study. Today, advancements in technology make radiological imaging more diverse and thus one of the most challenging and interesting fields. Computers are widely used and some radiography departments are completely digitised. In addition, changing societies, with more knowledge and understanding of their rights, demands quality and professionalism from service providers.

Today radiographers' skills are required in areas outside medicine, which affects the way they are trained. The ability of these professionals to respond to the challenges they face, including depleting resources, necessitates cost-effective development initiatives.

Chapter 3 discusses human resource development of academics in higher education institutions.

CHAPTER 3

HUMAN RESOURCE DEVELOPMENT (HRD) AND THE PROFESSIONALISATION OF EDUCATORS AT HIGHER EDUCATION INSTITUTIONS

*The degree that I create relationships that facilitate growth in others as separate persons is
a measure of the growth I have achieved in myself*

Carl Rogers

3.1 INTRODUCTION

Chapter 2 described radiography and the current changes in the profession as influenced by the changing health care and higher education landscape. The impact of these changes on the role and education of radiographers necessitates continuous professional development of trainers and educators in higher education institutions.

This chapter discusses HRD in new skills and competences required of academics for transformation to improve the quality of education of radiographers. The focus will be on the core functions of academics, including teaching and learning, research, community service and learner supervision. Some of the challenges faced by higher education institutions at a time of change affect the nature and direction of the transformation in higher education. Policy on academic HRD and development strategies that can be adopted in an academic department to effect sustainable change is also discussed.

3.2 CHALLENGES FACING HIGHER EDUCATION IN SOUTH AFRICA

The major challenges facing higher education today are mainly the result of globalisation and internationalisation. Hay & Wilkinson 2002:41) cites Lelliot, Pendlebury and Enslin who describe globalisation as a process by which societies are connected through rapid, large-scale networks of political, social and economic (including academic) interactions. Hay and Wilkinson

(2002:44) add that globalisation is mostly negatively connected to what outside forces and organisations impose on countries. Currie (2003:16) describes speed, instantaneous transfer of information and capital, the world becoming condensed and knowledge flowing easily across borders (internationalisation) as images of globalisation.

Another challenge facing South African higher education is the state demands that universities contribute to economic and socio-political transformation. According to Reddy (2004:1), universities are expected to perform as viable corporate enterprises producing graduates to steer South Africa into a competitive global economy, while at the same time serving the public good in producing critical citizens for a vibrant democratic society. Hansen (2003:136) maintains that there is a broad political drive by governments to harness higher education to the needs of the economy.

Currie (2003:20) emphasises that such changes affect higher education because the business of education involves seeking partnerships, alliances, outsourcing of services especially between education providers and technology companies. This could pose a serious challenge for some institutions.

Van Wyk (2003:153) states that the ability to maximise the use of information is now considered the single most important factor in deciding the country's competitiveness and ability to empower its citizens through enhanced access to information.

3.3 TRANSFORMATION OF HIGHER EDUCATION (HE)

Higher education (HE) is hotly debated nationally and internationally. Hassan (2003:43) states that technological innovations, expanding knowledge and socio-economic developments all have a major impact on higher education. HE is required to produce graduates that will succeed in changing environments. Gnanam (2000:317) and Hassan (2003:44) criticise general education as irrelevant to societal needs and available jobs and maintain that higher education institutions (HEI's) should change from "business as usual" to confront and meet the changing social and economic challenges.

In South Africa and around the world, the changing trends in higher education are in response to the effects of globalisation. Hassan (2003:46) stresses that in a changing society, knowledge is perishable. So in today's knowledge-driven societies, learners need to be skilled and competent to succeed in any situation or environment. This requires the development of skills like life-long learning, self-directedness, creative and critical thinking, problem solving, and intra- and interpersonal skills.

Table 3.1 outlines the principles that guide higher education transformation in South Africa

Table 3.1: Principles guiding higher education transformation in South Africa

1	Equity and redress	Fair opportunities to enter HE programmes and succeed.
2	Democratisation	Governance of HE system and individual institutions is democratic, representative and participatory. Characterized by mutual respect, tolerance and maintenance of peaceful community life.
3	Development	Conditions to facilitate HE transformation must be created.
4	Quality	Maintaining and applying academic and educational standards, to pursue ideals of excellence.
5	Effectiveness and efficiency	HE institutions should function in a way that leads to achievement of desired outcomes or objectives.
6	Academic freedom	Absence of outside interference in pursuit and practice of academic work.
7	Institutional autonomy	HE institutions be self-regulatory and demonstrate administrative independence.
8	Public accountability	HE institutions being answerable for their decisions and actions.

Source: Department of Education (1997:10)

Along with the increasing demand for relevance, there is also the issue of quality and accountability. The researcher is of the opinion that programmes and curricula need to be of high quality (standard) and relevance and this should be evidenced in new ways of teaching and assessment. However, Pretorius (2003:120) warns that despite the good intentions, the potential for significant change could be hampered by a focus on accountability rather than on quality improvement.

According to Reddy (2004:1), there is a need to restructure the curriculum to reflect the experiences, histories, cultures and politics as they relate to the majority of the continent-wide residents. Hence acknowledgement of these discourses should be evidenced in the curriculum, research, and community service functions of academics. Ramose (2003:141) cites Da Costa and Meerkotter who state that education in South Africa should make Africa the focal point from which all other cultures are studied, and should give just and unexaggerated recognition to the cultural contributions of Africa to world civilization.

The education approach or underpinning philosophy adopted in South Africa is outcomes-based education (OBE) which is believed to have the potential to address education issues and simultaneously respond to the demands for growth and development by preparing a workforce and citizenry for the country's HR needs and democracy (Hassan 2003:61). In this regard Hassan (2003:61) cites McGrath who argues that if OBE is to live up to the highest principles and ambitions of the "new South Africa" then major methodological and attitudinal shifts will need to take place that empower learners and educators to become real change agents.

To ensure that OBE in South Africa lives up to its expectations, the South African Qualifications Authority (SAQA) has developed critical outcomes that every educational experience should seek to develop for a qualification to be awarded. Table 3.2 represents the critical cross-field outcomes that need to be developed by learners at every level of their education, with increasing intensity as levels go up.

Table 3.2: SAQA's critical cross-field outcomes

Critical Outcomes	Developmental Outcomes
1. Self-management Organising oneself and one's activities responsibly and effectively	8. Learning skills Reflect and explore a variety of strategies to learn more effectively
2. Develop a macro vision Demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation	9. Citizenship Participate as a responsible citizen in the life of local, national and international communities
3. Communication Communicate effectively using visual, mathematical and/or language skills in the modes of oral/or written persuasions	10. Cultural and aesthetic responsibility Be culturally and aesthetically sensitive across a range of social contexts
4. Team member Work effectively with others as a member of a team, group, organisation and community	11. Employment Explore education and career opportunities
5. Problem solving Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made	12. Entrepreneurial skills Develop entrepreneurial opportunities
6. Research skills Collect, analyse, organise and critically evaluate information	
7. Environmental responsibility	

Use science and technology effectively and critically, showing responsibility towards the environment and health of others	
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Source: Adapted from Hassan (2003)

3.4 IMPLICATION OF CHANGE TO ACADEME: THE NEED FOR HRD

Globalisation with its increased technological innovation and knowledge-driven economies, the role of academics in higher education institutions is affected. The most significant factors that will be affected are according to Hay & Wilkinson (2002: 41), re-configuration of the HE landscape as well as curriculum development, teaching and learning including assessment and incorporation of technology in teaching and research. According to Currie (2003:19), how educators approach these challenges will determine the quality of the educational experiences for the learners.

3.4.1 Curricular transformation

The curriculum in HEI's is always evolving to keep abreast of changes in society. The curriculum needs to be relevant in content and process to come to grips with learners' needs as well as the challenges posed by national and international standards. Hassan (2003:57) indicates that the curriculum should reflect an environment structured to facilitate emergence of a set of dynamic ideas that would ensure progressive education suited to a new era.

Outcomes-based education (OBE) and problem-based learning (PBL) are approaches to curriculum development designed to meet society's changing needs through holistic development of learners to contribute positively to the social development and knowledge creation in South Africa (Hassan, 2003:59). Both approaches are in concert with the new paradigm in education and training and have the potential, if applied correctly, to equip learners with knowledge, skills and competences to succeed in a dynamic world of work.

The success of these approaches in ensuring effective learning depends on the attitudes and understanding of the educators. With the challenges faced by educators, of insufficient training and lack of understanding of the processes involved to transform traditional approaches, implementing them might be more of a challenge (Hassan, 2003: 60). The only way is for educators themselves to be trained to effectively apply the new approaches in curriculum development initiatives as well as teaching. Educators need to be competent in developing learning outcomes and assessment in OBE and PBL formats and skilled in creating learning environments that will enhance learning.

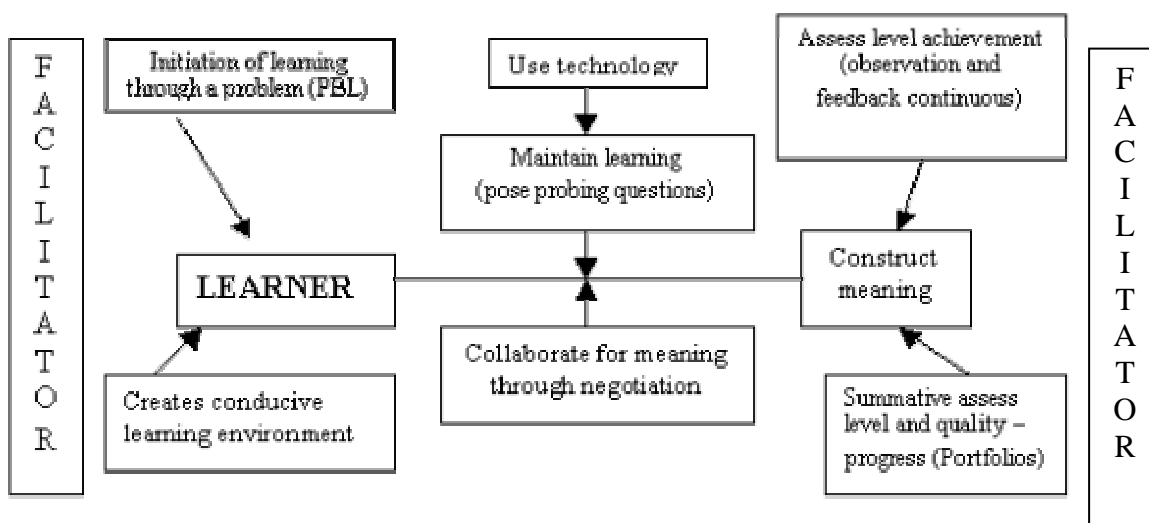
3.4.2 Teaching and learning

The changes in education that necessitates the adoption of OBE to enhance learning, present challenges for educators in higher education. Hansen (2000:140) emphasises that changing academic practice is always a complex process, especially at a time when perceptions of academic work are changing.

A shift from teaching to learning is another area that affects the role of educators, demanding specific skills and competencies to be developed to improve teaching and enhance learning. In recognising that knowledge dates, learners need to possess skills to access and analyse information to create new knowledge (Fielden 1996:3; Hassan 2003:34; Mashile 2002:175). Hassan (2003:55) adds that learners should contribute to the development of society through high levels of intellectual vigour, analytical skills, independence and self-directedness, basic research skills and an attitude for learning and success.

The emphasis on education or learning by the learner implies that learners should be meta-learners, able to monitor their own learning. According to Slabbert (1997:40), the relationship for constructing meaning through personal experience and enquiry is fundamental to this new paradigm because it is fundamental to maximising human potential. Hence the role of educators will be to facilitate the process of learning for learners to create their own meaning. Figure 3.1 depicts the process of learning in the new paradigm.

Figure 3.1: Learning experience in the new paradigm



3.4.3 Research

In the new paradigm of learning, teaching and learning, research and community service are interrelated discourses of higher education praxis (Walker 2002:212). Walker (2002:212) states that “good teaching can produce excellent research and the latter, in turn, reinforces effective teaching and learning”. Mofokeng (2002:138) cites Dubbey who points out that it is necessary for the teaching and research functions of university lecturers to support each other, especially at a time of knowledge explosion and rapid change. Mofokeng (2002:138) adds further “teaching and research should be equally valued as complementary and reciprocally supportive activities in the work of university lecturers”. This is important because, in the researcher’s experience, higher education institutions like Medunsa value and reward research achievements rather than teaching and learning achievements.

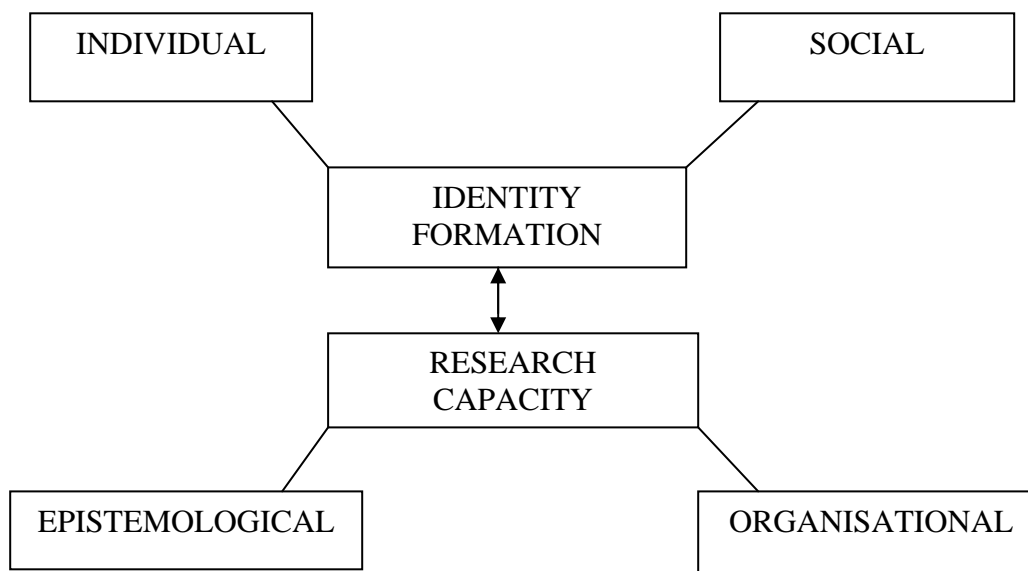
Most academics are not sufficiently trained in conducting research except for the minimal exposure when they themselves were studying (Hassan 2003:164; Mofokeng 2002:77).

It is against this background that human resource development initiatives for academics be planned with a focus on teaching, research and community service as complementary activities. Mofokeng (2002:139) cites Dubbey who elucidates these functions as follows:

Teaching at an advanced level develops a disciplined, systematic approach to the acquisition and retention of knowledge. The best way to master a difficult concept is to teach it, discuss it, argue about it, answer hard questions about it and through collaboration with colleagues many ideas and problems for research development will emerge. Conversely, it is mainly through research that lecturers become familiar with the new frontiers of their subject area, obtain authority in their teaching and hence convey content of real value to the learners.

In a study on research capacity development, Dyson (2004:84) found that in addition to the frame of socialisation, identity formation was an important concept in understanding research capacity development (see figure 3.2). This implies that individual lecturers need to believe that they can be researchers. Dyson (2004:84) found further that research capability is more than the sum of the skills and abilities an individual has mastered, but comes from the capacity of the whole person.

Figure 3.2: Lenses for viewing research capacity development



Source: Adopted from Dyson (2004:84)

3.4.4 Community service and service learning

Higher education institutions have a responsibility to develop the national human resource capital and contribute to the development of communities by responding to other social needs. Parellada and Bertran (1999:67) indicate that universities have traditionally contributed to the development of regional societies by developing the country's human resource capital as well as creating and exchanging knowledge.

Fourie (2003:31) refers to Swick's definition of service learning as "a pedagogical strategy that combines authentic community service with integrated academic learning". According to Lucas (2000:196), service learning is "a credit-bearing educational experience in which students participate in organised service activities that meet identified community needs in such a way as to gain further understanding of the course content, a broader appreciation of the discipline and an enhanced sense of civic responsibility".

UNESCO (1998:34) states that if HE has a larger and more central role in society today, it is first and foremost due to its tremendous resources, especially in terms of accumulated wisdom about ways to train and educate entire generations of young people and in the expert knowledge and deep understanding of teachers, scholars and scientists.

The emphasis is therefore on learning and service, willingness to serve and learn and willingness to balance benefits and responsibilities from both the institution and the community as a reciprocal activity. Reflection activities, which are critical to service learning, offer learners opportunities to consider the social implications of their discipline specific work as well as their social responsibilities (Fourie, 2003:31). This function also extends to academics, as they are the ones to facilitate the learning process for learners.

Community service also offers academics and learners opportunities for research and rich learning environments. According to Mofokeng (2002:142), research and consultancy services normally develop, and also have a potential to improve and attract funding.

Fourie (2003:31) indicates that the concept and practice of service learning (achieved through community service) has succeeded in uniting the core functions of academics, and the quality of learner experiences is of crucial importance for higher education.

Fourie (2003:31) goes on to say that individual institutions have seldom succeeded in maintaining an acceptable balance between the three core functions, and that it is much more useful to think of academic activity as a continuum along which basic and applied research overlap and merge into application and related forms of outreach. Through community service and/or service learning, learners have opportunities to gain new skills, apply new knowledge in different and challenging situations, reflect on their actions to enhance learning and still contribute to the life of others in a meaningful way (Mofokeng: 2002:143).

According to Mofokeng (2002: 143) developing community service for academics is both a national and institutional investment. Even though it might not have direct monetary incentives, there is a wealth of new knowledge to be explored and achieved. The academic's perceptions of

this function should be acknowledged and supported so that it can be effectively planned and implemented.

3.4.5 Learner supervision

Most programmes at Medunsa, including radiography, involve clinical training. One of the objectives of clinical training is to ensure that learners are exposed to real-life experiences in practice that will enhance their theoretical understanding. Clinical training also calls for the translation of theory into practice. Learner supervision is another function of radiographers teaching in HE even though clinical staff does most of the supervision. Educators need to be involved in some way, such as in providing practical assessment to evaluate learners' progress and to identify areas that needs to be emphasised and improved in their training. The Department of Radiography at Medunsa is currently looking at expanding their programmes to postgraduate level provision. At this level, educators need the skills to supervise research projects.

According to Ngcongco (2001:53), supervision and promotion of masters and doctoral students is an important activity through which universities perform their teaching and research roles. This type of supervision is aimed at orientating senior students as researchers more broadly, and implies developing critical skills in conducting a research process, which will be a creditable component of the programme. Hence educators themselves need to be well versed in the process of research to offer guidance and support to learners. Ngcongco (2001:56) points out that this type of supervision should have a "transformative impact on learners and hence requires transformational leadership" from academics.

3.5 HUMAN RESOURCE DEVELOPMENT (HRD) OF ACADEME

HRD for academic staff includes all efforts and processes that aim to encourage effective teaching and learning practices, research capacity and community service functions. Brew (1995:21) points out that, most educational developments are conceived of in terms of changing the lecturers' practice, their techniques and skills as well as methods used in training and in practice. Action research (AR) may be used to improve educator practice because AR has the

potential to link theory and practice as well as more integration between research developments because lecturers are researching their own practice (Walker, 2002:213).

3.5.1 Policy provisions for HRD of academe in South Africa

South Africa's commitment to creating a high quality system of education for all its learners is evidenced in policies including those that deal with development of their educators. These policy initiatives were developed to guide the development of the new system and serve as a yardstick to measure successes and problem areas (Department of Education, 1997, 2001).

Table 3.3 below outlines policy guidelines aimed at the development of academics in higher education institutions. This is indicative of the government's commitment to ensuring improved education in South Africa.

Table 3.3: Policy guidelines for HRD of academe

POLICY	VISION
National Commission on Higher Education (NCHE), 1996	Academic development programme be funded as an integral part of new funding formula, taking into account historical inequalities in student body.
White Paper on Higher Education, 1997	The successful development of a coordinated system requires more than a commitment to transformation but also capacity building in all spheres of HE Maintain and apply academic and educational standards to pursue ideals of excellence
National Qualifications Act,	All HEs should adapt their teaching programmes to OBE principles, to ensure relevance.

	They must be learner-centred and involve problem-based, project-oriented and work-oriented learning
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3.5.2 Competences, knowledge and skills required to transform HE

According to Fielden (1998:9) and Slabbert (1997:12), in their teaching role, the academics face the biggest set of challenges to their working patterns. Fielden (1998:9) states further that they bear the ultimate burden of having to do more with less and are asked to teach a diversity of learners using new methods and technologies. Also, their accountabilities are made explicit, because of quality reviews and assessments to examine their work.

Against this background, academics need to develop the following skills and competences to ensure that educational transformation is achieved (Fielden, 1998: 10):

- awareness and understanding of different ways of learning
- knowledge, skills and attitudes relating to assessment and evaluation of learners in order to help them learn
- commitment to scholarship in the discipline maintaining professional standards and knowledge of current developments
- awareness of IT application to the discipline, to access materials and
- resources world wide as well as incorporating into teaching
- sensitivity to external and labour markets
- mastery of new developments in teaching and learning
- customer awareness, including learners
- understanding the impact of cultural and multicultural factors on curricula
- development of personal and professional coping strategies.

In South Africa, the following competences are also necessary (Hassan, 2003: 129):

- understanding of HE transformation
- developing new programmes in an OBE format
- using PBL as an alternative curricula approach

- incorporating community service to support learning and research.

3.5.3 Creating learning communities as a strategy for development

The term “learning communities” is often used interchangeably with “learning organisations” and there is no consensus on its definition. Angelo (2000:74) points out that most definitions of learning communities centre on a vision of faculty and students working together systematically towards shared significant goals. Motshekga-Sebolai (2003:74) cites Garvin’s definition of a learning organisation as “skilled at creating, acquiring, interpreting, transferring and retaining new knowledge and insight”.

Zepeda (1999:58) defines a learning community as “a group of individuals who share a similar vision of educational values and beliefs, honesty, respect, trust, courage and compassion and as a result work towards a common goal that enhances personal and professional development”. Furthermore, the emphasis is on collaboration and reflection to create synergies that render them more profound than individual efforts. Covey (1999:37) stresses that the whole is more than the sum of the parts.

Angelo (2000:74) maintains that many recent efforts at academic development reform, though well intended, have resulted in relatively little lasting improvement. This is typical of poorly planned and prematurely implemented initiatives. According to Angelo (2000:80), the problem with such initiatives is twofold, namely that they have been implemented without a deep understanding of collegiate learning and have for the most part been attempted piecemeal both within and across institutions.

Academic departments, especially leaders, could use the following guidelines to transform their departments into productive learning communities (Angelo 2000:80):

- Build shared trust by breaking down social and interpersonal barriers for change.
- Build shared motivation by collaboratively determining goals worth working towards and problems worth solving

- Build shared language by developing a collective understanding of new concepts needed for the transformation
- Design backwards and work forwards; in other words, from the vision and long-term goals to outcomes and strategies or what Covey (1999) refers to as “beginning with the end in mind”.
- Think and act systematically by understanding the system and context in which you operate.
- Practise what you preach by using your experience to inform and explain efforts and strategies.
- Communicate, using effective communication, which involves making the implicit explicit, not assuming, asking, assessing and evaluating what matters.

Adopting this approach to development is necessary because it offers opportunity for continuous expansion of capacity that might bear results truly desired, new and extended patterns of thinking are nurtured, and aspirations are set free and continuous learning guaranteed in unity (Angelo, 2000: 81).

3.5.4 Adopting a total quality management (TQM) approach to development

Even though the concept of TQM and associated strategies were developed in industry and business, they can be adapted in higher education to improve quality. According to Freed, Klugman and Fife (1997:1), institutions and academic departments adopting the TQM approach are concerned about quality and committed to continuous improvement by consciously removing all barriers to progress and ensuring that every initiative they take is guided by the principles of TQM.

Arjang and Olian (1995:77) cite Juran who states that though people are willing to give their best, systems usually prevent them from doing so because “80% of problems and inefficiencies in any workplace are caused by poor management”. TQM focuses on devolving responsibility to the lowest level within a department so that every member becomes the agent of the change they wish to achieve. This encourages and enables members to participate in decision making

involving identification of problem areas, setting objectives and determining procedures to effect the change.

3.6 CONSTRAINTS TO HRD IN AN ACADEMIC DEPARTMENT

Many factors can fundamentally hinder departmental growth. In this study, three factors were examined as the researcher considered them important to anchor most departmental initiatives for development and growth.

3.6.1 The effects of change

Change in higher education is not an imperative but is inevitable. Lucas (2000:7) asserts that change in higher education will be a compelling force in the next decade, with no clear-cut beginning, middle or end. Any large-scale transformation is therefore a complex and tedious process that requires good planning and commitment from all involved because it also involves people's emotions.

Implementing new innovations may often be the cause of stress and anxiety for educators and leaders. However, these elements are fundamental to the process and experience of any change initiative. Fullan (2001:7) emphasises that working through such problems is an essential feature of change.

Carl (1995:138) states that meaningful renewal is only possible if there is active involvement, dynamic and visionary leadership. In addition, "meaningful change demands a deep sense of understanding and beyond all a commitment to improve education". Change therefore requires a deep sense of understanding and commitment to contribute to the improvement of education.

3.6.2 Departmental leadership

An academic leader's role is critical in any change process. According to Gmelch and Miskin (1995:44) the leader creates a culture receptive to change, sets high expectations, models good

performance and builds capacity through motivation, support and provision of opportunities for learning. If these tasks are not efficiently performed, stagnation will result.

Despite consistent effort to transform academic departments and institutions, many record minimal improvement. Angelo (2000:74) points out that many efforts at academic reform, though well intentioned, have resulted in relatively little lasting improvement, but effective leadership could bring about the necessary change.

Gmelch and Miskin (1995:45) define academic leadership as “an influence relationship between the academic leader and the members in the department who intend real change that reflect their mutual purpose (vision)”. Leaders offer support to members in a department. Gmelch and Miskin (1995:45) stress that support from superiors contributes to increased confidence and cooperation in workers, both of which are behaviours that have to be nurtured. Gmelch and Miskin (1995:133) refer to academic leaders as “chairs that swivel” and identify their roles as

- faculty developer
- manager
- leader
- scholar.

These roles were explored to see how departmental leadership influences departmental development and growth.

- **Faculty developer**

As a faculty developer, the leader’s role involves recruiting members who will add value to the department and encouraging the personal and professional development of old staff members. This role involves the following activities (Gmelch & Miskin 1995:13):

- Encourage professional development efforts of faculty.
- Provide informal faculty leadership.
- Encourage research and publication.

- Create conducive work culture.
- Evaluate faculty performance.

Also important in this role is the support that the academic leader offers to academics. Support involves

- Modelling productive behaviour
- Motivating for excellent performance
- Mentoring professional development
- Networking with colleagues.

Support and motivation should be based on performance, namely more for members whose performance is low and less for high performers (Gmelch & Miskin 1995:14).

- **Manager**

Gmelch and Miskin (1995:14) describe an academic leader as a manager who ensures that resources are used efficiently, develops strategic plans and allocates resources accordingly. Management tasks include planning, implementing, controlling and evaluation to ensure that the department runs smoothly.

As manager, the leader performs the following tasks (Gmelch & Miskin 1995: 14):

- Prepare and propose budgets.
- Manage all departmental resources (finance, facilities and equipment).
- Maintain departmental records.
- Delegate duties.
- Prepare departmental reports.

- **Leader**

In this role, the academic leader provides a vision for the department; leads activities in the department by delegating duties; coordinates all functions within the department and represents them at professional meetings to keep the department informed (Gmelch & Miskin 1995:13).

Typical activities include (Gmelch & Miskin 1995:13):

- Develop initial long-term goals.
- Plan and evaluate curriculum development.
- Solicit ideas to improve the department.
- Coordinate departmental activities with members.
- Keep the department informed.

- **Scholar**

As a scholar, the academic leader remains involved in learning through teaching and research to keep abreast of new professional knowledge and learners' academic development (Gmelch & Miskin 1995:13). Activities performed in this role include:

- Obtain resources for personal and departmental research
- Maintain research program and associated professional activities
- Remain current within academic discipline
- Obtain and manage external funds
- Select and supervise postgraduate students
- Teach and advise students

3.6.3 Transfer of learning

Another factor that is a constraint to development is the effectiveness by which academics implement the skills and knowledge gained in development programmes in their daily work and this concept is referred to by Meldrum & Atkinson (1998:327) as "transfer of learning".

Transfer of learning is any intervention aimed at equipping the learners with the necessary knowledge; skills and attitudes to enable them to better perform their work in a rapidly changing world of work, Meldrum and Atkinson (1998:329). The aim of learning, then, is to bring about

change, especially improvement. Slabbert (1997:23) emphasises that a learning task has no use unless it is put into practice.

When planning any learning intervention, therefore, it is important to take into consideration that academics are adult learners and present programmes in ways that will enhance their learning. According to Gerber (1987:215), adult learners evaluate and integrate what they learn and are interested in the usability of the new knowledge. Hence their learning intervention should be hands-on or experiential learning experiences, using real-life problems rather than theoretical and abstract notions.

Evaluating the effectiveness of learning interventions will therefore consider approaches that are performance-based as a strategy to ensure development. Holmes (1998:15) cites Galagen who states that training and development in their current forms “run the risk of obsolescence because they fail to focus on the enhancement of individual and organisational performance”.

Holmes (1998:17) states further that to create a high performance work system, an organisation must consider how its work gets done and then design the most effective and efficient system possible to achieve its goals. Holmes (1998:17) identifies two myths about current efforts and HRD, namely that

- training on its own will make significant differences in individual and organisational performance
- the primary purpose of training is to achieve learning objectives.

Planning learning interventions hence needs to take a long-term view of organisational change and recognise that there are no quick fixes. Significant problems require a good analysis of the environment so that solutions are systematically integrated between personal and departmental needs. In this sense, leadership and performance assessment in all areas of academic activities become crucial.

According to Meldrum and Atkinson (1998:329), effective transfer of learning can be hampered by:

- too broad expectations that are difficult to measure
- hostility and mistrust between leadership and practitioners
- inadequate coaching
- lack of feedback
- using ineffective methods for adult learning
- organisational culture
- irrelevant learning programmes
- ill-managed change
- lack of collaboration and teamwork

Table 3.4 depicts broad constraints to transfer of learning.

Table 3.4: Constraints to transfer of learning

The learner	The workplace	Training factors
Willingness	Culture	Preparation
Level of learning	Mentoring	Teaching strategies
Work experience	Coaching	Evaluation methods
Routine work	Feedback	Facilitators' competences
	Performance assessments	Content
	Opportunities	

3.6.4 Mindset of academe

Mindset refers to “thinking orientation that determines how a person sees the world and hence behaves”; Reeves, Ford, O’Brien, Smith and Tomlinson (2000:14). It is a complex concept as it

deals with people's beliefs and attitudes. To change a mindset is thus both demanding and challenging. However, if any change is envisaged, the mindset of the people involved should be receptive to the change.

Reeves, Ford, O'Brien, Smith and Tomlinson (2000:14) maintain that in reforming practice, an important dimension is the potential change or modification of self-concept as part of the learning process. Reeves et al (2000:62) also indicate that a key feature in professional development for performance is a change in the learner's perception of his/her professional identity. This is primarily because what people do is a result of their thoughts.

According to Reeves et al (2000:63), key features for development include

- Self-enhancement: seeking to maintain a positive view and feeling about oneself
- Self-efficacy: seeing oneself as competent and effective
- Self-consistency: sensing and experiencing oneself as consistent and having a continuity of identity.

In professions like radiography and teaching, the process of interaction with people and subsequent accountability is the essence of practice. Reeves et al (2000:15) state that accountability is fundamental when growth and development are considered in a social setting.

3.7 DEPARTMENTAL INITIATIVES FOR PROFESSIONAL DEVELOPMENT

Development initiatives planned and implemented by practitioners themselves have more chance of success than those imposed. This is because they are planned precisely to meet specific needs of academics. Hassan (2003:9) adds that, the implementation ensures effective use of available resources and practitioners are committed to them.

Holmes (1998:15) cites Galagen who states that training and development in their current forms “run the risk of obsolescence because they fail to focus on the enhancement of individual and organisational performance”.

Brown and Macatangay (2002:43) emphasise that practitioners become responsible for their own professional development in their preferred ways performed in familiar situations and within the limits of available resources. Real transformation or change is an individual decision. If education transformations are to be realized, individual lecturers need to internalise the initiatives and change first. Slabbert (1997:22) holds that educational renaissance “should begin in the chambers of our own hearts. We cannot wait for society to change or for institutions and organisations to be renewed. We, as individuals, must assume the responsibility for our own personal transformation.”

When development and improvements are considered, personal development; with specific emphasis on skills that will enable collaborative learning, personal leadership, pro-activity and ultimately maximising potential need to be enhanced. Peterson and Provo (2000:106) point out that adult education draws primarily from personal development or individual self-actualisation and personal transformation.

It therefore becomes necessary for practitioners to take proactive steps to determine their development needs as well as developing and implementing strategies that they feel will improve their practice and ensure excellence. The researcher is of the opinion that it is no longer practicable to sit and wait for management to take care of the personal and professional development of practitioners alone. Academics also need to take initiatives towards their own personal and professional development.

3.7. 1 Models for staff development

In order for any departmental initiative to bear fruit, a formal plan for the process or blue print to serve as a guide needs to be in place for all members to understand what needs to be done and when. Five models of staff development are briefly described next.

3.7.1.1 Readiness, planning, training, implementation and maintenance (RPTIM) model

The RPTIM is a five-step model for academic development that seeks to bring a systematic change in schools and equally to academic departments. According to Zepeda (1999:97), this model is based on the belief that local school site is the primary unit of change. Lucas (2000:) states that academic departments are the sites where the change actually occurs hence academics are the agents of the very change envisaged.

The five steps of the model consist of the following processes or activities performed at appropriate times, namely readiness, planning, training, implementation and maintenance.

3.7.1.2 Individually guided model

According to Motshekga-Sebolai (2004: 60) this model was designed to assist educators, as individuals, departments and institutions to achieve mutually agreed upon improvement objectives. It is sometimes difficult to evaluate progress without criteria to measure against. Zepeda (1999:109) states that it is difficult for educators to learn things without any formal guidance hence they need a kind of formal programme they can use to plan, monitor and evaluate their progress.

Individual members become self-directed learners and the department becomes a learning community where members identify problem areas and their needs, then plan, implement, monitor and evaluate their progress and achievements. This approach can be used alone or with other approaches like mentoring, peer coaching and reflection.

3.7.1.3 Problem-based learning model

According to Kennedy (2005:238), this is a learner-centred or problem-stimulated approach aimed at the self-empowerment of academics through problem solving. The problems identified are practice oriented which makes the solution more relevant. The emphasis is on the learner's

needs in terms of development thus this approach is useful in developing specific skills dictated by practice through knowledge creation by members themselves.

3.7.1.4 Study group or cluster model

Study groups usually form around topics, by subject areas or special interest. According to Motshekga-Sebolai (2004:61) every member in the study group or cluster is thus an active participant in the learning process. The group focuses on specific areas and each member is assigned a task that will enable the group to negotiate the solution. This method is effective in providing opportunities for life-long learning because it provides opportunities for continuous dialogue and reflection. A culture of trust is normally created between the members, which are essential for collaborative learning from individual skills and experiences.

3.7.1.5 Action Research model

Action research is a type of practice-based applied research that focuses on personal and professional development (Walker, 2002:213). The research process is less cumbersome because it focuses on a specific problem in practice and is flexible. The academics themselves are the researchers into their own practices. AR advocates, like Zuber-Skerrit describe it as a cyclic process consisting of the following activities:

- Planning: the focus is identified and research instruments developed
- Action: implementation and data collection
- Evaluation: data analysis and interpretation
- Reflection: internal conversation
- Planning again

According to Zepeda (1999:108), the design of AR staff development has the following advantages:

- Opportunities for members to collaborate
- Development of a community of learners through dialogue and reflection

- Learning opportunities with no influence towards a predetermined point of view
- Opportunity for support to members
- Data-driven collaborative decision making
- A community receptive to change

3.7.2 Processes that enhance staff development

- **Peer coaching**

Members usually perform peer coaching either from the same department, teaching teams or educators from the same institution. Zepeda (1999:110) cites Pojak who states that peer coaching affirms the sequential processes of the original clinical models of supervision.

- **Mentoring**

Zepeda, (1999:109) defines mentoring as a form of professional support offered by a more experienced member of staff to a less experienced one, in an effort to develop the protégé's skills and competence. The author (1999:111) cites Zey's definition of a mentor as "a person who oversees the career and development of another person, usually a junior through teaching, counselling, providing psychological support protecting and at times promoting or sponsoring. Mentoring is an effective tool for promoting collaboration and reflection in teaching and hence a good strategy for professional development."

- **Reflection**

Reflection is a meta-cognitive skill and is prerequisite to self-directed learning, lifelong learning and continued growth (Kraft 2002:175). According to Kraft (2002:179), reflection includes making inferences, generalizations, analogies, discriminations and evaluations as well as feeling, remembering and solving problems. The aim of reflection is to achieve a deeper understanding to make sustainable behavioural change.

The practice of reflection in education is critical because it brings to people's attention, their own beliefs and ideologies that shape their behaviour, and understanding of how this behaviour impacts on their roles as educators. Also important is the fact that it is at this level of consciousness that real transformation should occur (Kraft 2002:179).

According to Zepeda (1999:112), reflection is best understood as "a serious thought about a subject and serves as assessment and a vehicle for acquisition of skills. It helps an individual to identify existing biases that may inhibit learning."

Kraft (2002:179) cites Mazirow, who believes that transformative learning occurs when "an individual has reflected on assumptions or expectations about what will occur, and has found his assumptions to be faulty and has revised them". Zepeda (1999:79) also adds that reflective questioning gives opportunity for meaningful dialogue, which is essential in learning communities, because it creates an atmosphere conducive to learning where educators make known their thoughts without fear.

The practice of reflection is therefore the fundamental basis of change within every individual. The "knowledge which education may give us by this process of reflection in the context of critique of ideology represents the most significant kind of learning we can achieve" (Mazirow cited in Webb 1996:59).

- **Collaboration**

Lucas (2004:12) indicates that collaboration usually develops "when people with a common purpose work together to fulfil a purpose in an atmosphere of honesty, openness, trust and commitment to a shared vision".

Kraft (2002:180) states, "our greatest assurance of objectivity comes from exposing an expressed idea to rational and reflective discourse. The success of collaborative practice can be seen when partners share their knowledge and ideas, are not self-serving and their focus is on collective achievement."

In this way a community of learners with a common interest engage in a dialogue to seek consensus on held beliefs, practices and experiences. Kraft (2002:180) maintains that collaborative enquiry can create the conditions where educators learn about their practice by talking about their experiences.

Waghid (2004:34) points out “praxis emphasizes the importance of collective participation; equality and individual liberty in all forms of social interactions and also includes critical pedagogy which uses reflexivity and critical praxis to engage diverse voices equally and contextually in an educative transformative meaning making process”.

3.7.3 Activities that facilitate development

Various activities facilitate development; such as workshops, conferences, project teams/group work, meetings, seminars, audiovisual demonstrations, journal clubs, consultation and self-study.

3.7.4 Improving the core functions of academe

To improve the performance of academics, a strategic plan informed by the aims and objectives of the department needs to be considered. The capacity as well as other resources in the department should also be considered in the context of these objectives

3.7.4.1 Improving the teaching function of academe

Teaching is the most important function of academic work (see chapter 2, section 2.5.2 for the scope of teaching practice and associated challenges). Slabbert (1999:12) and Hassan (2003:140) emphasise that excellent teaching could be amongst the most difficult of human accomplishments. The challenge with this function is amplified by new ways of knowing, the shift from teaching to learning, relevant curricular, assessments and learner diversity. The role of academics in the new paradigm of learning is designing methods and learning environments (Lucas 2000:160). The teaching function involves curriculum development, learning facilitation

and assessments, and teaching scholarship. All these processes should be systematically planned and implemented to enhance the quality of learning.

Curriculum represents all activities that learners are exposed to during the time when they are registered. Its development involves all stakeholders interacting with learners during their studies. Zepeda (1999:114) indicate that the process of curriculum development as a collaborative activity, where members are forced to make and defend choices, enhances their understanding of their own beliefs about learning, hence improves development. Gardiner (2000:271) attests that listening to others' ideas when describing new content and methods enhances the development of learning communities.

Educators normally have their own beliefs of what effective teaching and learning is, and through critical dialogue, they expose these conceptions to colleagues and to themselves in such ways that can change their understanding and hence influence behavioural change. Implementing new teaching approaches to facilitate learning may challenge long held beliefs and encourage defensiveness.

Lucas (1994:101) lists the following myths normally held by educators which very often-hinder development in the teaching function:

- If you know your subject you can teach it
- High self-esteem regarding teaching versus assessment results
- Lecture-oriented teaching is comfortable and encourages defensiveness when improvements are considered
- Lack of enthusiasm when teaching topics are introduced at departmental meetings because they feel they will expose their lack of knowledge on teaching
- Learners are not only illiterate they are unmotivated too. It is my responsibility to teach and their duty to learn.

In the light of the above, Lucas (1994) suggests the following strategies to improve the teaching function:

- Make teaching effectiveness a priority goal for the department.
- Let members know that teaching effectiveness like learning is a life-long process.
- Create a climate of trust and support so that members visit each other's classrooms, are acceptable and non-threatening.
- Recruiting new members with a potential for effective teaching as a prerequisite for the post.
- Sponsor departmental workshops on different aspects of teaching.
- Share course syllabi with other members in the department.
- Start a teaching committee.
- Build a departmental library on teaching.
- Use all feedback to celebrate good teaching.
- Develop mentoring and peer coaching systems.
- Create a tolerance for risk-taking so that members are free to try new things.
- Encourage and support the integration of technology in teaching to promote learning.
- Use teaching portfolios and other methods to facilitate performance management and reward.
- Use informal meetings regularly.
- Encourage participation in teaching scholarship.

3.7.4.2 Improving the research function of academe

Given the importance of research involvement by academics, participation should be encouraged and motivated. Most universities perceive themselves as either teaching or research oriented, and this demonstrates what the institution values. With current demands for quality, many are moving towards a balance of the two Gmelch & Miskin (1995:15). Academics' involvement in research can be hindered by several factors and according to Lucas (1994:54) may include:

- departmental culture not encouraging research involvement
- the department being more teaching oriented
- lack of resources

- the small size of the department, not enabling division of tasks
- general lack of stimulation for research.

Encouragement and assistance could be provided by

- making resources available to develop the necessary knowledge and skills
- appointing an experienced researcher and providing infrastructure for discussion of research topics
- enabling participants to publish their work in peer-reviewed journals
- recognising different abilities when it comes to allocations and delegating

Moss (1998:97) highlights the role of the head of department in encouraging research involvement and identifies the following strategies:

- Arrange staff research seminars.
- Encourage regular discussions of current research projects in the Department.
- Communicate regularly with all staff about their research involvement and future plans.
- Where appropriate, develop or encourage necessary research skills and competences through group projects.
- Acknowledge and praise openly those who are attracting grants, publishing or progressing well.
- Establish research teams that could also help to quality assure projects before they are submitted for publication.
- Consider varying teaching loads, depending on level of research involvement.

Dyson (2004:85) emphasises that “becoming a competent researcher is very much about developing an identity as a researcher in a particular context or discipline and it takes place through participation in practice”. Lecturers’ experience in teaching could also enable them to take up other challenging tasks in an effort to develop themselves.

3.7.4.3 Improving the community service function of academe

Collaboration, teamwork and critical reflection on the programme offered in community service are important for academics as they are for learners (Mofokeng, 2002:143). This enables members to determine what works and to enhance it. In this way, community service has the potential to provide learning opportunities for them.

Lucas (2000:211) outlines the following strategies to improve this function:

- Ensure that there is understanding of what service learning is, its purpose and benefits.
- Insist on the same level of excellence as in any other comparable departmental work.
- Establish the kind of support the institution can offer to departmental staff involved in this function.
- Defuse defensiveness, some members might not be keen to get involved for personal reasons, empower them with necessary knowledge and motivate and support them.
- Collectively work towards developing community-based programmes most likely to yield results.
- Consider developing service learning as a departmental resource.

Developing community service for academics is a national and institutional investment. There is a wealth of knowledge to be explored and gained. Hence acknowledging and supporting the perceptions of academics could encourage participation and good programme planning.

3.7.4.4 Improving learner supervision as a function of academe

Sim, Zadnik & Radlof (2002:13) attest that training for the professions has always involved a professional training model, with emphasis on the acceptance of a knowledge base through an appropriate subject-based degree and simultaneous supervised professional and competency training with emphasis on the development of professionalism and clinical competence in clinical practice. However, Evans (1995:122) states that both models are considered inadequate because both do not achieve the highest standard. Clinical supervision is a form of mentoring aimed at

ensuring that theory translates into practice. Clinical staff members, who are on site during clinical placements of learners, often offer this service. According to Evans (1995:122), the supervisory function involves providing support, counseling, learning facilitation and assessments and is aimed at translating theory into practice.

3.8 CONCLUSION

This chapter presented the theoretical and conceptual framework for HR development of academics in higher education institutions. The role of academics in an ever changing social, political and economic environment, and the challenges they face as a result, were explored. This highlighted the need for academic HRD and the varied skills and competencies that will improve their performance were considered.

When considering departmental improvements, creating learning communities, adopting a total quality approach to development and using action research could enhance the development initiatives. The need for personal development for sustained improvement was also highlighted. Different HRD models and development strategies were described.

Chapter 4 discusses the data analysis and findings regarding HRD of academics in the radiography department at Medunsa, with respect to their primary roles.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

Learning is not attained by chance; it must be sought with ardor and attended to with diligence.

Abigail Adams

4.1 INTRODUCTION

The current changes in higher education and health care and their implications for the skills and competences of academics motivated the researcher to undertake this study. These changes demand that academics in HEI's reposition themselves to take up the new challenges facing them. Academics are higher education's biggest resource hence their skills and competences are crucial in determining the quality of work in these institutions.

Chapter 3 discussed the literature study on HE and the need for academic HRD. From the literature, it is evident that the changes in HE, health care and radiography in particular require new ways of doing things, which demand new skills and competences from academics. This chapter describes the research methodology, data analysis and interpretation.

4.2 RESEARCH QUESTIONS

The study sought to answer the following questions (see chapter 1, section 1.3):

- *How has the substance and syntax of the radiographic practice changed in the last twenty years and what are the demands being placed on practitioners?*

This question aimed to establish the perceptions of participants regarding the changes in radiography in the past twenty years. These changes are mainly as a result of the transformations

in our country, affecting all sectors including healthcare and higher education. These, in turn, impact on the education and training of radiographers and hence make new demands on the skills and competences of educators.

- *What new skills and competences are demanded on academe in training institutions as a result of these new developments, in terms of teaching and learning, research, community service and learner supervision?*

This question aimed to establish the skills and competences demanded of academics in the department of radiography, with the responsibility of training radiography practitioners. The focus was on their primary functions of teaching, research and community service.

- *What strategies could be used to develop the necessary skills and competences of radiography educators to better prepare practitioners?*

This question aimed to determine the strategies that academics in the department of radiography prefer to use to develop the necessary skills and competences demanded by the changing radiographic practice resulting from technological innovations, higher education and health care transformation.

4.3 RESEARCH DESIGN

A qualitative research approach was adopted since it enabled the researcher to gain an understanding of the perceptions, beliefs and feelings of participants regarding human resource development of academics in radiography education. Amaratunga, Baldry, Sarshar and Newton (2002:20) point out that qualitative research methods are useful when the researcher needs to supplement, validate, explain, illuminate or interpret quantitative data from the same setting (see chapter 1, section 1.8).

Therefore in addition to the literature study, the researcher used interviews to collect data. Two types of interviews were conducted, namely individual face-to-face interviews and the focus group interview (see chapter 1, sections 1.8.2.1 and 1.8.2.2, respectively).

4.4 DATA COLLECTION METHODS

The researcher collected data through the use of face-to-face and focus group interviews. The rationale for the focus group interview was that all the interviewees could be interviewed simultaneously to save time. The individual interviews permitted the researcher to rephrase questions that respondents did not understand and the respondents could elaborate their ideas at length.

4.4.1 Selection and description of participants

The researcher used purposive sampling in this study. According to Wiersma (1991:83), purposive sampling is conducted “when the participants are selected because of their characteristics in relation to the study”. The participants were selected on the basis of specific characteristics deemed important for the study.

The respondents were selected for the individual face-to-face interviews because they are educators in the radiography department at Medunsa and have a good understanding of the challenges they face with regard to their primary functions as well as extensive knowledge in radiography education. The respondents constituted all the academics in the department at Medunsa, as there are too few to have a representative sample

The respondents in the focus group interview were selected based on their knowledge and experience in radiography and education. The group included two academics from the Department of Radiography, two members of the clinical staff from Dr George Mukhari Hospital, a newly qualified radiographer and a member of the Centre for Academic Development Centre (CADS) at Medunsa.

4.4.2 Conducting the interviews

The researcher requested permission from the respective heads of departments for the faculty's participation in the interviews. Then letters were sent to the selected respondents to seek their approval. Copies of the correspondence between the researcher, management and faculty members are contained in addendum B. The letters stated the researcher's contact details, the purpose of the investigation and the date of the interviews. Confidentiality of the information was also assured.

Before the interviews, the respondents agreed to the use of a tape recorder. The respondents were also encouraged to share their views freely and to introduce anything that they thought could be of significance to the study.

4.4.3 Ensuring reliability and validity of the procedures

The reliability of a measuring instrument or research pertains to the consistency of the instrument in measuring precisely what it intends to measure. De Vos and Strydom (1998:85) define reliability as "the accuracy or precision of an instrument". Wiersma (1991:239) adds that reliability of the research involves the extent to which studies can be replicated, and applies to both procedures and results.

Research results are considered valid if they measure accurately what the instrument is intended to measure. De Vos and Strydom (1998:83) state that validity has two parts, firstly the instruments measure the concept in question, and secondly, the concept is measured accurately. Wiersma (1991:239) points out that the validity of research involves interpretations of research results with confidence (internal validity) and the generalisability of results (external validity).

After transcription of the responses, the researcher met with the respondents again in order to validate the interpretation of the responses and the respondents' meaning. The respondents had an opportunity to clarify, confirm or amend what they had communicated during the interview.

4.4.4 Content and construct validity of the interview schedules

The interview schedules for the focus group and individual face-to-face interviews were identical except for terms that required specific knowledge of academic staff development, which were directed towards the member from CADS. However this member was not directly involved with academic development of staff. She was the only member the researcher could invite to participate as they were short of staff at the time of the interview. Although construct and content validation of questionnaires and interview schedules applies mainly to quantitative designs, the researcher thought it well to justify the inclusion of certain questions in the schedule from a theoretical and conceptual point of view. The rationale for the inclusion of specific items in the interview schedule is explained below. Tables 4.1 and 4.2 outline the interview schedules and their significance.

Table 4.1: Face-to-face interview schedule

Interview question	Reason for asking	How evidence is to be used
1. What are the current changes in radiography and higher education?	To determine their knowledge and understanding of health care and higher education transformation	To establish whether respondents are familiar with policy in radiography and higher education transformation
2. Do you think you are fulfilling your primary responsibilities as a lecturer in an academic department?	To determine their opinions regarding their effectiveness in their roles	To determine their development needs
3. How would you rate your community service function?	To determine their community service involvement	To establish specific development needs in the community service function
4. What are your constraints regarding the	To determine constraints to engagement in	To identify problem areas for community service engagement

department's involvement in community service ?	community service	
5. How can the department's role and function in community service be improved?	To determine preferred strategies to improve community service involvement	To find ways to improve the community service function of academics
6. How are you fulfilling your teaching function?	To determine their opinions regarding their teaching function	To identify areas for development in their teaching roles
7. What are the biggest challenges you experience as a teacher?	To determine problem areas in the teaching function	To identify areas for development in their teaching function
8. What is your opinion regarding your own professional development?	To determine their understanding of the need for continuous development	To establish their vision regarding their own development
9. Do you attend courses and workshops offered by CADS?	To determine whether they use the services of CADS and whether CADS fulfils its role	To establish whether they acknowledge the role of CADS in their professional development
10. How do you rate your own as well as the department's involvement in research?	To determine the extent of individual and departmental research involvement	To establish their perceptions of the role and importance of research
11. What are your constraints regarding the department's as well as your own involvement towards research?	To determine any constraints in research involvement	To determine areas of need for development in research capacity building

12. How supportive is the department of development in any of the primary tasks you have to perform?	To determine the support that the department offers in performing primary functions	To establish the support needs of academics
13. What do you think the department can do to improve the quality of its work?	To determine an approach that the department can use to improve	To find ways that the department can use to improve
14. Do you think you and other members of the department work well together?	To determine the kinds of relationships among members in the department	To determine the quality of team work
15. How do you cope with your own needs and aspirations, the students' needs as well as the institution's needs and aspirations?	To determine the coping needs of the participants listed	To find ways to balance daily activities for effectiveness

Table 4.2: Focus group interview schedule

Interview question	Reason for asking	How evidence is to be used
1. How do you think radiographic practice has changed in the past few years ?	To determine the perception of changes in radiography and HE	To establish the changes in radiography that highlight the impact on their education and training
2. Do you think that academics in higher education are capable of handling the challenges	To determine how academics and practitioners deal with the current changes	To establish their acknowledgement of the challenges and mechanisms to deal with them effectively

of these changes?		
4. What stumbling blocks prevent academics from performing adequately in their core or prime tasks?	To determine constraints in the effective execution of functions by academics	To establish their needs for effective execution of their core functions
5. What do you think of academic development courses offered by university support units such as CADS ?	To determine their perception of the effectiveness of CADS in personal and professional development of academics	To establish whether CADS fulfils its role for academic staff
6. How do you think radiography education needs to be improved?	To determine areas in radiography education where improvements are necessary	To establish areas of need in radiography education where development is required
7. Do you meet your research outputs as members of a department and in the institution in terms of the number of articles published each year?	To establish the extent of departmental involvement in research activities	To determine the needs for research development and capacity building
8. What community service project are you involved with?	To determine the degree of involvement in community service	To establish perceptions of involvement in community service as a core function of academics
9. What competences or skills do you consider essential for radiographers as well as educators teaching aspects of radiography?	To determine their opinions on the competencies and skills required in a time of change	To establish the HR needs of practitioners and educators

10. Are there any incentives for pursuing excellence in a radiography department?	To determine whether there is any reward for pursuing excellence in any of the primary functions	To establish any motivators in striving for excellence
10. What strategies can academic departments implement to contribute to the enhancement of their personal and professional development?	To determine preferred strategies that the department can use for their personal and professional development	To develop an inclusive strategy for HRD of academics in the department

4.5 DATA ANALYSIS

The qualitative data was analysed using an appropriate coding system and characterisation strategies. The audio taped data were transcribed, and notes taken during the interviews used to assist the researcher to attribute meaning to the responses. Characterisation and coding methods, which entail condensation and categorisation of the responses of the participants in an attempt to explicate the main themes, were used. Where themes or topics appeared more complex, subcategories were developed for the coding to be performed more effectively.

The researcher characterised and coded the transcribed data retrieved from each interview schedule individually and gave the results to a second coder for verification. Where there was a divergence, a “dialogue solution” was attempted. Where consensus was not reached, a third coder was consulted, and then the information relevant to the aims and objectives of the study was used for data analysis.

Triangulation was used as a technique during the data-collection process with the aim of increasing the reliability of the results. The researcher deemed it an effective method to validate the findings. According to Creswell (2002:571), triangulation analysis can be done in two ways.

It can be used firstly, to discuss the themes emerging from the data and how they support or refute one another, and secondly, to combine qualitative and quantitative data to arrive at a new variable for further testing or exploration. In this study, triangulation was used to discuss the themes that emerged. The coded and characterised responses are contained in addendum D of this report.

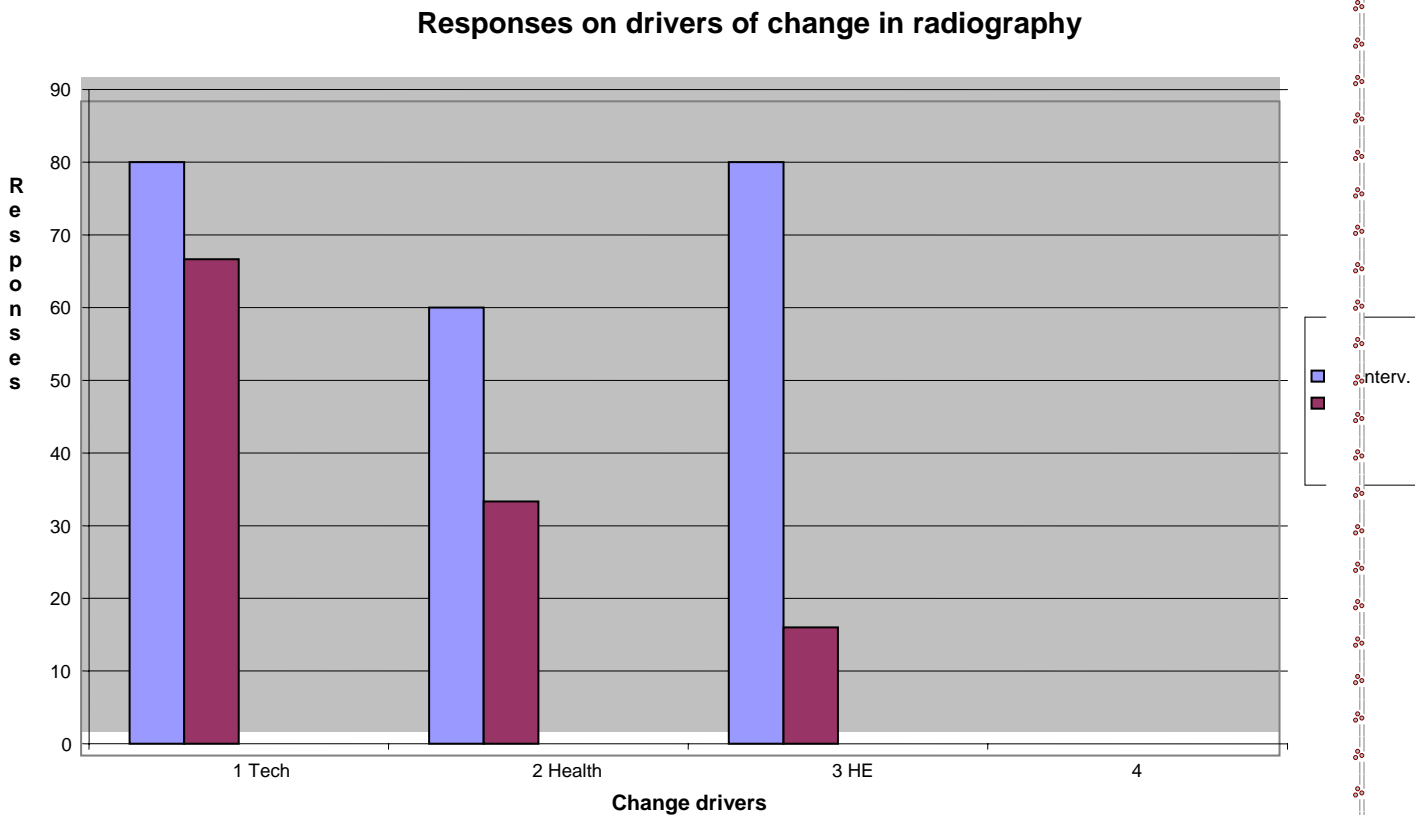
4.6 DATA INTERPRETATION AND FINDINGS

Because of the small number of participants involved in the investigation ($n = 5$ or 6), the conversion of the raw scores to percentage scores was a problem seeing that a single raw score contributed to close to 20 or 17 percentage points, respectively. It was never the researcher's intention to quantify the outcomes of the results along a percentage scale but the decision to allow for some quantitative analysis was made after the qualitative data had been captured and coded. In the researcher's view, the outcomes of the quantification would reasonably supplement the results of the qualitative analysis. However, great care was taken with the conversion of the raw scores to percentage scores as well as the interpretation of such values in this report.

❖ Change in radiographic practice and in higher education

Technological innovations, health care and higher education transformation have changed radiography in many ways (Paterson 2000; Fielden 1998; Price, High & Miller 1997). These changes impact on the role of the radiographer in practice and hence on the role of academics, who have the responsibility of training these professionals to meet the challenges of the world of work.

Figure 4.1: Responses on the perceptions of the drivers of change in radiography



From figure 4.1, it is clear that the major drivers of the changes experienced in radiography today are the result of changing technology, health care and higher education transformation. In this regard, two of the respondents had the following to say:

Clinical radiography is changing at a fast rate mainly because of increased technological advancement.

I think the changes in radiography are to do firstly with the impact of technology witnessed in new innovations with x-ray equipment.

Of the respondents, 60% (n=3) stated that health care transformation was the second driver of the changes in the profession:

The current transformation in health care affects the work of radiographers.

The third change driver or force identified by 80% (n=4) of the respondents was the current higher education transformation:

I think the biggest challenge that we are facing, especially as academics, is to align the curriculum with the SAQA requirements as set out in the higher education policy documents.

In the focus group, 66.66% (n=3) reported technological innovation as the main driver of change in radiography; 33, 33% (n=2) identified health care transformation and 16% (n=1) identified higher education transformation.

The researcher therefore concluded that the radiographers, including the academics responsible for teaching radiographers, are aware of the changing radiography practice as a result of the current transformation and its impact on their respective roles.

❖ **Perceptions on the role of academics in a time of change**

• **Teaching**

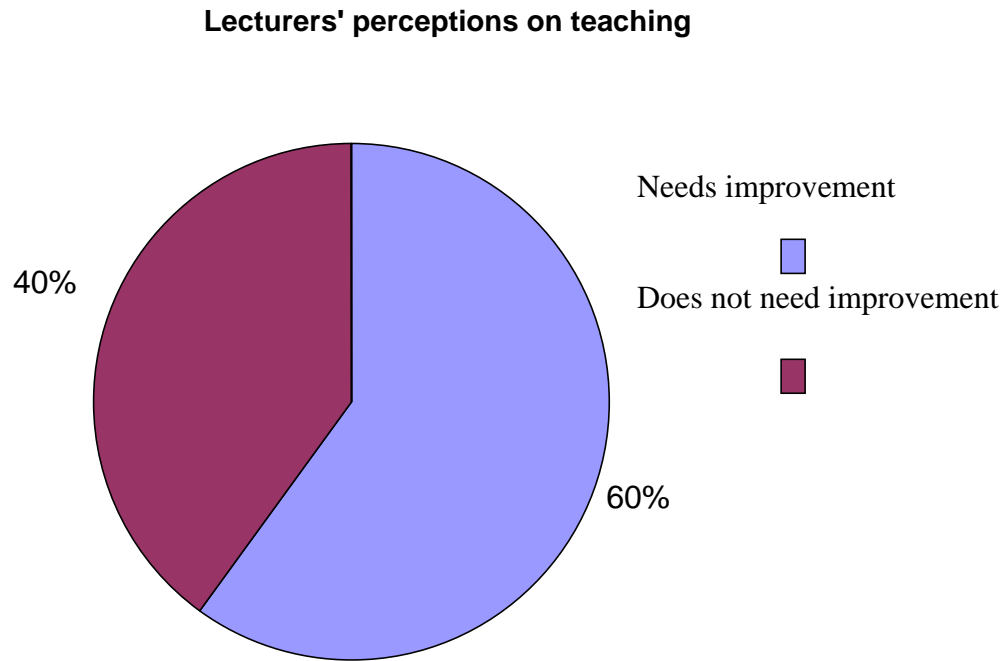
Of the respondents, 60% (n= 3) felt that their teaching needed to be improved:

There are things that I can do right now but there are those that I need support from my colleagues and the institution as far as implementation is concerned.

I think we are fulfilling the role, if you look at the product that comes out of the institution they are able to cope with different situations.

At the same time, the respondents indicated that the department had undertaken small-scale efforts to improve itself. See figure 4.2 for the responses, 40% (n=2) were happy with their teaching roles.

Figure 4.2: Lecturers perceptions on their teaching role



In the focus group, 33, 33% (n=2) of the respondents indicated that the quality of the equipment used for training the learners affects the quality of teaching in radiography:

Most of our learners are being trained in government institutions where you don't have this high tech equipment.

I also think there is a gap between industry and academics in the sense that when new technology comes in, the academics will only know the theory of how it works but not the practical application.

One of the respondents indicated that the teaching he received was good, stating that, *"I think we've been taught adequately."*

Table 4.3: Lecturers' perceptions on their teaching role

Responses	No	%
Not good but efforts are made to improve	3	60 %
Happy with the teaching role	2	40 %

All the respondents (100%) indicated that teaching could be improved:

If teaching is to be improved, lecturers should search for more information or conduct research on areas of concern.

I think we need to consider attending workshops and giving some.

- **Research**

In the individual face-to-face interviews, one respondent (20%) stated that she was actively involved in research and four (80%) indicated that they were not involved in research except for their own studies. All the respondents (100%) in the focus group interview agreed that research output from individuals, departments and the institution was not adequate. The responses in the focus group generally indicated that there was room for improvement

- **❖ Individual and departmental research function**

Table 4.4: Responses on individual and departmental research involvement

Responses	No	%
Active involvement	1	20 %
No involvement	4	80 %

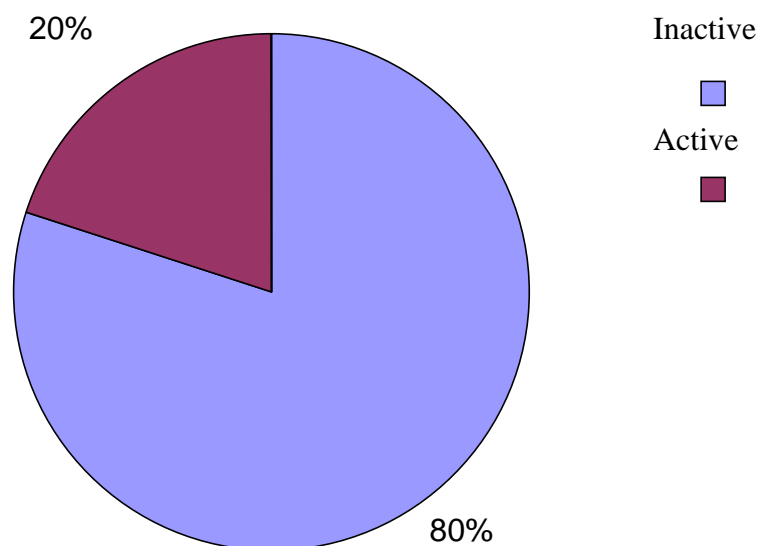
- **Community Service**

Table 4.5: Lecturers perceptions on CS function

Responses	No	%
Individual active involvement	1	20 %
Minimal individual involvement	4	80 %

Figure 4.3: Lectures' perceptions on CS function

Lecturer's responses on community service function



Of the respondents, 80% (n=4) indicated that they were minimally involved in community service except in their own communities and purely on an individual basis. One (20%) of the respondents reported being actively involved.

As a department, all members (100%) agreed that there is minimum community service involvement.

From the above, it is clear that the CS function in the department of radiography is not up to the standard that lecturers feel is adequate. There is a general feeling that the department needs to embark on joint activities and to plan and implement departmental programmes that they have collaborated and reached consensus on. There is minimal CS activity in the department of radiography from individual members and the department:

Some members are involved in community service but as a department we are not that involved.

I also think that we need to reach out to the community to be able to identify their needs.

The analysis revealed that the primary roles of academics include teaching, research and CS. However, the fourth role of academics is learner supervision on clinical practice and research (Ncongo 2001; Lucas 1994; Gardiner 2000). Radiography lecturers should perceive this role as their core function, considering the practical nature of the radiography profession. It is through this function that educators are able to evaluate achievement of learning outcomes. The researcher could only conclude that, firstly due to the HPCSA recommendation that clinical radiographers should play an essential role in the clinical supervision of learners (see chapter 2, section 2.3.2), the educators now excluded themselves from active performance of this function. This stance is of concern because all the theory that learners are exposed to should culminate in clinical competence. It is therefore important that there is a committed relationship of collaboration between academics and clinical staff to ensure that what learners learn in theory is put into practice.

Secondly, regarding research supervision, currently the learners are not doing research as a creditable component for the qualification. However, plans are underway to improve the programme to include research as a prerequisite for the qualification. In this sense, academics need to obtain the necessary skills to supervise research projects done by the learners. All the results indicate that the teaching function is better performed than the other two primary functions of research and CS. This could be due to the fact that the lecturers in the department of radiography consider teaching more important, because learners are always there to be taught and positive results are expected, whereas with the other functions, there are no enforced expectations.

Another significant concern raised was the quality of training when one considers that the type and quality of equipment that learners are trained to use is not up to standard in many instances because there is more advanced equipment in the market and text books are already treating the

new modalities. It therefore becomes difficult for the lecturers to choose which procedures to include in the curriculum, thereby overloading it to the detriment of the learners. So the learners at times are not exposed to procedures that they need experience of for practice, especially considering the discrepancy between public and private health providers in the country.

❖ **Stumbling blocks to the effective performance of academics**

In the focus group interview, 66, 66% (n=4) of the respondents attributed academics' lack of effective performance to inadequate resources, while 33, 33% (n=2) linked the ineffective performance of academics to their lack of knowledge and understanding of new technologies.

Table 4.6: Focus group's stumbling blocks to effective performance

Responses	No	%
Lack of resources	4	66,66%
Knowledge of new technology/initiative	2	33,33%

In the face-to-face interviews, 40% (n=2) of the respondents attributed lack of effective performance; especially effective teaching, to equipment availability; 20% (n=1) referred to financial constraints and 20% (n=1) indicated time available.

❖ **Lecturers' stumbling blocks to effective performance**

Table 4.7: Lecturer's responses to the stumbling blocks to effective performance

Responses	No	%
Availability of equipment	2	40%
Financial constraints	1	20%
Time availability and management	1	20%

The individual face-to-face interviews revealed the lack of initiative and the complexity of the transformation, equipment availability, time, and financial constraints. One respondent reported a lack of understanding of the institution's vision on the transformation process. The respondents had the following to report:

I think there is still a lot to be done especially with new innovations that have been introduced, the problem is, of course, lack of funding.

To be honest, there are things I can do right now but still there are things that would need some support from my colleagues, the institution and the department to implement the changes.

Are we, as facilitators, moving with the times to develop our skills?

The empirical investigation revealed stumbling blocks to effective performance. None of the respondents indicated that lack of the necessary knowledge, skills and attitude, or lack of effective leadership could be a stumbling block to effective performance. The major constraints to development, which ultimately affect performance, include change, departmental leadership, transfer of learning, and academics' mindset (see chapter 3, sections 3.6.1-3.6.4). These factors play a crucial role in the effective performance of academics.

From the above responses it is clear that there is dissatisfaction with performance in the department, as well as with radiography broadly.

❖ CS involvement

Of the respondents, 80% (n=4) reported that there was minimum CS involvement from faculty as well as the department; 20% (n=1) reported involvement in community service, but agreed that there was minimal involvement as a department. According to the respondents:

I think it would be wiser if we could, as a department, join other departments like Medicos on their community service programmes.

More needs to be done to be involved in community service, to identify the needs of the community so that we can kick-start whatever programme to help.

We have been talking about initiating some projects and I hope that we can take that up and use it and have a bigger departmental community service involvement.

In the focus group 100% of respondents agreed that generally there is little involvement in community service by both the academic and clinical departments.

Even though CS and service learning are core functions of academics (Paralleda & Bertran 1999; Fourie 2003; Lucas 2000; Mofokeng 2002), this study found that involvement in the Department of Radiography as not to the lecturers' satisfaction, (see table 4.3). This function is important in providing rich learning environments for educators and learners as well as contributing to the development of the communities in which higher education institutions find themselves (see chapter 2, section 2.5.4 and chapter 3, section 3.4.4). Mofokeng (2000) emphasises that teaching, research and CS should be seen as complementary functions of academics because the research and CS inform teaching. It is therefore important that radiography lecturers begin to explore this function so that they can learn how best to exploit it for the benefit of their learners and the department.

❖ Constraints to CS involvement

Regarding constraints to CS involvement, it is clear from table 4.8 that the major constraints are lack of resources, including time and personnel, lack of initiative and negative attitudes towards community service:

Radiography is a scarce skill so our main focus at the moment is to provide qualified radiographers to the given health centres. We need to link up with other departments like Medicos or other professions so that we can have some buy-in into CS because that will give us a more holistic approach to problem

within communities.

I think it is also a question of being mentally ready and having more staff.

Community service can be seen as going an extra mile, and so very often finding the time to offer this service becomes a problem.

Financial resource is a major stumbling block to community service involvement.

Mofokeng (2002:140) indicates that lack of resources (time, human and financial) in most institutions makes it difficult to be actively involved in CS. Also reported was a lack of initiative and negative attitudes towards community service. There was also a general feeling that something could and should be done.

Table 4.8: Lecturers responses to constraints to CS

Responses	No	%
Resources	2	40%
Attitude/mindset perceptions	1	20%
Lack of initiative	2	40%

The respondents identified several constraints to CS involvement, but at the same time understand the importance of CS in an academic career. It should be noted that the learners in the department of radiography are involved in community outreach programmes that were initiated at institutional level, and only involve providing a radiography service to health centres accredited as clinical sites.

In some higher education institutions, teaching and research are considered generally more important, even though not equally because learners are there all the time and research outputs help with promotion (Hassan 2003; Walker 2002). The importance of service learning, which can be provided through CS, has not been adequately explored (see chapter 3, section 3.4.4).

Involvement in CS requires an understanding of its purpose and benefits to enhance the commitment of academics. The fact that it requires personal sacrifice of time and remuneration implies that more support may initially be required until the participants experience success.

The researcher could only conclude that proper motivation and support is needed to persuade academics to participate in the planning and implementation of CS programmes. They need to buy into the programmes and commit to them.

❖ **Improving CS for academe**

The empirical investigation revealed that academics acknowledge the importance of community service as part of their primary responsibilities. For this function to improve, the respondents reported more intra- and extra-departmental collaboration as well as with other institutions.

The departmental leader plays a major role in motivating and supporting staff members to be involved in CS as well as having high expectations of excellence in this function (Gmelch & Miskin 1995; Kraft 2002; Waghid 2004; Lucas 2000; Dyson 2004).

The empirical investigation revealed that lecturers prefer to collaborate and buy into existing programmes from the departments who are actively involved in order to gain experience as well as the motivation to be involved themselves. This is valid considering that not all academics will be interested in CS or service learning (Lucas 2000:212). Collaboration could also improve identification of community needs as well as the planning, implementation and monitoring of implemented programmes. For the CS function to be successful, the commitment of academics needs to be encouraged and supported, and their perceptions and orientations regarding this function taken into account (Mofokeng 2002). The researcher is thus of the opinion that a state of empowerment needs to be developed and a purpose unravelled for the academics to be involved.

❖ **Perceptions on the teaching function**

Figure 4.3 illustrates the lecturers' perceptions of the teaching function. Some of the respondents reported that they were happy with their teaching, but others raised some concerns:

I do fulfil the primary responsibility of teaching and learning, taking into consideration the product that is out there, learners who are on community service and are able to work unsupervised under different and difficult situations.

We are training with the outcome that learners should have high-level skills, but at present we are still teaching lower level skills and this is where the quality gap lies. I think this is where, as educators, we have to work to bridge this gap. We are also supposed to have been on the bandwagon with regard to curriculum transformation by 2003; we are now in 2005 and the goal posts have been shifted, so we are not reaching where we are supposed to reach.

I think education is dynamic; there are always new teaching strategies that one can learn and use to improve learning.

Teaching is one of the most challenging functions of academics (Gmelch & Miskin 1995; Waghid 2004). The respondents' concerns indicated the challenges lecturers face with regard to teaching. It could be concluded that lecturers felt much still needed to be done to fulfil this role. Facilitating learning is a complex and dynamic process.

❖ **Challenges with the teaching**

Of the respondents, 40% (n=2) reported curriculum development as a challenge to teaching and learning:

From what I can see, we are still not fully implementing policy guidelines that we have, we are at a starting point with curriculum, but I'm not sure whether the pace is right. We are slow.

I think curriculum development. One could say our institution has been lax, in the sense that we were not prepared to accept the change.

Two respondents (40%) reported the use of effective teaching strategies to facilitate learning as a challenge:

As facilitators, we are not moving with the times to develop our skills.

Curriculum development, especially in line with OBE is one of the challenges that academics face, considering that the curriculum (even though not solely) determines the quality of the programme offered (see chapter 3, sections 3.2, 3.3 and 3.4.1). It is therefore important for lecturers to be competent to develop the kind of curriculum that will ensure that the learners are equipped with market-related skills.

With regard to facilitating learning and innovative assessment strategies, the new paradigm of teaching can be daunting (Garrison & Anderson 2004; O'Connor 1996). The skills of competent lecturers lie in their ability to use the most effective teaching strategy to maximise learning in a given situation.

However, in the department of radiography the block system was reported to be a hindrance to the effective monitoring of teaching.

❖ **Departmental initiatives to improve teaching**

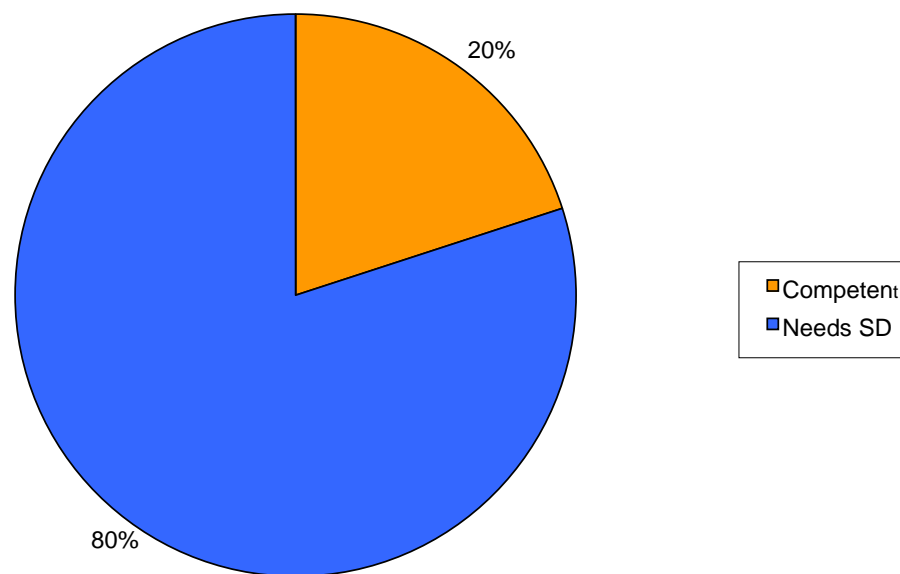
The study found that, on realising the challenges that they faced with the teaching function, the department of radiography initiated a quality assurance process to improve. This departmental initiative is a positive step in that the members themselves can monitor its progress and ensure that it achieves the objectives that were set out and members become the beneficiaries of their own efforts (see chapter 3, section 3.6). Such initiatives are indicative of empowerment and a commitment to change. However this does not appear to be entirely the case. The majority of the respondents were positive about the initiative while one reported concern over the pace and effectiveness of such initiative because it lacks constant monitoring. There was also concern at the degree of collaboration during the implementation of such programmes (see also chapter 3, section 3.5.2). Two of the respondents stated that attending and giving workshops as a way for continued professional development were needed and two emphasised a need for collaboration within the department. One respondent also urged peer review to be implemented in the department.

In the researcher's view, it is time that academics begin to be proactive and committed to their own development so that the educational objectives for learners can be achieved. The initiative seems to be a step in the right direction. However, commitment is a prerequisite for successful implementation of initiatives. Motivation and support from the HOD could boost the process (also see chapter 3, section 3.6.2 for the role of the leader during change).

❖ Lecturers opinions on their own development

Figure 4.4 shows the responses of the face-to-face interviews

Figure 4.4: Lecturers' opinions regarding their own development



All the respondents agreed that professional development is a process that needs time and indicated that they still needed to develop their skills to perform their functions efficiently. Two respondents were content with teaching:

Partly yes, I do fulfil my primary responsibility of teaching and learning.

Table 4.9: Lecturers' opinions on their own professional development

Responses	No	%
Need skills development	4	80%
No need for skills development	1	20%

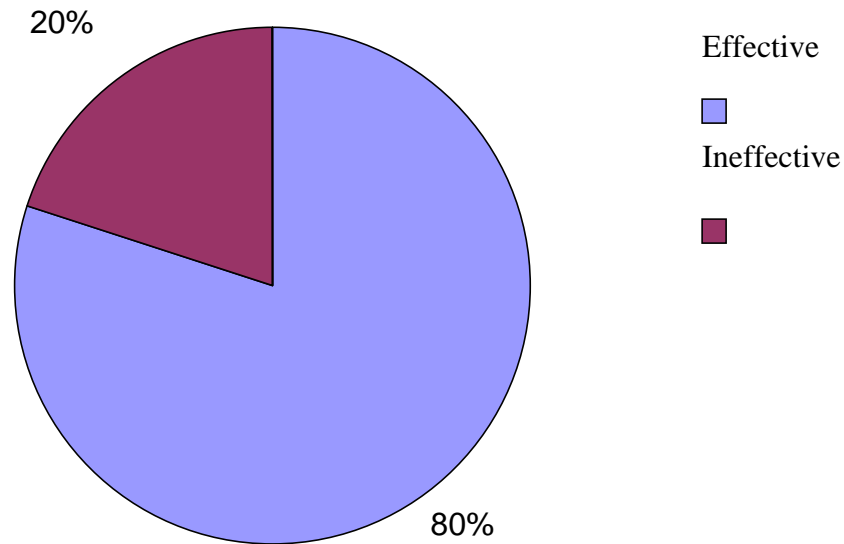
From the responses the researcher could only attribute the patterns to the myth held in many institutions that teaching equals learning. Where respondents felt that there was need for development, they were younger members of staff who still saw their future in the department. The other respondents, who did not feel the need for development, were older members of staff who probably felt that they were nearing the end of their careers, but most importantly that they were more knowledgeable with regard to the subject matter.

❖ **The role of CADS in academic staff development**

This question was asked to determine the respondents' perception on the role of the Centre for Academic Staff Development Centre (CADS) in their professional development (see figure 4.4). In the individual face-to-face interviews, four respondents indicated that they did attend the courses offered by CADS and found them relevant and effective:

Figure 4.5: Lecturers opinions on the role of CADS in staff development

Lecturer's opinions on the role of CADS in staff development



A lot of it (content) reinforces what I had already learnt when I was in training, which is, in fact, for me that yes, I'm still doing the right thing and I think it is an advantage looking at what is currently happening in practice.

Yes, CADS's staffs understand what they do and the courses are more than helpful.

However, one respondent said:

I don't think the learners' development can be without the facilitators being competent in the task, more so that in the institution, the educational background of lecturers is minimal and the support that we get from CADS is a blanket support, and it lacks follow-up to see if the things learnt are actually being implemented in our daily practice.

Table 4.10: Responses regarding the role of CADS in staff development

Responses	No	%
Relevant and effective	4	80%
Not effective	1	20%

In the focus group, 33,33%(n=2) indicated that the courses were relevant and effective; 16,66% (n=1) reiterated the need for such courses even in clinical practice; 33,33%(n=2) had no knowledge of such courses and 16.66%(n=1), who was a member of CADS, could not rate the effectiveness of the centre as she was not directly involved with staff development but reiterated that the response or attendance at these courses was poor and she had no idea of the feedback received from those who attended.

The researcher's understanding of the response pattern is that the lecturers are the ones who attend these courses and hence would naturally be the ones knowledgeable about them. Very often, as found in this study, courses offered adopt a top-down approach, where lecturers are not consulted to determine their specific needs. Furthermore, because of the increased workloads and staff shortages, programmes lack monitoring and follow-up (see chapter 3, section 3.5.3). The clinical member who cited the need for such courses could have been speaking from an understanding that even clinical members needed to update their knowledge and be motivated to perform well.

❖ Respondents opinion on research involvement

Of the respondents, 60% (n=3) reported that the research function needed capacity building and 20% (n=1) cited minimal research involvement. One respondent (20%) reported being actively involved though on an individual level:

I think in all my time at Medunsa there might be one year that I might not have been involved in something (research).

All the respondents (100%) in the focus group agreed that there was minimal research involvement, while output in radiography from both academics and clinical staff as well as from the university was not adequate. Two respondents reported that only an insignificant number of lecturers were involved in research.

It is also the researcher's view that radiographers still hold the general belief that their profession is only technical and therefore does not need any research involvement, and that is why it is given

the least attention. Chapter 2, section 2.5.2 explains why South African radiographers are not involved in research. This belief still exists in spite of the current call for all professionals to be involved in research.

❖ **Constraints to research involvement**

Individual respondents from the face-to-face interview reported increased workloads, more attention being awarded to teaching, the lack of initiative, no accredited journal for radiographers to publish their work and the NRF not recognising their research activities as constraints to research involvement in the department of radiography. According to one respondent:

As a new member in the department and a student myself, all my time has been allocated to getting acquainted with the subject that I'm teaching and my studies.

The focus group gave similar responses to this question.

Research involvement should be seen and motivated for as an integral discourse of higher education praxis, in conjunction with teaching and CS (Walker 2002; Mofokeng 2002; Hassan 2003; Dyson 2004). The researcher's conclusion is that research involvement within the department cannot happen if the constraints are not dealt with, by providing resources, changing the negative attitude and providing mentorship and support where necessary. Furthermore, the role of leadership in improving the research involvement should not be underestimated.

❖ **Research improvement**

Of the respondents, two acknowledged the necessity to build research capacity, and further indicated a need for support and motivation to do this; two reported a need for division of labour due to the increasing workload and staff shortages. Two respondents also reported a need for the recognition of radiographers involved in research because at present they received no recognition from the NRF, as well an accredited journal for publications. One respondent reported a need to consult the research unit on campus for advice and guidance. Two respondents reiterated a need for mentoring and support for novice researchers, innovativeness of the lecturers themselves. The

majority also felt that collaboration at national and international level could help build the research capacity within the department.

Academic departments in higher education institutions can improve their research capacity using AR (Slabbert 1997; Gerber 1987; Holmes 1998). It is the researcher's view that even though involvement in research within the department is not adequate, the respondents acknowledged the need for involvement and identified strategies that could help to improve research involvement. Getting started is a greater challenge because it has to do with a change of mindset (see chapter 3, section 3.6.4).

Research involvement and improvement has much to do with institutional expectations and the individual's positive self-conception on research. Proper motivation and support is required at institutional level for lecturers to feel the need for involvement.

❖ **Strategies for overall improvement**

The data analysis indicated the willingness of lecturers to perform better in their function by reporting overwhelmingly that collaboration between members in and outside the department could prove fruitful. One respondent reported that performance appraisal should be used and two cited mentoring and motivation as strategies for improvement. One respondent indicated that AR could be considered if there was a need for overall departmental renewal (see chapter 3, section 3.6).

It should be noted that the respondents rated collaboration with all stakeholders as a strategy for improvement in all the primary functions of academics. Action research, performance appraisal and mentoring are also cost-effective ways to consider for departmental improvement.

❖ **Departmental relationships**

All the respondents (100%) agreed that good and healthy relationships existed within the department. The respondents also agreed that there was a good support structure to enable change

initiatives to succeed. The researcher is of the opinion that good working relationships are critical where change is envisaged so that differences can be resolved with ease. Change is normally not an easy process but if members are able to reach consensus without stress, it facilitates the process (Ramphela 1999; Mofokeng 2002).

❖ **New competences required by academics**

This question was asked to determine the competences that lecturers regard as important for them (see table 4.2). Most of the respondents revealed that developing the curriculum in an OBE format was a challenge and required knowledgeable practitioners to do it. Most reported learning facilitation, using effective teaching strategies, as a necessary skill.

We need the skills for pattern recognition and to perform and interpret ultra-sonographs and teach these to learners.

To identify community needs and come up with programmes of how we can help.

I think peer review of other members is necessary if we want to help one another grow. Mentoring new lecturers and old without necessary skills is also important.

New competences and skills are required of academics during a time of change, especially in South African higher education institutions (Fielden 1998; Slabbert 1997; Mofokeng 2002). The conclusion drawn from this analysis is that, in view of current technological changes and the nature of teaching and learning environments, curriculum development, facilitating learning and peer review are, indeed, skills and competences required in an academic department.

❖ **Coping mechanisms**

This question was asked to determine the coping needs of academics. All the respondents indicated that there needed to be more collaboration within the department as well as with other departments and institutions. Three faculty members added that:

Effective time management will enable lecturers to do things that they normally do not have time for.

Two staff members stated:

Prioritising and working smartly as well as searching for information and attending conferences on related subjects could help ease the workload.

Two respondents added:

Continued professional education would also help, as it will enable lecturers to be up-to-date with new knowledge in the field.

It is clear from the responses that academics view time management as important, especially given the workload that they are confronted with. Working smartly, prioritising tasks and collaboration ease the load. Continued professional education provides the confidence and motivation most needed during a time of change.

❖ **Motivation to pursue excellence**

The study found that pursuing quality and achieving excellence is a process requiring hard work and commitment. The respondents stated:

I am motivated by my own success.

Seeing what you put your energy into paying off, at this point my contributions have been recognised.

Three respondents cited personal satisfaction as their main motivation to pursue excellence.

The reports were indicative of the need to initiate some action and when the initiative bears fruits, a form of recognition be awarded. Most importantly, however, academics would feel more satisfied when they had a taste of their own success.

❖ **Other concerns of academe**

The respondents identified three major concerns relating to their primary functions. All the respondents (100%) stated concerns relating to clinical practice:

The dilemma here is what do I say is 'nice to know' or essential knowledge, and this is where the quality gap lies. This is where we, as educators, have to work to bridge the gap.

Putting what you learn in theory into practice, there's a big gap. So that, to me, is critical, a very good point we haven't transformed yet, we haven't even got to the red dot system.

Radiography is now shifting more towards digital imaging, and public health facilities do not have this high tech equipment, so we teach learners the theory and do not expose them to the practical settings.

In addition, the following concerns were raised:

I think my concern is building capacity for research and develop to take initiatives to improve our department.

I do not have any particular concern because the staff in the department is determined, we just need to sit and come up with a plan to start.

I think we have the right kind of manpower and skills, just put them together and put them to use. So with the proper kind of motivation we can do it.

From the data analysis it is clear that even though the academics felt a need to improve, there were also concerns regarding total quality improvements. Nevertheless, there was a determination among the respondents to make inputs for improvements. Although they were positive, they needed motivation and a good plan of action to embark on.

4.7 CONCLUSION

This chapter discussed the research methodology and the data analysis and findings with reference to the literature review. The chapter also illustrated the coding and classification system used in the data analysis.

The challenging areas for lecturers in the department of radiography were said to be curriculum development in an OBE format, learning facilitation using effective teaching and learning strategies, and assessments. The respondents also felt they needed motivation and support to take on new initiatives in all their primary functions as well as mentoring and peer review.

Chapter 5 concludes the study and makes recommendations to improve performance and for further research.

CHAPTER 5

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

Learning is not attained by chance; it must be sought with ardour and attended to with diligence.

Abigail Adams

5.1 INTRODUCTION

This chapter presents the findings of the study, draws meaningful conclusions from them and makes recommendations for practice and further research.

5.2 OVERVIEW OF THE RESEARCH REPORT

Chapter 1 provided an orientation to the study on the human resource development needs in radiography education, and covered the problem statement, aim and objectives of the study, research questions and the research methodology.

The problem that gave rise to this study came from the current social transformations that impact on higher education and the health care environments. Also contributing significantly to these changes are the technological revolution and knowledge-driven economies. The success of the South African society in world terms will depend on the quality of their human resource development programmes. This, in turn, presents a tremendous challenge to institutions of higher learning and academics.

It would be naïve of any institution of higher learning to attempt to realise the national aspirations of a viable and world competitive economy if its main resources, namely the academics, are not fully prepared to take up the challenge. Hence their professional development should be an integral part of faculty and institutional planning, committed to sustained improvement and the overall institutional drive to pursue excellence.

The aim of the study was to understand the HRD needs of academic radiographers at Medunsa as a result of the changes taking place in radiography. This would enable them to determine the best strategies to develop the skills and competences they require to improve their performance in their primary functions.

The objectives of the study were to determine

- how radiography as a profession and field of specialisation had changed in the last twenty years
- the demands made on academics in training institutions in terms of new skills and competences to improve the quality of their work and ensure excellence in a cost-effective way
- the most effective ways to develop these skills and competences of academics to better prepare practitioners.

The study sought to answer the following questions:

How has radiography as a profession and field of specialisation changed in the last twenty years?

What are the implications of these changes for academics in institutions of higher learning in terms of new skills and competences?

What strategies can be used to improve the skills and competences of radiography educators to ensure quality and excellence?

The research design was qualitative (see chapter 1, section 1.8) and the research methodology consisted of a literature review (see section 1.8.1) and empirical research, involving focus group and individual face-to face interviews as data-collection instruments.

Chapter 2 discussed the literature review conducted on the changing nature of radiography as a science and field of specialisation, the role of the radiographer in practice and its impact on the role of radiography educators in higher education institutions.

Chapter 3 discussed the dynamic nature of the higher education environment and its impact on the academic career, and explored the following topics:

- ❖ the challenges facing higher education in South Africa
- ❖ higher education transformation and its impact on academics
- ❖ human resource development of academics
- ❖ new skills and competences required
- ❖ constraints to HRD of academics
- ❖ models of staff development
- ❖ activities that facilitate development

Chapter 4 focused on the empirical investigation, including research design, sampling and selection of respondents, data-collection methods as well as the strategies applied for the transcription of raw data into meaningful codes and clusters. The data was then analysed and the researcher's interpretation provided.

Chapter 5 concludes the study, discusses conclusions based on the findings, and makes recommendations for improved practice and further research.

5.3 SUMMARY AND CONCLUSIONS

5.3.1 Summary and conclusions drawn from the literature review

The main findings of the literature review can be summarised as follows:

- Radiographic practices have changed significantly in the last twenty years primarily due to technological innovations and health care transformation. This has subsequently affected the role of the radiographer, which is also expanding (see chapter 2, section 2.3). Radiographers need to possess high order skills and perform beyond the normal technical scope previously considered their profession.

- These changes have also impacted significantly on the role of academic radiographers in higher education (see chapter 2, section 2.4), demanding new knowledge, skills and competences to better prepare radiographers. The role of academic radiographers includes four primary functions: teaching and learning, research, community service and learner supervision.
- Teaching effectiveness for deep and meaningful learning emphasises facilitation of understanding through critical reflection and collaboration (Garrison & Anderson 2004)
- Unless the unity of people's cognitive and affective domains is recognised, reflective skills cannot be developed; hence effective learning cannot occur (see section 2.4.1).
- The skills fundamental to research are not adequately developed in an average South African radiographer (see section 2.4.2).
- There is enormous potential for research in radiography, but it is currently not exploited (see section 2.4.2).
- Academic radiographers need to see learner supervision as an integral and essential part of learner preparation and success (2.4.3).
- There is a need for community service involvement, for social development and upliftment and academic improvements, hence proper motivation and commitment of academics to be actively involved in this role is required (see section 2.4.4).
- Academic excellence needs to be pursued at all costs and should be seen as an institutional goal to be achieved through the thoughts, attitudes and actions of the university community, on and off campus (see section 2.5)

The major findings from chapter 3 are as follows:

- The primary role of an academic includes four complex functions, namely teaching and learning, research, community service and learner supervision.
- Governments and societies have high expectations of higher education to contribute to regional development needs; hence academics' performance is critical.
- The implication is that there needs to be a paradigm shift in the discourse of higher education praxis, which demands new knowledge, skills and competencies (see section 3.4).

- Curriculum development, teaching and learning, research, community service/ service learning and learner supervision pose particular challenges to academics (see sections 3.4.1-3.4.4).
- Given all the challenges, it would be to the benefit of academics if the skills, competences and knowledge identified in section 3.5.2 could be tackled.
- Constraints that normally hinder development include departmental leadership, academic mindset, change and transfer of learning need to be corrected and/or minimised. Section 3.6 explores the common constraints to development in an academic department.
- Strategies useful in an academic department for staff development are outlined in sections 3.7.1, 3.7.2 and 3.7.3. These include models (e g, RPTIM, problem-based learning), processes (e g, peer coaching, mentoring, collaboration) and activities (e g, seminars, workshops, consultation, self-study).

5.3.2 Summary and conclusions drawn from the empirical investigation

5.3.2.1 Individual face-to-face interviews

The following findings should be regarded as a consolidation of the outcomes of the individual face-to face interviews:

- Challenges experienced in all their primary functions hence the academics feel that their performance in the department is not satisfactory (see chapter 4, section 4.4). To improve the performance of academics, a plan that outlines the expected outcomes, implementation strategies and performance indicators should be collaboratively developed and implemented. This plan should provide guidelines on the process and enable individual members to evaluate their own progress. At the same time, members know what is expected of them and why, and this has the potential to enhance their commitment.
- The challenges identified include work overload, time constraints, academics' attitudes and mindset, which lead to lack of initiative to take up new challenges. Effective time

management, establishment of critical friends and working smartly could be useful for members in the department.

- Teaching poses particular challenges in curriculum development, learning facilitation and assessment. Slabbert (1999:12) emphasises that “excellent teaching is amongst the most difficult of human accomplishments”. It also emerged that of all the primary functions in the department, teaching is better performed than the others (see section 3.7.4.1 for strategies to improve this function).
- Research outputs from individual lecturers and by the departments in the institution are not adequate (see chapter 2, section 2.5.2 and chapter 3, section 3.4.3 for explanations of this function). It is clear that there is a need for a committed research involvement to contribute to the body of knowledge in radiography and consequently a need for life-long learning and creative problem solving. Ruscheniko (1997:8) points out “the skills that are fundamental to research activity are not adequately developed in an average South African radiographer”. (See chapter 3, section 3.7.1.4 for strategies to improve the research function.)
- There is minimal community service involvement in the department of radiography; both from individual members and the department (see chapter 2, section 2.5.2 and chapter 3, section 3.4.3 for explanations). The national aspiration for community involvement also affects members in the profession. Mofokeng (2002:140) points out that community service is an important function of academics in that it provides good learning opportunities, has the potential for curricula improvement and could be used as a financial resource in higher education
- It emerged that CADS at Medunsa presents relevant and effective development courses, but offers blanket support and lacks monitoring during implementation. Again, it was indicated that CADS uses a top-down approach to courses offered and some academics only attend because they are mandated. Hence new knowledge, if any, gained might not be transferred to practice. To improve, CADS needs to perform a thorough needs analysis and collaboratively

plan development courses that will meet the lecturers' needs. In addition, they need to empower people to develop themselves, including conducting their own performance evaluations to evaluate whatever they do.

- Academics feel that they lack the right attitude and initiative to kick-start projects in the department and expressed a need for motivation and support as well as more collaboration, peer mentoring and appraisals.
- It was found that attending and giving workshops, teamwork and collaboration within the institution and with other institutions could be helpful in acquiring knowledge and experience as well as building the necessary confidence.
- There is a healthy working relationship between members in the department as well as dedication and commitment to change with some motivation and support. This is a positive sign when change is considered because trust and honesty are essential in any change initiative that challenges people's attitudes and behaviour.
- New competences in line with higher education transformation are needed (see chapter 3, section 3.5.2). These competences can be developed using a variety of models, singly or in combination (see section 3.7.1 and 3.7.2 for models of development and processes that enhance development, as well as section 3.7.3 for delivery modes).

5.3.2.2 Focus group interviews

The data collected from the focus group interview revealed the following:

- The major drivers of change experienced in radiography are technological innovations, health care and higher education transformation.
- CADS offer development courses that are relevant and effective even

though they provide blanket support for all academics within the institution because they do not consider individual development needs, and attendance at these courses is poor. Achieving quality and pursuing excellence is a process that requires hard work and commitment. Planning of development initiatives should be a thorough process that takes into account the vision and mission of the department, the development needs of academics and their attitudes towards development (see section 3.7.1 for staff development models and section 3.7.2 for processes to facilitate development).

- Lack of resources in terms of money for projects and staff shortages are constraints to development and effective performance. Resource constraints are not unique to the department of radiography, members need to be creative and find ways to develop themselves for better service to their clients, at least as their moral obligation. In addition, academic staff development should be an integral part of institutional planning to realise their vision and mission

5.4 CONCLUSIONS FROM THE INVESTIGATION

This study highlighted some of the challenges that academic radiographers face as a result of the higher education and health care transformation in South Africa today. Despite these challenges, the academics have a responsibility towards the learners to provide good learning opportunities for relevant and effective learning as well as a duty towards society at large through the provision of competent professionals for our social and economic development. Failure to fulfil this duty will render South Africa less prosperous.

The findings indicate inadequacies in performance in the primary functions. This is of concern because effective learning, knowledge creation and community development will be compromised. It should be noted that, despite the challenges, the academics are willing to engage in development initiatives that will improve their performance.

Each member needs to be the change agent for the improvement they wish to achieve, and CADS should see to the development of all staff and students. What appears to be lacking is a positive

attitude to initiate and sustain the processes of development. Although change is difficult, effective motivators need to be identified and provided. Support during the process of implementation should also be provided as far as practically possible.

Finally, the department of radiography can no longer wait for the institution's management and CADS alone to provide initiatives for their own development. If quality and excellence are to be pursued, they need to take a proactive stance to develop their skills and competences, exploring every opportunity available to them.

5.5 ACHIEVEMENT OF THE AIM AND OBJECTIVES

The aim and objectives of this study were presented in chapter 1, sections 1.4 and 1.5, respectively. It is now necessary to determine whether the research questions have been answered when assessed against the achievement of the objectives.

(1) How has the substance and syntax of the radiographic practice changed in the last twenty years and what are the demands being placed on practitioners?

Objective: To determine how radiography as a profession and a field of specialisation has changed in the last twenty years and the demands made on practitioners

The literature reviewed and the empirical investigation revealed that due to technological innovations and health care and higher education transformation, radiography is changing and will continue to do so for some time (see chapter 2, section 2.4 on the changing role of the radiographer and chapter 3, section 3.3 on transformation of higher education). These changes impact on radiographers in practice whose role is also expanding to areas beyond medicine (see sections 2.4.5).

The use of high technology equipment and understanding patient psychology for optimum care as well as deep scientific understanding of ionising radiation for patient protection make

radiography more scientific than the more technical orientation it used to have (section 2.3.2 2.4.2 for the standard of practice for radiographers and technological influences on radiography).

(2) What new skills and competencies are demanded on academe in training institutions as a result of these new developments, in terms of teaching and learning, research, community service and learner supervision?

Objective: To establish the demands in terms of skills and competences expected of academics in training institutions in their primary roles, which include teaching and learning, research and community service that will improve the quality of their work and ensure excellence in a cost-effective way.

The empirical investigation revealed that, with the current changes in radiography, there is a need for the knowledge, skills and competences of academics responsible for the education and training of radiographers to be continuously improved. This is in an effort to improve the quality of learning experiences the learners are exposed to during their training to enhance their learning.

Higher education in South Africa is undergoing large-scale transformation that demands a paradigm shift from how education was conceptualised before (see section 3.4 for the implications of the change for academics in their primary functions).

The demand for high quality education and accountability impacts on the role of academics. In addition, a shift from teaching to learning, active involvement in research and community service to improve practice by all professionals further increases the challenge to academics. Very often the academic staffs in these institutions are ill prepared for the demands these changes make on them (Hassan 2003; Mofokeng 2002).

Consequently, academic departments and lecturers will inevitably have to play an active role in steering their development to acquire the necessary skills (see sections 3.5.2). Acquiring these skills might need a lot of hard work and commitment, but above all the intent and willingness of

academics is a crucial determining factor for success. Constant motivation and support can improve willingness to participate.

(3) What strategies can be used to develop the necessary skills and competences of academics to better prepare practitioners?

Objective: To determine current strategies that can be used to develop these skills and competences of academics to better prepare practitioners.

There are various strategies that academic departments can use to improve their competences and enhance their performance (see section 3.6.1 for broad approaches to any development initiative).

Possible constraints to individual and departmental development are outlined in section 3.6, and should be dealt with to increase the chances for success (see sections 3.7.1, 3.7.2 and 3.7.3). Most of these strategies were identified in the empirical investigation too.

5.6 RECOMMENDATIONS AND IMPLICATIONS

In today's knowledge-driven world, change is evident in every aspect of life. The traditional role of educators is constantly challenged. Government reforms, free market economies and changing social demands require academics and universities to be responsive to new needs.

With the increasing demand for quality, and associated resource limitations, HEI's need to adopt a business approach and thrive on competition to survive. They need to be particularly client-centred by offering relevant programmes, providing quality teaching and research, and community service. Hence a committed investment in the development of new skills and competences could ensure future competitiveness and sustained quality.

The following recommendations are made in an effort to enhance development and improve performance in the primary functions of academics in the department of radiography.

5.6.1 Personal development

Personal development involves a fundamental transformation within an individual or a paradigmatic shift of a particular individual, which inculcates a positive outlook to life thereby enhancing growth and maturity. It is a prerequisite for becoming a change agent because it involves changing the perceptions that influence behaviours. This is particularly significant for the department of radiography as it is the researcher's view that there is a need for fundamental change in attitude, mindset and behaviour.

The members need to be personally and professionally mature to effectively deal with the challenges they face. Mature individuals have a good understanding of themselves, what they want, and their strong and weak points, and therefore can easily find their place in any environment in which they find themselves.

Covey (1996) maintains that the required level of effectiveness is attained through an inside-out approach. From the study, it could be concluded that the academics are predominantly operating in an outside-in approach, meaning that they mostly see problems as being there but not necessarily being with them. Covey's (1989) seven principles are aimed at personal development:

- Be proactive
- Begin with the end in mind
- Put first things first
- Think win-win
- Seek first to understand then to be understood
- Synergies
- Sharpen the saw

The essence of these principles to this study is their emphasis on personal transformation. If adopted, there will be improvements in taking initiatives and seeing them through, improved collaboration and continuous improvements. This would benefit all involved, especially the learners.

5.6.2 Dealing with obstacles that hinder development and effective performance

The study found that change, departmental leadership, academics' mindset or negative attitudes and transfer of learning often hinder development and performance. The following recommendations are made to bring about significant and sustained improvement:

- **Deal with the effects of change**

Change is very often a complex and difficult process because it challenges people's long held beliefs and involves change in behaviour. However, change signifies our daily existence and therefore is here to stay. Dealing effectively with change, then, will involve accepting it, and embracing it as the only way to bring about improvement.

- **Change mindset and behaviour**

Changing a mindset that influences people's behaviour involves a paradigmatic shift and the individual's willingness. It can be achieved through personal development and is a prerequisite for becoming a change agent. This is particularly significant for the department of radiography as the study found that there is a need for a fundamental change in attitude, mindset and behaviour.

- **Improve departmental leadership**

An academic department is where institutional goals are turned into tangible results. Lucas and Horak (2000:3) states that it is where the "rubber meets the road". The role of a departmental leader is therefore crucial, especially in a time of change. The departmental leader should be familiar with effective leadership strategies to steer the department towards achieving its vision. Leadership development programmes can be particularly helpful in developing the necessary leadership skills. In addition, personal development can enhance performance in this role.

- **Ensure transfer of learning**

The study found that although CADS presents development courses that are helpful and relevant, there is no form of evaluation of teaching and performance, no peer review and formal appraisal system in the department.

According to Zepeda (1999:80), only about 10% of educators are able to transfer newly learned skills into daily practice. Given this, it is more likely that academics in the department lack transfer of learning in their daily practice.

If the department initiated development process, the likelihood of effective transfer of learning would be enhanced. Experience gained will inform practice and contribute to its improvement. Departmentally initiated processes or job-embedded learning offer more opportunities for relevance, feedback, peer coaching, reflection and dialogue, all strategies recommended by the department. Academics' performance of their primary functions should be constantly evaluated to inform them of areas that need attention, and serve as a form of motivation for even better performance.

5.6.3 Overall departmental improvement

Table 4.15 (chapter 4) outlines the respondents' proposals for overall improvement and chapter 3, section 3.7.4 presents suggestions for improving the core functions indicated in the literature. The researcher recommends the adaptation of the high-impact training model for planning development initiatives in the department of radiography because any expectation for good results should start with a good plan: "before an architect's creation becomes a reality, it starts with a plan".

5.6.3.1 The high-impact training model

The high-impact training model is a six-staged training model that can be employed in an academic department to plan for development initiatives. Its relevance to the study is that it offers opportunities for collaboration so that when consensus is reached all members can be sure that their aspirations and concerns will be considered. This model can serve as a guideline to

systematically plan for development initiatives, monitoring during implementation and evaluating achievement of pre-determined objectives.

Phase 1: Identify training needs

In this phase all members in the department need to work collaboratively to determine departmental development needs in line with departmental goals. The determined needs should be prioritised. Then the outcomes of the development initiatives are developed. Motivation and support can also be given, depending on individuals' needs.

Activities in this phase include:

- Collaboratively identify training needs.
- Determine objectives and outcomes of training in line with departmental goals.
- Motivate members to enhance commitment.

Phase 2: Map the approach

In this phase the strategy to be adopted to realise the preset outcomes is determined, and that involves the most effective methods of delivery for the development initiative. Consideration should be given to the resources available for the successful implementation of the initiative. Cost-effective strategies like peer coaching, peer mentoring and group work can be considered in the department of radiography.

Phase 3: Develop learning tools

In this phase the members need to establish the new knowledge to be acquired and thus the precise learning content to be included in the programme as well as its related assessment criteria, to enable them to evaluate progress.

Phase 4: Apply training techniques

In this phase members need to implement the initiative, which could be one-dimensional or multi-dimensional, depending on the outcomes to be achieved as well as the selected learning tools.

During the implementation process evidence should be collected rigorously. This can be done through feedback from peers, learners or any other external person involved, like the staff from CADS

Phase 5: Measure results

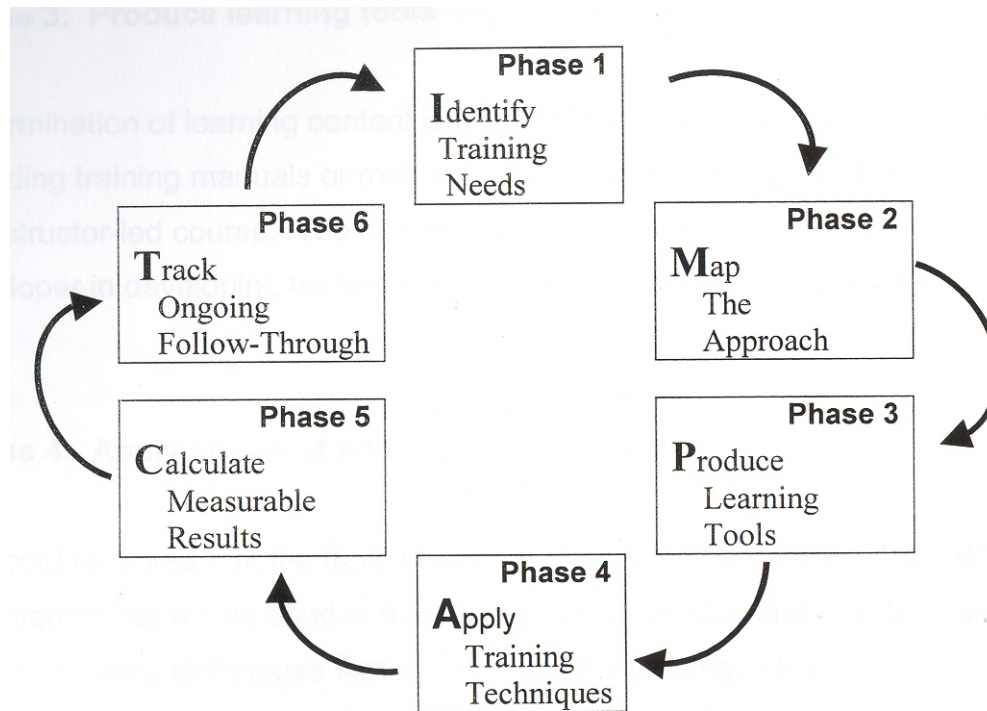
In this phase collegial friends critically analyse the process and reflect on their experiences to come to new conclusions. Specific activities include

- Use feedback from participants.
- Determine the success of the programme, using predetermined criteria.

Phase 6: Track ongoing follow-through

An assessment or evaluation of the extent to which the outcomes have been achieved is done, as well as identifying other challenges and opportunities to be adapted in the next cycle. Re-plan for the next cycle and then implement with the adaptations.

Figure 5.1: The high impact-training model



Source: Motshekga-Sebolai (2003:130; original source: Sparhawk)

5.6.3.2 Improving the primary functions of academe

The following activities are recommended for departmental improvements with regard to the primary functions of academics.

- **Curriculum development in the new paradigm of learning**
 - sensitivity to external and labour markets
 - customer awareness
 - understanding the purpose of HE transformation
 - impact of cultural and multicultural factors on curriculum
 - curriculum development process

▪ **Teaching and learning**

In section 3.7.4.1, important strategies to improve/develop the role of the leader in terms of the teaching function. The following are additional activities that may ensure that this function is improved.

- Understand the different ways of learning.
- Be innovative and creative in developing teaching strategies that will enhance learning.
- Use assessment strategies that will enhance learning.
- Undertake continuous research to understand and master new developments in teaching and learning.
- Document and reflect on learning opportunities in an effort to advance the teaching scholarship for future improvement.
- Conduct performance evaluation based on feedback from learners and colleagues.

▪ **Research**

The following recommendations are made to improve research capacity development and involvement in the department of radiography (see also section 3.7.4.2).

- Use collaborative teams, including clinical staff members, to conduct research in the discipline to maintain professional standards.
- Collaborate with institutional research unit on research capacity development, publishing of research work in reviewed journals and to assist with obtaining the necessary recognition by the NRF.
- Encourage one another to conduct and disseminate research work in scientific forums, which will improve the members' self-concept about research.

▪ **Community service**

The following recommendations should be considered to improve the community service function of academics:

- Understand purpose and benefits.
- Determine community needs and find creative ways to assist.
- Design and implement projects.
- Design reflection activities to enhance learning.
- Incorporate community service to support teaching and learning.

▪ **Learner supervision**

To improve the learner supervision function of academics the following recommendations are made:

- Understand the purpose of learner supervision.
- Establish ways to enhance learner supervision.
- Understand mentoring as a form of supervision.

5.7 RECOMMENDATIONS FOR FUTURE RESEARCH

This study only revealed the human resource needs of academics in a radiography department as well as the preferred strategies that can be used to develop the required skills. If quality and excellence are the ultimate goals of this development, then the findings of this study leave gaps that warrant further investigation.

Further research should be undertaken to determine how the strategies can be effectively implemented to achieve the desired outcomes. There is also a need to determine the criteria that CADS uses to plan academic programmes that they offer at the institution, especially with regard to the involvement of staff in the planning process. The academics' participation in the planning process would enable CADS to provide development programmes that are desperately needed and attendance would improve.

How performance can be managed in the department and the institution to ensure quality and excellence in the programmes and the teaching and learning processes should be investigated. This is critical, particularly in the light of government initiatives to ensure quality and improve the relevance of programmes in institutions of higher learning.

In terms of research and community service functions, the staff needs to know and understand the programmes that are offered to develop capacities for these tasks, and what benefits or incentives there are for those who take part.

5.8 EPILOQUE

In view of the accelerating rate of change experienced in the world today, higher education institutions are confronted with mounting challenges to improve the quality of education for learners and subsequently the socio-economic conditions of all South Africans. If these national aspirations are to be met, a conscious and committed effort needs to be made as a matter of urgency to invest in the development of the necessary skills and competences of academics, by both government and higher education institutions.

The academics are the biggest asset in higher education and an integral part of the education transformation to bring its agenda to reality. Hence they need to be knowledgeable and skilled to effectively perform their tasks. Their development should be encouraged and supported in all forms. In addition to providing structured programmes or courses for development, the academic development departments should also motivate and empower staff to help develop and improve the quality of their work.

Academics in higher education can no longer wait for management for their development and quality performance. There are cost-effective and manageable mechanisms that they can adopt in their constant pursuit for excellence. What is needed is a paradigmatic shift and creative thinking that will inculcate a sense of growth to see opportunities for a better education for the learners.

Finally, the South African society has high hopes for institutions of higher learning. Despite the many challenges, nothing can be achieved if we do not start somewhere. It may be our best opportunity to learn from and bring about sustainable improvements.

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ADDENDUM A

ETHICAL STATEMENT

The purpose of this ethical statement is to inform the reader that as a researcher, I will ensure that all research processes undertaken in this investigation, are conducted with professional and ethical procedures guided by the following principle.

- Principle of voluntary participation

The respondents' participation in the investigation will be entirely voluntary hence if they express a wish to withdraw anytime during the investigation, they are free to do so.

- The principle of informed consent

Respondents in this investigation will be duly informed about the purpose and process of the investigation and requested to consent to their participation before the research is conducted, during the research process and after the research has been completed.

- Principle of safety in participation

Respondents will not, at any stage of the investigation, be exposed to any form of risk or harm.

- Principle of privacy

Confidentiality and anonymity of respondent's identities will be maintained and any information obtained in this study will only be used for this investigation.

- Principle of trust

If at any instance I am required to publish or use the participants' names, a formal written request and approval will be sought from participants to do so.

1. SUMMARY OF THE RESEARCH

The purpose of this investigation is to determine how radiography as a profession and as a field of specialisation has changed in the past twenty years, and the impact this has on the role of academe in higher education. The study further determines the human resource needs of academic radiographers at the University of Limpopo (Medunsa Campus), as well as the preferred strategies to be used for development.

The report begins by providing the background from within which the problem is embedded and the research methodology employed. Then the literature review, which forms part of data collection technique, is provided. The data of the empirical investigation was collected through unstructured individual face-to-face interviews with lecturers and a focus group comprising of lecturers, clinical radiographers, a newly qualified radiographer on community service and a member from the Centre for Academic Staff Development (CADS) at Medunsa.

The audio taped responses were then transcribed. Data was then coded by characterisation and clustering, then analysed and interpreted. Triangulation was also used to increase the validity of the results from the literature review; the individual face-to-face and the focus group interviews. Conclusions and recommendations were then provided.

2. PARTICIPATION OF HUMAN RESPONDENTS

The participants for this investigation are employees from the University of Limpopo (Meduna Campus) and Dr George Mukhari Hospital. For the face-to-face interviews all five academic radiographers from the department of radiography participated. In the focus group interviews six members are involved and include two academic radiographers from the department of radiography, two clinical radiographers from Dr George Mukhari Hospital, one newly qualified radiographer on community service from Dr George Mukhari Hospital and a member from the Centre for Academic Development Services at Medunsa. No other special criteria for the selection of participants was considered except for their knowledge and experience in radiography, education, and academic staff development and their availability for the investigation.

This study employed purposive sampling for selection of respondents. Purposive sampling simply means selection based on the participant's knowledge and experience regarding the purpose of the study, their availability and willingness to participate in the study. So, participation is completely voluntary and no inducements are offered for taking part.

A 30-40 minute interview was arranged for each participant in the individual face-to-face interview and 45-60 minutes for the focus group interview. Questions on the changing nature of radiography and its impact on radiographic practice, the human resource needs of academic radiographers; the role of CADS in staff development was asked. The questions were forwarded to participants before the scheduled date so that participants could prepare the most appropriate answers. Respondents were informed prior to the interview schedules that the entire process will be conducted in English and would be audio taped, which they all agreed to.

3. PARTICIPANTS APPROVAL AND INFORMED CONSENT

Permission for participation was sought from the Heads of Department concerned, and was granted. Individual participants' permission was also requested by correspondence, which also outlined the purpose of the investigation. They were also informed of their right to voluntary participation and that if at any stage of the investigation they felt uncomfortable, they could withdraw without fear. In addition they were informed of their right to confidentiality and anonymity. Respondents were also informed that if further clarification was necessary, subsequent appointments could be arranged to provide further clarifications. They were then asked to attach their signatures on a provided form to confirm their agreement to participate in the study.

4. QUALIFICATIONS AND EXPERTICE OF THE RESEARCHER

I have no prior experience in research except that I have completed Research Methodology 720 and 780 at the University of Pretoria whereby a research paper was submitted for the purpose of a Bed degree. Furthermore the guidance of my supervisor assisted in making this study professional, complying with the ethical code of conduct.

5. RISKS AND DISADVANTAGES TO HUMAN RESPONDENTS

This investigation, to the researcher's knowledge does not in anyway pose any risks or harm for the participants as only interviews (were) will be conducted in a safe and conducive environment.

6. BENEFITS AND ADVANTAGE TO HUMAN RESPONDENTS

I think that participation in this investigation will stimulate thought on problem areas that academics and indeed clinical radiographers might be experiencing and to consider the benefits of specific strategies for development, growth and quality improvements.

7. CONFIDENTIALITY, ANONYMITY AND TRUST

Participants were assured that the investigation was purely as a requirement for the fulfilment of a degree and if publication was considered, they will be informed and even then their identities and confidentiality of all information will be protected.

ADDENDUM B

CORRESPONDENCES

Covering letter to Heads of Departments

Department of Radiography

P.O. Box 159

Medunsa

0204

21. 04. 2005

The Head of Department
(Department Name)

Re: Request for staff member(s) to participate in the focus group interview

Dear Sir/ Madam

I am currently engaged in an investigation on human resource development of radiography educators in partial fulfilment of a Masters degree with the University of Pretoria. This letter serves as a humble request for member(s) in your department to participate in this investigation. Their participation will be invaluable in providing information regarding the changing nature of the radiography practice and its impact on the skills and competencies of academe. This investigation aims to establish the cost effective development strategies that can be used to develop the necessary skills and hence improve their performance in their academic work.

The scheduled date for the interview is Tuesday, 3rd May 2005 at 10 O'clock in the department of radiography. The interviews are scheduled to last an hour at most. Attached please find the questions for the interview schedule. Your assistance in this investigation will be extremely helpful in making it a success.

Thanking you in anticipation for your cooperation.

Yours sincerely

M.A Mochifefe

Extension: 4144

Cell: 0833063890

e-mail: amochifefe@medunsa.ac.za

Covering letter to participants of the individual face-to-face interviews

Department of Radiography

P.O. Box 159

Medunsa

0204

21. 04. 2005

Dear Sir/ Madam

Re: Request for participation in the individual face-to-face interviews

I am currently engaged in an investigation on human resource development of academic radiographers at Medunsa for a Masters degree with the University of Pretoria.

Your participation in this investigation is requested as it is my belief that it will be invaluable in providing information regarding the changing nature of the radiography practice, higher education and healthcare which impacts on the skills and competences of academe, your human resource needs and the strategies that can be used to develop these skills and competences in a cost effective way to improve the quality of work.

I will like to assure you that the information obtained will be treated with strict confidentiality and will only be used for this investigation. The interviews will be conducted in English and will also be audio taped. Please find attached copy of the interview schedule that will be used in the interviews. For any questions, my contact details are provided below.

Thanking you in anticipation for your cooperation

Yours Sincerely

M.A. Mochifefe

Extension: 4144

Cell: 0833063890e-mail: amochifefe@medunsa.ac.za

Covering letter for participants of the focus group interviews

Department of Radiography

P.O. Box 159

Medunsa

0204

21. 04. 2005

Dear Sir/Madam

Re: Request for participation in the focus group interview

This letter serves as a humble request for your participation in the focus group interviews. I am currently involved in an investigation on the human resource development of radiography educators at Medunsa for partial fulfilment of a Masters degree with the University of Pretoria.

Your participation will be invaluable in providing information regarding the changing nature of the radiography practice and its impact on academe in training institutions and the cost effective strategies that can be used to develop the necessary skills and competences to enhance quality.

The scheduled date for the interview is Tuesday 3rd. May 2005 at 10:00 in the radiography department. The interview is expected to last for an hour at most. I would like to assure you that the information obtained will be treated with strict confidentiality and will only be used for this investigation. The interview will be conducted in English and will be audio taped. For any questions, my contact details are listed below.

Thanking you in anticipation for your cooperation.

Yours sincerely

M.A. Mochifefe

Extension: 4144

Cell: 0833063890

e-mail: amochifefe@medunsa.ac.za

ADDENDUM C

INTERVIEW SCHEDULES

Individual face-to-face interview schedule

- ❖ With the current changes in radiographic practice and in higher education, what are the biggest challenges that you think you are facing currently?
- ❖ Do you think as an individual lecturer within a department you are fulfilling your primary responsibilities and that include, teaching, research and community service?
- ❖ If we consider community service to be the core function of university lecturers how would you rate your individual or departmental involvement in this function?
- ❖ What in your opinion are your possible constraints to this involvement
- ❖ How do you think you and the department can do to improve involvement in community service?
- ❖ How would you rate your teaching functions/role, do you fulfil this role?
- ❖ What in your opinion are your biggest challenges regarding the teaching function?
- ❖ Do you ever introduce departmental initiatives that aim to improve your skills or improve practice How did you fare with such initiatives
- ❖ What is your opinion regarding your own development?
- ❖ CADS offer short courses especially on teaching and learning.

Do you attend these courses, how do you find them, are they helpful?

Do you apply the knowledge gained from these programmes?

- ❖ How would you rate your research involvement as well as that for the department?
- ❖ Are you a rated researcher with the NRF? (Why? Why not?)
- ❖ What are your constraints to getting involved in research
- ❖ How do you think the department can do to improve the quality of work they do.
- ❖ Do you think that you and other members in the department work well together
- ❖ Discuss the support you receive from your department regarding each of the aforementioned tasks or functions
- ❖ How do you perceive the achievement of your own goals and objectives?
- ❖ How do you cope with your own needs and aspirations, the needs of students as well as that of the institution in terms of your core responsibilities

Focus group interview schedule

- ❖ How do you think radiography practice has changed in the past twenty years?
- ❖ Do you think that academics in higher education are capable to handle the challenges brought b these changes
- ❖ What in your opinion are the stumbling blocks preventing academics to perform adequately in their core functions
- ❖ What do you think about the academic development courses offered by CADS?
- ❖ How do you think radiography education can be improved?
- ❖ What is your opinion regarding research outputs in the department?
- ❖ How would you rate your community service involvement?
- ❖ Which competences do you consider essential for radiographers as well as educators?
- ❖ What motivates you to pursue excellence in radiography?
- ❖ What strategies do you think academic departments can use to enhance their personal and professional development
- ❖ Is there anything you would like to add or comment on?

ADDENDUM D

CODING AND CHARACTERISATION OF THE INTERVIEW SCHEDULEL

Table A1: Coding system relating to *changes in radiographic practices and in higher education in general*

Sub-categories	Explanations	Code
Availability and use of Technology	Equipment innovation	CT1
	Role extension	CT2
Transformation in the Healthcare profession	Quality of service provision	CH1
	Patient care	CH2
Higher education transformation	New and relevant curricula	CE1
	Quality of practitioners	CE2
	Quality of learners	CE3

Table A2: Coding system relating to the *perceptions of respondents on primary functions*

Sub-categories	Explanation	Code
Teaching	There is a need for development	TF1
	Not 100% -but efforts are in place	TF2
Research	Respondents not involved at all	RF1
	Little involvement	RF2
	Actively involved	RF3
	There's need to build research capacity	RF4
Community service	Minimal individual involvement	CS1
	Individually members are active	CS2
	Individually not active	CS3
	Active departmental involvement	CS4
	No departmental involvement	CS5

Table A3: Coding system relating to *constraints in community service involvement*

Explanations	Code
Staff shortages limit community service involvement	KL1
Lack of initiative to drive community service involvement	KL2
Negative attitude towards community service	KL3

Table A4: Coding system relating to *the improvement of community service (CS)*

Explanations	Code
Collaboration between members and other departments is required	SC1
There is a need to identify community needs prior to CS	SC2

Table A5: Coding system relating to *respondents' perception of the teaching function*

Explanations	Code
Fulfil the function fully	TI1
Inadequate	TI2
Needs development	TI3

Table A6: Coding system regarding *the challenges with the teaching function*

Explanations	Code
Curriculum development in OBE format	TC1
Respondents' experienced challenges with assessments	TC2

Table A7: Coding system relating to *departmental initiatives to improve teaching*

Subcategories	Explanations	Code
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Initiatives	There are initiatives in place Pace and effectiveness is concerning	DI1 DI2
Strategies for improvement	Attending and giving workshops Collaboration intra- and extra departmental	SI1 SI2

Table A8: Coding system relating to *the role of CADS in staff development*

Explanations	Code
Courses are too sporadic and lack follow up	SD1
Effective and relevant courses offered	SD2
CADS is supportive in any development initiatives	SD4

Table A9: Coding system regarding *perception on own development*

Explanations	Code
Development is a process- there is always room for improvement	OD1
No need for skills development but initiative	OD2

Table A12: Coding system *relating to research involvement*

Explanations	Code
Involvement in research is satisfactory	RO1
Research needs capacity building	RO2
Very minimal research outputs	RO3

Table A13: Coding system relating to *constraints in research involvement*

Explanations	Code
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Lack of relevant research skills	RC1
Lack of initiatives from staff	RC2
Negative attitude towards research	RC3
No stumbling blocks	RC4

Table A14: Coding system relating to *research improvement*

Explanations	Code
There is a need for research capacity building	RI1
Division of tasks can alleviate problem	RI2
Identification of accredited journals for publications by radiographers	RI3
Availability of resources	RI4

Table A15: Coding system relating to *departmental relationships*

Explanations	Code
Good, healthy relationships in the department	DR1
Members receptive for change	DR2
Supportive environment	DR3

Table A16: Coding system relating to strategies for overall improvements

Explanations	Code
Collaboration intra- and extra-departmental	OM1
Networking with other providers	OM2
Peer review of lecturers	OM3

Table A17: Coding system in relation to *coping mechanism*

Explanations	Code
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Time management	CM1
Prioritizing tasks	CM2
Division of tasks	CM3

Table A18: Coding system relating to *other concerns*

Subcategories	Explanations	Code
Clinical practice	Theory translating into practice	DC1
	Effective supervision	DC2
	Developing learner's critical skills	DC3
Theory	Curriculum overload	DT1
	Holistic learner development	DT2
Development	Dire need for professional development	DP1
	Policy change for international compatibility	DP2

Table A19: Coding system relating to *new competencies required in HE*

Explanations	Code
Developing curriculum material in OBE format	CR1
Learning facilitation	CR2
Research skills	CR3
Peer review of lecturers	CR4
Mentoring of new and old staff members	CR5

Table A20: Coding system in relation to *pursuing excellence in an academic department*

Subcategories	Explanations	Code
Teaching and research	Should be recognized and rewarded	PE1
	The members should utilize the services of CADS	PE2
	Use the research unit for guidance	PE3
	Develop a positive attitude and interests in all primary functions	PE4