



**A SKILLS DEVELOPMENT PROGRAMME FOR POSTGRADUATE
SUPERVISORS AT UNIVERSITIES OF TECHNOLOGY**

by

JEANINE NOTHNAGEL

(B.P.L., B.P.L. Hons., M.P.L., University of the Free State)

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PROMOTER: Prof. L.O.K. Lategan

CO-PROMOTER: Prof. P.G. le Roux

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DECLARATION OF INDEPENDENT WORK

I, **Jeanine Nothnagel**, identity number [REDACTED] and student number [REDACTED] do hereby declare that this research project submitted to the Central University of Technology, Free State for the Degree DOCTOR OF BUSINESS ADMINISTRATION, is my own independent work; and complies with the Code of Academic Integrity, as well as other relevant policies, procedures, rules and regulations of the Central University of Technology, Free State; and has not been submitted before by any person in fulfilment (or partial fulfilment) of the requirements for the attainment of any qualification.

SIGNATURE OF STUDENT

DATE

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DEDICATION

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SUMMARY

Postgraduate supervision is vital to the successful completion of the doctoral student's research, which is influenced by the effectiveness of the postgraduate supervision process and the competence of the postgraduate supervisor. The development of the next generation of researchers in South Africa is a priority in the bid to make a significant contribution to the production of new knowledge. To be competitive it is necessary to promote and develop doctoral capacity which entails an understanding of what skills are necessary to provide effective postgraduate supervision. This is applicable in particular to universities of technology (UoTs) – unique institutions that came about after the merger with universities that had a more extensive experience in postgraduate studies. Their challenges are pronounced, taking into account their level of experience and the emerging research culture still developing in these institutions.

UoTs face a unique challenge to produce knowledge that is useable and from which industry and businesses can benefit. UoTs, as part of the university typology, have very specific needs with regard to the development of a skills development programme for postgraduate supervision, because the knowledge generated at UoTs should inform both industry and business. However, to generate new knowledge, postgraduate supervisors need to have skills and knowledge on how to supervise doctoral students. UoTs need to be vigorous in the provision of knowledge and skills to develop postgraduate supervisors. The outcome of this study, namely a skills development programme for postgraduate supervisors, addresses this need. From this perspective and from the literature it is apparent that all types of universities should have a skills development programme in place in order to be effective and efficient in contributing to the successful completion of doctoral degrees.

Although UoTs realise the importance of postgraduate supervision and research, they nevertheless need to implement a skills development programme in order to address the skills of postgraduate supervisors, especially novice postgraduate supervisors. No evidence of the existence of a skills development programme for supervisors to supervise doctoral students at UoTs in South Africa could be found by the researcher. Hence a skills programme was developed to manage the continuous professional development of academic staff in an effective and efficient manner. To achieve the aim and objectives of the study, i.e. to develop a skills development programme for postgraduate supervisors, existing literature on postgraduate supervision was investigated.

The presentation of the programme will ensure the achievement of higher education's responsibility towards doctoral students in a planned and coordinated manner. The researcher is of the opinion that postgraduate supervisors will be capacitated by a customised skills development programme. The programme does not have to be implemented in its original form, and other institutions can customise it according to their own unique situations. However, the process followed and components of the programme can be presented without reinventing the wheel. The researcher believes that this study will facilitate the development of postgraduate supervisors. Furthermore, the researcher is also of the opinion that the skills development programme described in this study can be implemented at other UoTs in South Africa. Therefore, the overall goal, aim and objectives of this study were reached.

Key terms: doctoral education; doctoral student; knowledge; learning; postgraduate supervision; postgraduate supervisor; research; skills development programme; teaching; universities of technology

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ACRONYMS

ASSAf:	Academy of Science of South Africa
CHE:	Council on Higher Education
CHET:	Centre for Higher Education Trust
CPUT:	Cape Peninsula University of Technology
CREST:	Centre for Research on Science and Technology
CUT:	Central University of Technology
DHET:	Department of Higher Education and Training
DoE:	Department of Education
DUT:	Durban University of Technology
HE:	Higher Education
HEI:	Higher Education Institution
HEIs:	Higher Education Institutions
HELTASA:	Higher Education Learning and Teaching Association of Southern Africa
HEQC:	Higher Education Quality Committee
HEQF:	Higher Education Qualifications Framework
HEQSF:	Higher Education Qualifications Sub-Framework
HEMIS:	Higher Education Management Information System
HEQF:	Higher Education Qualifications Framework
HESA:	Higher Education South Africa
MUT:	Mangosuthu University of Technology
NDP:	National Development Plan
NPC:	National Planning Commission
NPHE:	National Plan for Higher Education
NCHE:	National Commission on Higher Education
NQF:	National Qualifications Framework
QA:	Quality Assurance
QEP:	Quality Enhancement Project
SAQA:	South African Qualifications Authority

SATN:	South African Technology Network
SARUA:	Southern African Regional Universities Association
TUT:	Tshwane University of Technology
UoT:	University of Technology
UoTs:	Universities of Technology
USA:	United States of America
VUT:	Vaal University of Technology

CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

Research is an integral and indispensable function of all universities. One very important aspect of research is postgraduate studies and therefore also the postgraduate supervision process. This process involves the participation of the doctoral student, his/her supervisor, and most importantly, the university itself, as the collective for academic activities. Each partner has a critical role to play in the postgraduate supervision process (Hughes cited by Haksever & Manisali, 2000:29). The student, supervisor and university form therefore an ecosystem whereby these entities can be identified but never separated in the supervisory process (Cloete, Mouton & Sheppard, 2015:24). An ecosystem is a connection between formal and informal learning, between existing providers (the university) and between “service providers” (academics) and “service users” (students). Consequently, in this ecosystem the learning environment has moved towards being simultaneously autonomous and collaborative, taking place in a dynamically changing environment whereby students can follow their personal learning paths while being simultaneously guided by academic staff (Normak, Pata & Kaipainen, 2012:262).

Postgraduate supervision may be defined as a multi-perspective process, enabled by institutional research policies and supported by a commitment to the provision of appropriate infrastructure, which involves knowledge creation and development, and ensures that the student has every opportunity to develop effective research skills.

Postgraduate supervisors face the dual challenge posed by the demands of continuous development in the research environment and those of successfully supervising their students towards the completion of their studies. In this regard, Bak (2011:1048) mentions the problematic South African context in which postgraduate supervision takes place, namely a context “fraught with inherited injustices, deeply-rooted political (and racial) identities, an inherent suspicion of authority, and a small academic educational research community”. Students enter universities with individual identities influenced by their prior political and social experiences, to be introduced into the scholarly community. They must now enter into a relationship with a postgraduate supervisor who has his/her own intellectual and educational background, and his/her own way of thinking. This can challenge the supervisory process.

According to the White Paper for Post-School Education and Training (Department of Higher Education and Training [DHET], 2013:35), academic staff is a crucial factor in the overall quality improvement and development of the university sector. South Africa faces a significant and complex challenge in terms of staffing its universities (DHET, 2013:35). It has to sustain adequate levels of academic staff, build capacity within the system, develop future generations of academics for the system, and substantially improve equity. The challenge also relates to the academic teaching and supervision capacities to expand current and mount new doctoral programmes, and the institutional capacities for managing substantial expansion in postgraduate enrolments (Cloete *et al.*, 2015:59; Higher Education South Africa [HESA], 2014:6; Mouton, Boshoff & James, 2015:3). The White Paper challenges the preparedness of postgraduate supervisors and therefore it is important that postgraduate supervisors undertake the necessary academic development to prepare them for the complex task of postgraduate supervision. Moreover, postgraduate

supervisors need to know how to lead the research process (Lategan, 2009:161).

From the above introduction to postgraduate supervision, it is evident that higher education institutions (HEIs) as providers of postgraduate supervision should have a strategy in place to be effective and efficient in contributing to the challenges of the knowledge economy. Linked to the above-mentioned comments, the observation can be made that the changing nature of research production, postgraduate supervision and universities warrants a deeper look into these matters. The focus in this study will be on postgraduate supervision. Due to the wide scope of postgraduate supervision, the particular focus will be on a skills development programme for postgraduate supervisors. The context will be related to one of the three South African University sectors, namely the Universities of Technology (UoTs). The motivation for focusing on a skills development programme for postgraduate supervisors will be explained in the next paragraphs.

The first question to be asked is: Why is it important to have a deeper understanding of postgraduate supervision?

1.2 WHY IS A DEEPER UNDERSTANDING OF POSTGRADUATE SUPERVISION IMPORTANT?

Postgraduate supervision is a multi-disciplinary field of study that requires skills in aspects such as contributing to new knowledge development, teaching, learning, administration and the management of the process. This multi-perspective understanding of postgraduate supervision has been confirmed by South African authors such as Backhouse (2007, 2009, 2010), Bitzer (2004, 2006, 2007, 2010, 2011), Govender (2011a, 2011b, 2012), Herman (2010, 2011a, 2011b, 2011c, 2011d), Jansen (2011a,

2011b), Lategan (2004, 2005, 2008, 2009), Mouton (2001, 2007, 2011), and Wilkinson (2011), as well as by institutional studies such as those of the Academy of Science of South Africa (ASSAf) (2010) and the Southern African Regional Universities Association (SARUA) (2012). International studies of Grant (1999, 2001, 2003, 2005a, 2005b, 2008, 2009, 2010), Lee (2007, 2008), Lovitts (2001, 2005, 2008), Manathunga (2005a, 2005b, 2007, 2009), Murphy, (2004), Nerad (2004, 2011), Philips and Pugh (2000), Vilkinas (2002, 2008), as well as Zuber-Skerritt and Ryan (1994) also confirm the challenges and importance of postgraduate supervision. From all of the studies above, three observations can be made:

- i. Postgraduate supervision is a field of study in its own right.
- ii. Successful roll-out of specific skills is demanded for successful supervision.
- iii. Training for both novice postgraduate supervisors and (doctoral) students will enhance the successful completion of the study.

In order to address the multi-perspective understanding of postgraduate supervision, three questions require attention, namely:

1. What is the nature of postgraduate supervision?
2. What are the academic expectations of postgraduate supervision?
3. What skills does the postgraduate supervisor need to have in order to lead in this process?

In this study, the focus will be on postgraduate supervision and postgraduate studies, the primary reason being that although there are commonalities between master's and doctoral supervision, there are also distinct differences, such as the criteria outlined by the South African Qualifications Authority (SAQA). The primary purpose of the Master's degree is to educate and train future researchers who can contribute to the development of knowledge at an advanced level, while the doctorate

(see Chapter 4:4.5) provides training for an academic career (South Africa, 2014:36, 40) and the creation of knowledge that is useful to the knowledge society. Due to the broad scope of postgraduate studies, the focus will be on one aspect only, namely doctoral studies. This focus will be in line with the on-going emphasis to grow doctoral outputs in South Africa. See in particular ASSAf (2010) the White Paper for Post-School Education and Training (DHET, 2013) and the National Development Plan for Higher Education (Department of Education [DoE], 2001), where there is evidence provided on the growing trajectory for doctoral studies.

To meet these demands, one needs to understand the nature of postgraduate supervision (see Chapter 2:2.4).

1.3 THE NATURE OF POSTGRADUATE SUPERVISION

Traditionally, postgraduate supervision has been regarded as a process that any person academically active in research could and would do effectively without a need for further development. Kolmos (2004:1) is of the opinion that it is a widely accepted myth that once one becomes a researcher, an associate professor or a professor, one does not need any further education regarding the postgraduate supervision process. It is in fact entirely possible to be a researcher within an expert field, yet not to have expertise in the field of postgraduate supervision. Dietz, Jansen and Wade (2006:140) note that there is a perception at (some) South African universities that academics become qualified to supervise doctoral students merely by virtue of having attained a PhD. In this regard, Cloete *et al.* (2015) and ASSAf (2010) state that the proposal that new supervisors require training in supervision subverts the traditional notion of the 'clever chap' (Edwards, 2002) with a PhD as being sufficient to supervise doctoral students.

While effective postgraduate supervision is central to successful postgraduate research, it is the teaching and learning in the postgraduate supervision process that are poorly understood (Gurr, 2001:81). The practice of postgraduate supervision does not merely entail providing teaching, but also requires the creation of a milieu for the student in which to learn how to do research (Halse, 2011:557; Jansen, Herman & Pillay, 2004:80), and the mastering of research-specific skills (Halse, 2011:557).

Postgraduate supervisors believe that a good thesis should display evidence of an attitude of engaged commitment of the student to the academic work (Anderson, Day & McLaughlin, 2006:158). When students do not commit themselves wholeheartedly to the research process, the postgraduate supervisor experiences considerable dissatisfaction, which may cause tension in the supervisory relationship. It is important to establish a context conducive to dialogue in which postgraduate supervisors and doctoral students form learning partnerships, emphasising accountability and responsibility on both sides.

Postgraduate supervision represents a special kind of academic relationship, which involves complex interpersonal skills (Bitzer, 2007:1010). According to Hodza (2007:1156), postgraduate supervision is a two-way interactional process that requires both the doctoral student and the postgraduate supervisor to consciously engage with each other in the spirit of professionalism, respect, collegiality and open-mindedness. It also is a guiding process aimed at giving direction to the doctoral student's efforts to make a noteworthy contribution to creating new knowledge and developing scholarly capabilities.

It is essential for the postgraduate supervisor to be aware of the student's needs during the supervisory process (Ngcongco, 2001:56), because

development, personal, language and a number of other possible needs may have an impact on the student's chances of success. Equally important is the supervisory style of the postgraduate supervisor (Abiddin, 2007:381). A multifaceted postgraduate supervision process therefore is crucial as the postgraduate supervisor must fulfil many roles in order for the doctoral student to complete the study successfully.

It can be concluded that research supervision is not merely a teaching-and-learning process; nor does it only entail research guidance. The supervisor-student relationship is not a social relationship, but an intellectual association. Having identified the nature of postgraduate supervision, it is safe to say that there are specific academic expectations inherent in the process.

1.4 ACADEMIC EXPECTATIONS OF POSTGRADUATE SUPERVISION

According to students, they undertake doctoral studies because a doctorate is the highest academic accolade a university can award. Other reasons may be that they wish to contribute to new knowledge, to improve their employability or to distinguish themselves in a competitive environment (Backhouse, 2009:162). On completion of doctoral studies, it is expected of those graduates who are academics or who enter academia, to demonstrate specific skills and competencies, inter alia, supervising other doctoral students. Unfortunately, in the process of doing research aimed at obtaining a doctorate, students master research skills, while the skill of teaching is largely ignored in the postgraduate supervision process.

Having obtained a doctoral degree, it is expected of students to be able to undertake independent research, to arrive at well-grounded conclusions, to solve problems and to access, process and manage information. Together with these requirements, the student must also ascribe to the necessary ethical and professional practices, produce and communicate information on the research, and understand the theoretical underpinnings in the management of complex systems to achieve systemic change. According to the level descriptors as outlined in the National Qualifications Framework (NQF) (SAQA, 2012:13) for a level-10 qualification (doctorate), graduates must demonstrate intellectual independence and research leadership. They need to demonstrate the ability to manage research and research development in a discipline, field or practice, to be accountable in respect of the ability to operate independently, and to take full responsibility for their work. Where appropriate, they must lead, oversee and ultimately be held accountable for the overall governance of processes and systems (SAQA, 2012:12-13).

This elucidation of the requirements with which doctoral students must comply in order to be successful, indicates that they not merely studying a certain topic; they have to raise their levels of thinking beyond the descriptive and content aspects of research, after which they will display "doctorateness". Leshem and Trafford (2007:102) state that doctorateness emerges in researchers as they progress upwards in the research process, coping with the different intellectual demands from description through analysis and interpretation and then to the conceptual. Through this progression the doctoral students raise their levels of thinking and gradually come to display doctorateness. Doctorateness is an illustration of scholarly competence.

Boyer's (1990) well known perspective on scholarship can assist in contextualising postgraduate studies in a scholarly framework. Boyer's four domains of scholarship include: discovery, application, integration and teaching (Boyer, 1990). The scholarship of *discovery* reflects on the generation of new knowledge, which is at the heart of research. It also entails fitting the findings of research into meaningful patterns (Braxton, 2005:287). The scholarship of discovery (generating new knowledge) offers an opportunity to generate funding and prestige for a university and students learn what it means to be a scholar. The primary goals of the scholarship of *integration* are to make new connections within and among disciplines and to synthesise knowledge in the field of study. Students interpret their own research to be useful beyond their own disciplinary boundaries so that it can be integrated in a larger body of knowledge. The scholarship of *application* involves the use of a scholar's disciplinary knowledge to address important individual, institutional, and societal problems. Doctoral students must be able to solve problems of importance to policymakers, community members, corporate leaders, business and industry. In professional fields such as education, medicine and other health-related professions, engineering and computer science, doctoral students must have an awareness of the ways in which knowledge generation is related to knowledge application (Austin & McDaniels, 2006:54). The scholarship of application and that of integration are applicable to all and vary across disciplines.

The scholarship of *teaching* entails the development and improvement of pedagogical practices. Doctoral students must develop their ability to practise scholarship within each of the four domains (Austin & McDaniels, 2006:53-54). The scholarship of teaching is typically less emphasised, because students do not experience the professional preparation that will enable them to learn and improve progressively in order to be teachers (Austin, 2002:94). Boyer's model, however, sees teaching and research

on a continuum and not as separate entities. Academics use their research to inform their teaching; they use their service and teaching as sources of ideas for their research, and their teaching as an opportunity to provide service to the community, as well as to foster student learning (Colbeck & Michael, 2006:10). The balanced focus of teaching and research in all forms of scholarship is an advantage in meeting the demands of the information age.

When doctoral students understand the unique characteristics of the four domains and how each domain influences, develops or connects with work in another domain, they will have a map of the broad area of scholarly activity and will recognise the legitimacy of different kinds of intellectual contributions. Therefore, doctoral students should develop within and across the four domains of Boyer, thus preparing them to collaborate effectively with colleagues and use their talents in multiple ways (Austin & McDaniels, 2006:52). Of concern is postgraduate supervisors' expertise and preparedness to guide doctoral students to develop in each of the four domains of scholarship as defined by Boyer. Such preparation will enable postgraduates to pass on these skills to the next generation of students when they themselves become supervisors of doctoral students (Bitzer, 2010:27). It is evident that all forms of scholarship can be regarded equally as being part of the academic expectations associated with postgraduate supervision. These perspectives will be further developed in Chapters 2, 3 and 4.

Now that we have identified the scope, the nature and the expectations of postgraduate supervision, we can conclude that specific skills are required for the postgraduate supervisor. The next section will look into this aspect.

1.5 SKILLS OF THE POSTGRADUATE SUPERVISOR

The role of the postgraduate supervisor is complex (see 2.5). Heath (cited by Mainhard, Van der Rijst, Van Tartwijk & Wubbels, 2009:359) argues that the success of the doctoral system depends largely on the postgraduate supervisor, who must provide time, expertise and support to foster the candidate's research skills and attitudes, and to ensure the production of a thesis of acceptable standard.

The postgraduate supervisor should be able to contribute to the advancement of knowledge through creative and effective supervisory and teaching strategies, as well as time management techniques, to ensure the success of students to result in a zero dropout rate (Rochford, 2003:219). Thus, it is important for postgraduate supervisors to practise high-quality supervision techniques to keep doctoral students in the system. Despite the fact that they have support at various levels, an unacceptably large proportion of doctoral students do not complete their studies (Wadee, Keane, Dietz & Hay, 2010:20). According to the Southern African Regional Universities Association (SARUA, 2012:23), the risk factors contributing to the non-completion of doctoral studies include the age of the student coupled with professional and family commitments, and poor student-supervisor relationships. ASSAf (2010:77) adds the following causes of non-completion: insufficient funding may lead to non-completion, gender and race may challenge bias and cultural differentiation, and the particular discipline of the student may vary from student to student and may demand a specific approach to finalise the study.

In the light of the causes of dropout from postgraduate studies, supervisors have the obligation to smooth the progress of the journey from being a doctoral student to becoming a scholar (Mudaly, 2012:41).

In their striving to achieve this, universities across Europe, the United Kingdom, Australia and New Zealand have introduced formal, often mandatory, academic development programmes for postgraduate supervisors (Halse, 2011:558).

In view of the above, it is understandable that the achievement of a doctorate cannot be the only prerequisite to supervision of doctoral students. Although the roles and responsibilities of postgraduate supervisors have changed over the years, their supervisory practices will have a direct effect on the students' ability to complete a research project. To make a meaningful contribution to our knowledge economy, skilful supervisors are essential. A skilful postgraduate supervisor is a knowledgeable researcher who is willing and eager to contribute to the development of the student (Holzbaur, Lategan, Dyason & Kock, 2012:1; Lues & Lategan, 2006a:28). Albeit that expertise and research skills are paramount in supervision, postgraduate supervisors may still be in need of training in supervisory skills. The skills of postgraduate supervisors will be discussed more extensively in Chapter 3 (see 3.2.1).

With this overview on the nature and the expectations of postgraduate supervision and the skills required for the postgraduate supervisor, we can state that:

- i) specific skills are required;
- ii) training can enhance these skills; and
- iii) postgraduate supervision is a very important activity to which more attention should be paid.

This is a confirmation of the important role a skills development programme can play in the successful delivery of postgraduate studies. Now that we have reached consensus on skills development, we also need

to understand the challenges within the UoTs. The next section will focus on this aspect.

1.6 UNIVERSITY TYPOLOGY CHALLENGES TO POSTGRADUATE SUPERVISION

The South African higher education (HE) system currently has twenty-six universities, of which eleven are traditional universities, six are UoTs, six are comprehensive universities and three are emerging universities. This study will concern itself with postgraduate supervision in one of these university types, namely the UoTs.

In general, the UoTs have their origin in the former technikons. Due to the transformation of technikons to UoTs, it was necessary for especially the research agenda to feature more prominently. Technikons were more concerned with vocational education and training than with research. Since becoming UoTs, these institutions were faced with the challenges to function in a unitary HE system, to deliver (doctoral) qualifications on the approved SAQA levels and to deliver research studies that are responsive to national priorities. These challenges, amongst others, contributed to the need to grow a postgraduate culture on the basis of mission differentiation. Today, UoTs are known more for their applied research in association with business and industry.

Technikons were classified by the Technikons Act of 1993 (South Africa, 1993) as institutions concentrating on the application of scientific principles to practical problems and to technology. Students were prepared for the practice, promotion and transfer of technology within a particular vocation or industry (Du Pré, 2006:13). Up to 1993, the technikons had only been able to offer two-year certificates and three-year diplomas. This had an influence on their capacity to conduct

research, as technikons could neither attract the calibre of student needed to enrol for postgraduate degrees, nor the staff members who could support and supervise postgraduate studies (McKenna & Powell, 2009:38). In 1993, technikons were granted the authority to award degrees (South Africa, 1993). Initially there was an absence of scholarly identity in these institutions as a research culture had not yet been fully established. Not all academic staff had higher degrees or had produced significant academic publications because of the primary focus on teaching and vocational training (Winberg, 2005:194). These requirements posed challenges to academic staff and special attention was needed to promote the improvement of their qualifications and to publish academic papers, for example (Wadesango & Machingambi, 2011:31).

Technikons had been established to address the shortage of technically skilled workers to meet the needs of commerce and industry. Technically skilled people were recruited from industry to teach in the various certificate and diploma programmes (Winberg, 2005:191), and staff members were then required to upgrade their qualifications (Arnolds, Stofile & Lillah, 2013:3). Although the focus was on the manner in which provision was made for technical education, the process of establishing an educational model to meet the country's demand for technical expertise could not be overlooked (Erasmus, 2008:18). Johnson and Louw (2014:151) maintain that neither basic nor fundamental research was undertaken at these institutions: this was still done at the established research universities. According to Ogude and Motha (2001:58), technikons conducted very little research compared to universities and this is a problem that needs to be addressed as a matter of urgency.

According to Erasmus (2008:180), technikon staff saw scholarship as being the responsibility of universities and as essentially inconsistent with

the teaching emphasis of technikons. Holding such views accounted for the relatively poor participation by technikon staff in research, which, in turn, symptomised the challenges faced by technikons in convincing their staff to undertake research. In this regard, Chetty (2003:10) states that postgraduate supervision was a major factor that affected the quality of research at former technikons. Many postgraduate supervisors had no training in postgraduate supervision and they had to supervise students over a wide range of topics and to use methodologies they had not practised themselves.

In February 2001 the then Minister of Education indicated in the National Plan for Higher Education (South Africa, 2001) his intention to reduce the number of HEIs. A national working group was appointed to make recommendations in this regard (Steyn, 2002:268). One of the more significant elements in the restructuring of South African HE was the change of those institutions known as technikons into UoTs. UoTs have as their foundation, then, the former technikons that had built a solid reputation in providing career-oriented programmes and transferring technological expertise to students for employment in industry (CHE, 2013a).

When UoTs were still technikons, they provided mainly job-related training (Kokt, Lategan & Orkin, 2012:136). From 2004 onwards, however, UoTs became part of the major reconfiguration of the HE landscape. Since 2004, there has been a notable shift in the research activities of UoTs. Although the bulk of research outputs still come from traditional universities, the UoTs are improving on their research performance. In this regard, the percentage of the weighted research outputs produced by UoTs as a collective increased steadily from 4,1% in 2009 to 5,2% in 2013 (DHET, 2015:34).

Pedagogical practices at UoTs have a number of particular features that distinguish them from traditional and comprehensive universities (Kraak, 2006:147), and although they have a different focus and ethos, they do contribute to greater technology transfer and international competitiveness (Du Pré, 2006:3). The resulting mergers were necessary to unify the fragmented HE systems inherited from the previous dispensation and to abolish the disparities and distortions of these education systems. Other reasons for the mergers included increasing student enrolments, especially from previously disadvantaged communities; meeting and taking advantage of national and global challenges and opportunities in terms of new technologies, research and training; and responding to the changing societal interests and needs as expressed in a transition from racial discrimination and oppression toward a democratic order (Mapasela & Hay, 2005:111).

UoTs, after these mergers, had their own challenges to face: one of the most important of these being postgraduate supervision. Although postgraduate supervision has certain generic challenges for all 25 universities, the challenges for UoTs were, and still are, more pronounced. UoTs face a unique challenge to produce knowledge but, more importantly, to ensure that the knowledge they produce is also useable (Ntshoe, 2012:208) and characterised by emphasis on scholarship, innovation, research and development (Du Pré, 2006:5). Higher-order thinking skills are required of doctoral students, which necessitates postgraduate supervisors playing a major role in the guiding of students towards successful completion of their research. Without effective supervision of postgraduate studies, therefore, new knowledge will hardly ever be produced (Lategan, 2008:4).

UoTs are in the process of growing the research culture and at the same time, closing the nexus between teaching and research (Du Pré,

2010:19). If UoTs want to become more research active, they have to grow the doctoral qualifications of academic staff to assist with the required research output (Govender, 2011b). According to HESA (2014:6), only a third of all permanent academic staff members in South African universities currently hold doctorates and are thus eligible to supervise at doctoral level (DHET, 2015; SARUA, 2012:48). The challenge is that while South Africa needs more researchers at doctorate level, it is nonetheless a fact that a doctorate in itself does not ensure the capacity to supervise doctoral students. Consequently, a serious lack of sufficient capable supervisors has developed.

In addition to a lack of research culture, postgraduate supervision at universities in South Africa has to respond to the transformation of the HE landscape, in terms of which increasing numbers of previously disadvantaged students must be accommodated and enrolment and output of doctoral students must improve (see Chapter 4, Figure 4.1). It is a challenge to universities to provide adequate supervision: first, because of the lack of sufficient academics who are eligible in terms of capacity to supervise, and especially because the number of doctoral enrolments has doubled since 1994 (HESA, 2011:5). Neumann and Tan (2011:607) mention another challenge, which is the wider acknowledgement of increasing doctoral graduate employment outside of the academic world; people with doctorates are increasingly leaving the academic environment to pursue careers outside academe. There has been a mounting concern regarding the appropriateness of doctoral education, as studies show that fewer graduates are entering the academic profession (Treptow, 2013:83).

The challenge in terms of development of institutional capacities should not be limited to infrastructure, facilities and equipment, but should also be recognised in terms of teaching and research. In this regard, Lategan

(2009:57-58) states that a university concerns itself with knowledge, the training of professionals and educating people and that, if an institution is not engaged in teaching and research, it cannot qualify as a university. Universities therefore must pay special attention to improving academics' supervision skills and in so doing, increase the quality of teaching and learning. It is important to recognise that the essential attributes of an effective doctoral programme depend to a large extent on the commitment, energy, goal orientation, connections and enthusiasm of the leaders, namely the postgraduate supervisors (ASSAf, 2010:94). The importance of training for postgraduate supervisors to equip them with the necessary competencies and skills to lead students to success, as well as to deliver more graduates at doctoral level, is paramount for UoTs.

This study will describe the postgraduate supervision process in the context of UoTs in South Africa. The focus is on UoTs to assist them in the building of a research culture that will enable them to improve their postgraduate supervision practices. Postgraduate supervision within the institutional context of the Central University of Technology (CUT) will be used as a case study where applicable. This university was a former technikon and like all such institutions, it lacked research capacity amongst its academic staff and had a poor research infrastructure (Lues & Lategan, 2006b:108). The current and fundamental approach at CUT is directed at the development of a sustained, engaged and responsive research culture. Therefore, a need exists for the conceptualisation of a research framework that includes the pillars of discovery (basic research and innovation) and integration (applied research, technology transfer and commercialisation) (Dyason, Lategan & Mpaku-Ntusi, 2010:48), and it is anticipated that this study will make a contribution in addressing this need. The results of this study should be applicable to other UoTs as well.

The discussion in this section confirms the initial observation that a skills development programme will assist the UoTs to grow the quality of their postgraduate supervision. On the basis of two major arguments, namely the importance of a skills development programme and how it can support UoTs to grow the research culture, we can now identify the background to the research problem, the research problem, the aim of the study, research questions and objectives of the study, the information collection, processing and analysis and finally, the interpretation of the research.

1.7 THE RESEARCH PROBLEM, AIM, RESEARCH QUESTIONS AND OBJECTIVES OF THE STUDY

This study will present a thorough review of information from the body of literature available on postgraduate supervision. Studies and literature on doctoral education and postgraduate supervision nationally and internationally were reviewed to assess what and how this form of teaching is being understood.

1.7.1 Background to the research problem

In the literature surveyed, there seems to be an unspoken assumption that all academics are capable of adequately supervising doctoral students; after all, these academics went through the process themselves and should therefore know how to supervise! This assumption is problematic, especially given that students are exposed to different contexts, environments and styles of postgraduate supervision. It is therefore posited that undertaking research and being an effective postgraduate supervisor are not mutually inclusive.

The first important question is: What skills and knowledge does a postgraduate supervisor need to have to be successful in supervising doctoral students? A “skill” is the learned capacity to carry out a particular action, and two types of skills can be distinguished: general skills and specific skills. General skills may include time management, leadership skills and self-motivation, while specific skills could include scientific writing, planning skills, and verbal and non-verbal communication skills (Holzbaur *et al.*, 2012:1). Secondly, are postgraduate supervisors successful because of their subject knowledge or because of their personal experience of supervision – or both? Novice postgraduates can have in-depth subject knowledge, but may lack sufficient postgraduate supervision experience. The longer they are in academia, however, the more experienced they will become in supervising students. It is therefore important for the postgraduate supervisor to be acutely aware of factors that may affect postgraduate supervision.

In 2009, ASSAf commissioned a series of studies on the status of the doctorate, which led to the first publication on doctoral education in South Africa in 2010. This study looked at various factors concerning postgraduate supervision. ASSAf highlights the dismal rate of production of doctoral graduates (ASSAf, 2010:15; Grossman & Cleaton-Jones, 2011:111; Samuel & Vithal, 2011:76), and one of the recommendations is to escalate the production of high-quality doctoral graduates in South Africa. South Africa lacks the dense networks found between universities, state and business in other countries, which facilitate the movement of people, knowledge, expertise, experience and innovation between universities and the public and private sectors (HESA, 2014:6). With regard to this lack, postgraduate supervisors face many challenges, ranging from research outputs, transferable research skills, cooperation with business and industry, relevance of research, access to state-of-the-art equipment, retention of students, and the development of a new

generation of researchers (Dyason *et al.*, 2010:43). Therefore, a relevant skills development programme will help to resolve the challenges posed by inadequate postgraduate supervision.

1.7.2 The research problem

With the above perspectives in mind, the research problem for the study becomes apparent. Once an academic has received a doctoral degree, he/she may acquire sufficient subject knowledge (Edwards, 2002), but lack the required skills to supervise doctoral students. It is evident that a university typology will influence the university context. The postgraduate supervisor may have the theoretical knowledge of his/her subject, but not necessarily the knowledge of the science and practice of postgraduate supervision. This consists of knowledge of the process that includes aspects such as scholarship, critical thinking and interpersonal relationships. The postgraduate supervisor's scientific discipline, in other words, may not include the knowledge of how to teach and provide guidance in order for the student to understand and comprehend this process.

The developmental needs of postgraduate supervision and the context within which postgraduate supervision is performed, suggest the need for a skills development programme directed especially for novice postgraduate supervisors. Although this problem is evident in the entire university sector, the UoTs in particular could benefit from this programme. For more empirical evidence in this regard, see Chapter 2: 2.4.

1.7.3 Aim of the study

This study was a multi-disciplinary one in which management (development of skills, human resources development) and education (postgraduate supervision and training) are the specialised fields. The term multi-disciplinary implies the incorporation of the perspectives of several disciplines, but always in the exclusive service of the home discipline, which is management, in terms of which the skills of academics will be developed (Kokt *et al.*, 2012:141).

The overall aim of the study was to develop a skills development programme for postgraduate supervisors at UoTs in South Africa in order to train them to practise postgraduate supervision effectively. The purpose of this study was therefore to explore, through the literature, the skills and knowledge involved in the postgraduate supervision process and to develop a skills development programme based on the analysed and interpreted findings. The reasoning behind this was that such a programme could serve as a foundation to assist new postgraduate supervisors in the process of supervising doctoral students and therefore postgraduate supervision would be enhanced within the UoT sector. This is in line with finding 24 of ASSAf (2010:16), which states that more research is required to develop a comprehensive understanding of the dynamics of doctoral education in South Africa. During the postgraduate supervision process, the postgraduate supervisor must contribute to the academic development of the doctoral student. The dynamics of doctoral education is contained in the fact that only an academic with a doctorate can supervise doctoral students. The implication of this is that the number of academics who have PhDs (ASSAf, 2010:97) determines the number of potential postgraduate supervisors.

1.7.4 Research questions and objectives of the study

Based on this aim and purpose of the study it became clear that the following research questions needed to be answered:

- Which skills and knowledge are required of postgraduate supervisors to supervise doctoral students?
- What are the essential components that should be included in a skills development programme for postgraduate supervisors?
- How can a skills development programme for postgraduate supervisors be created and presented to academic staff at UoTs?

To be able to answer the research questions and thereby achieve the aim of the study, the following objectives were established:

- To conduct a literature study to identify the skills and knowledge that are required of postgraduate supervisors to supervise doctoral students.
- To identify the essential components to be included in a skills development programme for postgraduate supervisors by means of a literature survey.
- To develop a skills development programme for postgraduate supervisors at a UoT based on the analysed and interpreted findings.

1.7.5 Information collection process

Information was collected by means of a literature survey. Sources included books by well-known authors who are experts in supervision of postgraduate students (Mouton, 2001; Lategan, 2008; Lues & Lategan, 2006a; James & Baldwin, 1999); journal articles; websites of other South African and international HEIs (Durban University of Technology (DUT),

Tshwane University of Technology (TUT), Cape Peninsula University of Technology (CPUT), Vaal University of Technology (VUT), Mangosuthu University of Technology (MUT) and a commissioned series of studies on the status of the doctorate by the ASSAf (2010), as well as documentation of SAQA (2012).

1.7.6 Information processing

Documents studied were scanned and relevant sections were marked. These were then read carefully and categories were indicated. The relevant sections were photocopied and once again ordered in categories. The material was paraphrased and summarised in different computer files according to the categories.

1.7.7 Information analysis and interpretation

In this study content analysis was used to examine the contents of the body of literature available on the research topic. During the analysis process the researcher read carefully through the information, scrutinising the body of information in search of patterns and themes reflected by the literature (Leedy & Ormrod, 2014:100). Information was compared, and generic opinions and views were selected for the researcher to form a clear understanding of the research findings, views and opinions on postgraduate supervision, as revealed in the literature. This approach enabled the researcher to identify patterns and themes. The most prevalent themes were then used as a framework for the skills development programme for postgraduate supervisors.

1.8 RESEARCH METHODOLOGY

Research is based on underlying philosophical assumptions about what constitutes research and which research methods are appropriate for the development of knowledge in a given study.

There are two major research paradigms, namely the *quantitative* and *qualitative* paradigm. These paradigms differ in their philosophical underpinning, their mode of enquiry, methods, procedures and models they utilise to investigate certain phenomena (Burns & Burns, 2008: 13).

The quantitative paradigm aims to measure the social world objectivity, to test hypotheses, to predict and control human behaviour. The qualitative paradigm refers to research that elicits participant accounts of meaning, experience or perceptions. The qualitative researcher is therefore concerned with understanding rather than explanation. Therefore, it rests on the assumption that valid understanding can be gained through accumulated knowledge acquired at first hand by a single researcher (Fouché & Delport, 2002: 79).

This study will follow the qualitative paradigm. The reason for this is that this approach best identifies general knowledge patterns and themes available related to the topic in the existing knowledge basis. These patterns and themes will assist to form a perspective of the challenges in postgraduate supervision. A framework for postgraduate supervision training will be developed from this knowledge basis.

The following comments inform the way qualitative research was used in this study. Babbie (2007:378) describes qualitative research as “a non-numerical examination and interpretation of observations, for the purpose of discovering underlying meanings and patterns of relationships”. Salkind

(2006:201) also refers to the statement that some people consider qualitative research as research without the numbers. Qualitative studies usually aim for depth rather than "quantity of understanding" (Henning, Van Rensburg & Smit, 2004:3), whereas Welman, Kruger and Mitchell (2005:188) describe qualitative research as an approach rather than a particular design or set of techniques. Maree (2007:51) states that it is not the breadth of the information that is taken note of as in quantitative research, but the quality and depth of information.

Qualitative researchers do not formulate hypotheses and gather information to prove or disapprove them. Generally, information are gathered and then synthesised inductively to generate generalisations (McMillan & Schumacher, 2010:323). The qualitative researcher aims to gather systemised information and to interpret it through analysing sources of the literature regarding the topic (Leedy & Ormrod, 2014:141). Researchers place their findings in the context of the general body of scientific knowledge (Babbie & Mouton, 2001:565). This study's literature review includes the theoretical perspectives and previous findings related to postgraduate supervision. The researcher critically reviewed existing literature to discover the various dimensions of the issue under investigation. The literature study therefore was a review of existing scholarship (Mouton, 2001:87), and sources included books, articles from scientific journals and articles from websites. The researcher also used a number of keyword searches on various databases such as Social Science Citations, TechWiz Library Catalogue, EBSCOhost, SA e-Publications and Google Scholar.

Through the literature review, the researcher could identify specific core issues on postgraduate supervision that needed further elaboration and substantiation for this study. Literature is an acknowledged knowledge basis and being engaged with the literature helps the researcher to

advance arguments that others will recognise and accept. According to Trafford and Leshem (2008:70), knowing the literature has intellectual and methodological benefits in providing new insights on issues through the synthesising of ideas and reworking of research evidence. When engaging in research, literature is used to describe a specific body of knowledge and to establish the potential scholarly provenance. Trafford and Leshem (2008:76) stated that by summarising, synthesising and analysing the literature, conclusions about the literature and the research could be drawn. From the literature key concepts were derived to develop the framework for the skills development framework (see Figure 1.1 below). The conceptual framework provided a theoretical classification of what the researcher intended to investigate. Furthermore, it enables the reader to be clear what the research seeks to achieve.

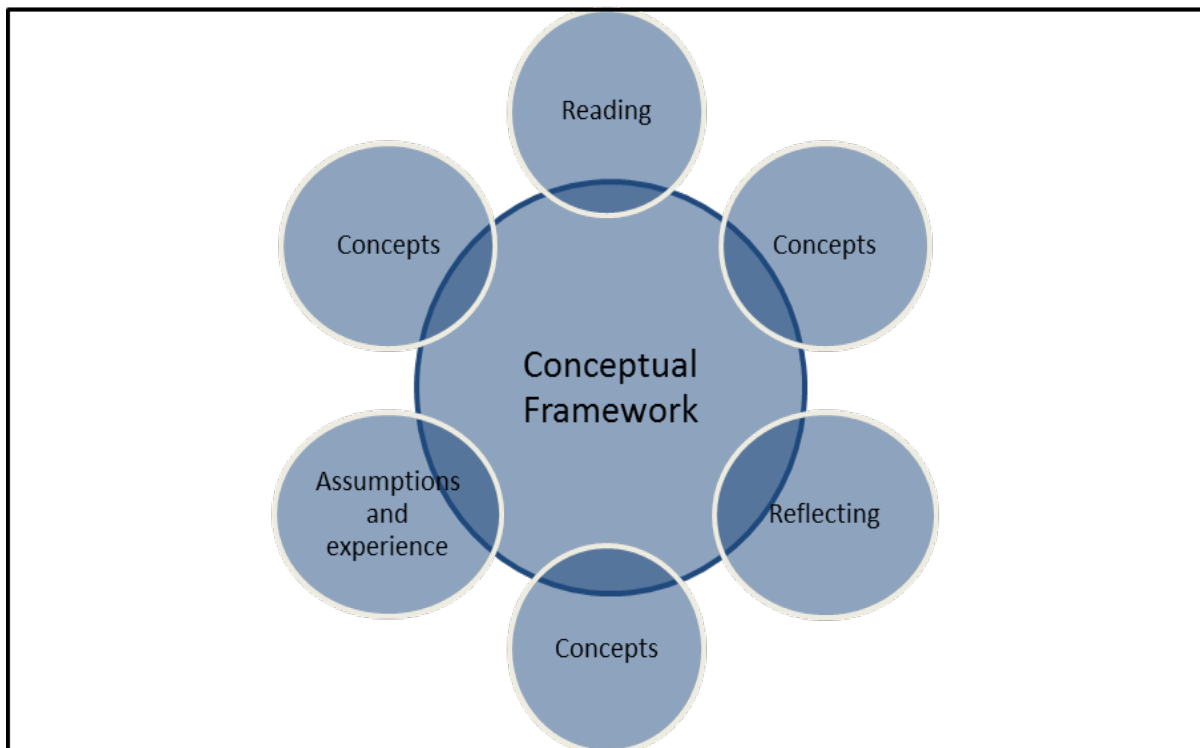


Figure 1.1: Sources for the conceptual framework (Trafford & Leshem, 2008:75)

According to Mouton (2001:86), the literature review can either be a study on its own or as a first phase as an empirical study. In addition, the literature review helps to avoid duplication and unnecessary repetition. The interpretation of information rather than the sharing of information is important and can be done through the available literature on the topic. By determining what was done on a specific topic, the researcher can decide on a certain course of action, for example to choose another problem or choose to replicate the study. Many disciplines fail to give replication its due as a legitimate and worthwhile research function. According to Fouché and Delpont (2002:128), a researcher may identify some deficiencies in previous research and thus argue that the proposed study will meet the proven need. For this study, the researcher decided to use the literature review as an acknowledged knowledge basis for the research.

In addition, it is important to recognise that researchers have a responsibility to orientate themselves to what benefit can the creation of new knowledge bring to impoverished communities, both locally and nationally. This approach can be referred to as 'use-oriented research'. It is an important component of the research mission of a university and an extension of an academic's use-oriented research for the benefit of external communities. User-oriented scholarship can be labelled as engaged scholarship. Engaged scholarships can be defined as scholarship rooted in the extension of an academic's use-oriented research for the benefit of external communities. The main purpose of engaged scholarship is to do research that will bring about new social innovation, which includes services, products and new ways of thinking (Johnson & Cooper, 2014:97-98).

The original intention of the study was to do a survey on postgraduate supervision by developing a questionnaire to explore the challenges that

postgraduate supervisors were experiencing and to identify the skills needed to supervise doctoral students. During the course of investigating material for the study, the ASSAf (2010) document was published. This was the first comprehensive report on doctoral training in South Africa, informing the need to develop skills development programme. One of the concerns was the shortage of suitably qualified supervisors at UoTs (ASSAf, 2010:97). ASSAf (2010:111) was able to provide substantive policy advice as to what was needed to increase the number and quality of doctoral graduates to meet the demands of the knowledge economy. Invaluable information about the challenges and opportunities of South African postgraduate supervision is provided in this publication. This is supplemented by a wide range of studies separately and jointly conducted by the Centre for Higher Education Trust (CHET) and Centre for Research on Science and Technology (CREST). Relevant studies are those of Botha (2015), Mentz (2013), Mouton (2009), Mouton, Boshoff, James & Treptow (2009), Mouton, Boshoff, James and Treptow (2012). The literature was deemed sufficient to eliminate the necessity of a separate survey on the same subject matter.

1.9 SIGNIFICANCE AND VALUE OF THE STUDY

The present study will contribute in a number of ways:

- First, this study intends to provide postgraduate supervisors with skills related to postgraduate supervision processes. In view of the fact that postgraduate supervisors follow their own supervision practices, this report intends to provide postgraduate supervisors with necessary guidelines.
- Second, this study intends to contribute to the existing literature on postgraduate supervision, particularly concerning supervisory skills. The challenge when researching postgraduate supervision is that

supervision differs among universities, faculties, departments and even postgraduate supervisors. Furthermore, processes of postgraduate supervision differ across disciplines and involve different social relations.

- Third, the researcher will make the skills development programme for postgraduate supervisors available to postgraduate supervisors, and to a wider audience through publication and presentations at conferences.

1.10 THEMATIC OVERVIEW OF THE STUDY

The study report consists of the following chapters:

In Chapter 1, the background to the study is provided. This chapter serves as a conceptual framework to the study in which the background, the overall goal, the aim and the objectives of the study are discussed. It further determines the significance and value of the study for postgraduate supervisors.

Chapter 2, understanding postgraduate supervision, contains an overview on postgraduate supervision, which includes the changing context of HE, the enhancement of scholarship, the complexity of postgraduate supervision, as well as teaching and learning. The roles and responsibilities of postgraduate supervisors in the relationship between postgraduate supervisors and postgraduate students, together with retention, attrition, planning and managing the postgraduate supervision process, are explained.

Chapter 3 explores the institutional partners in the postgraduate supervision process, namely the postgraduate supervisor, the postgraduate student and the university. A simple explanation of the skills the postgraduate supervisor needs to have is given. The relationship of the postgraduate student with the postgraduate supervisor is analysed with special reference to the expectations, research skills and the development of the postgraduate student. An important challenge for the student is his/her endeavour to master research skills and to take ownership of the research topic. The third partner, namely the university which provides the infrastructure without which the other two partners in this relationship cannot function, is discussed. Each partner plays a specific role in the postgraduate supervision process.

Chapter 4 discusses policy issues influencing the process of postgraduate supervision. The origin of the doctorate in general and the doctorate at UoTs, together with the development of the relationship between the state and universities, with special reference to the policies of the CHE in South Africa in the HE environment, is explained.

Chapter 5 reflects the outcome of the study, namely a skills development programme for postgraduate supervisors at UoTs. This programme is the result of a careful analysis of the literature concerning postgraduate supervision.

Chapter 6 presents the main conclusions of this study and provides recommendations for postgraduate supervision. Figure 1.1 illustrates the layout of the study.

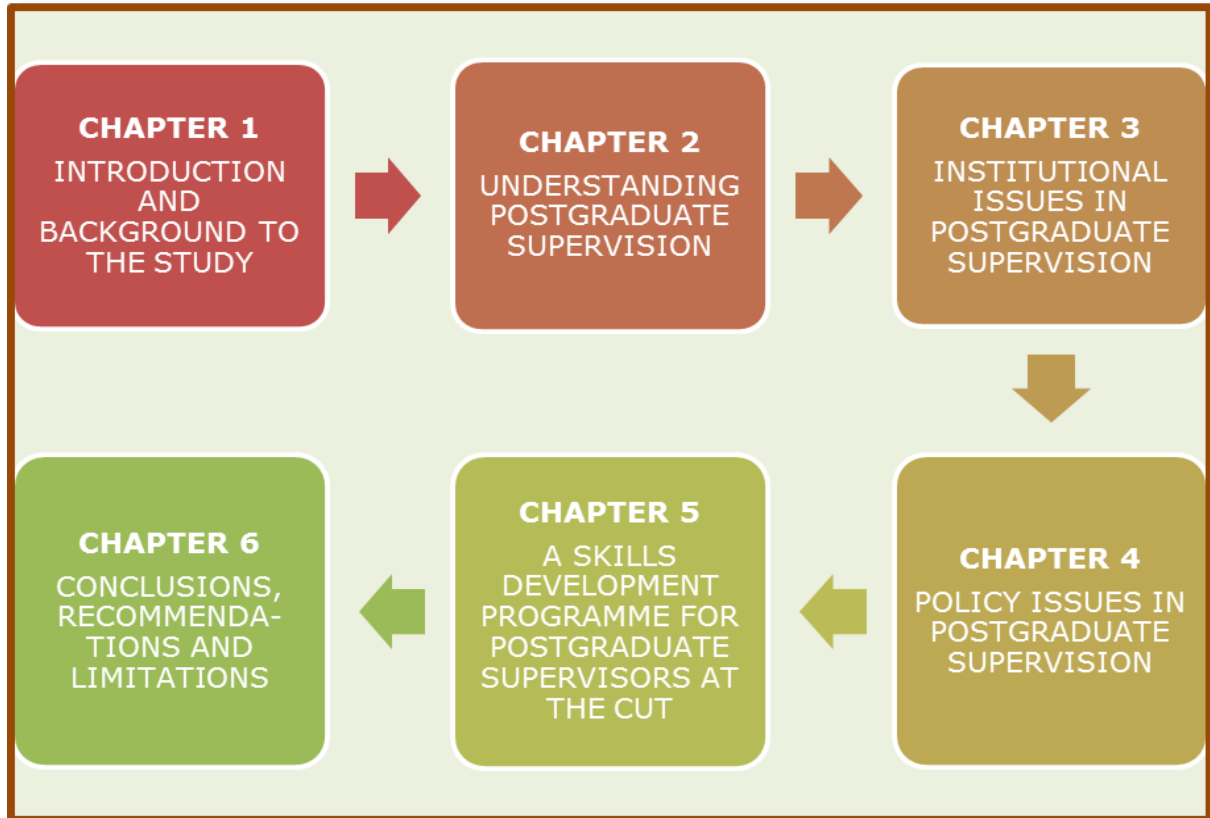


Figure 1.2: The layout of the study

1.11 CONCLUSION

Chapter 1 addressed the multi-dimensional approach and context to postgraduate supervision by focusing on the following four issues:

- The nature of postgraduate supervision.
- The academic expectations of postgraduate supervision.
- The skills of the postgraduate supervisor.
- University typology challenges to postgraduate supervision.

Postgraduate supervision is a multi-disciplinary field of study in its own right. First, this process deals with the interaction between the postgraduate supervisor, the doctoral student and the university. It requires certain skills to contribute to new knowledge and is a teaching and learning endeavour where administration and maintaining good

relations are critical. Second, it is not only an academic matter, but is influenced by societal and global developments. Universities rely on research outputs; therefore, there is much pressure on academics to meet their institutions' research goals. Clearly, there has been a shift in the way that new knowledge is produced at universities. There is a drive to escalate the number of doctorates, which will have a direct impact on the knowledge economy and economic growth.

UoTs, as part of the university typology in South Africa, have very specific needs with regard to the development of a skills development programme for postgraduate supervision, because the knowledge generated by researchers at UoTs is, for example, infused into industry and businesses. There are expectations of UoTs regarding the applied research generated by UoTs from which industry and businesses can benefit. However, to generate new knowledge, postgraduate supervisors need to have skills and knowledge on how to supervise doctoral students. UoTs need to be vigorous in the provision of these skills to develop postgraduate supervisors. The outcome of the study, namely a skills development programme for postgraduate supervisors, addresses this need (see Chapter 5).

CHAPTER 2

UNDERSTANDING POSTGRADUATE SUPERVISION

2.1 INTRODUCTION

Concerns have been raised in accredited journals, conference proceedings and books on postgraduate supervision amid transformation and changing environments in HE in South Africa (DHET, 2015:12; Lessing & Schulze 2002:139; Stephens, 2014:537; Van der Westhuizen & De Wet, 2003:185).

Some of the challenges identified are:

- a) The need for the provision of quality postgraduate supervision.
- b) The need for an increase in the production of doctorates in South Africa.
- c) Government's request to strengthen research and knowledge creation to promote innovation, economic development and growth.
- d) Accountability of universities regarding the implementation of policies and regulations for each stage of the postgraduate supervision process.
- e) Funding of universities linked to progression and throughput rates.

To understand the above-mentioned challenges pertaining to postgraduate supervision, an overview of the literature on postgraduate supervision will be presented (see 2.2). The aim is to contextualise postgraduate supervision as a complex teaching process leading to learning via the research practice (see 2.3). This view has consequences for postgraduate supervision, because it necessitates a deeper

understanding about how postgraduate supervisors perceive their roles and responsibilities regarding their supervision of doctoral students. The different roles and responsibilities of postgraduate supervisors (see 2.5), which also include the relationship between the doctoral student and the postgraduate supervisor (see 2.6), will be discussed, and the importance of the development of the postgraduate supervisor (see 2.7) will be examined. Finally, retention and completion will be discussed (see 2.8) and planning and managing the postgraduate supervision process (see 2.9). This discussion could inform a framework for the design and development of a skills development programme for postgraduate supervisors (see 2.10 and Chapter 5).

2.2 DOCTORAL EDUCATION: LEARNING TO ENHANCE SCHOLARSHIP

Doctoral studies are a fundamental component of university life (Buttery, Richter & Filho, 2005:7) and are known by a number of interchangeable terms, such as postgraduate education and research education (Pearson, 2005:119). Initially, not much attention was paid to doctoral education, either by policy makers or by the research society (Herman, 2011a:164), but over the past fifty years it has shifted from being a peripheral activity to one occupying a more central role, both institutionally and nationally (Neumann, 2003:4; Peterson, 2007:476; Wolhuter, 2011:126).

Boud and Lee (2009) point out how the literature in the field of doctoral education has seen a shift from doctoral *research* to doctoral *education*, thus moving the focus from the final *product* (the research output in the form of a thesis) to the *process* of producing the research. This shift has a number of implications for the postgraduate supervision process. First, it

gives postgraduate supervisors more responsibility, as they become educators rather than expert advisors to the doctoral student. Next, it supports the view of doctoral education as a process whereby doctoral students produce a thesis that demonstrates that they have the ability to conduct independent research. In this regard, Morris, Pitt and Manathunga (2011:1) state that the major aim of doctoral education is to provide training in a manner that encourages the transformation of doctoral students into independent researchers. It is clear that postgraduate supervisors need to be informed about the processes involved in postgraduate supervision (Phillips & Pugh, 2000:177) to move the emphasis from the final *product* to the *process of producing* the product.

As doctoral education in essence includes research training, the doctoral student should receive training and guidance from the postgraduate supervisor in conducting research and producing new knowledge (ASSAf, 2010:350; Casey, 2009:219; Gilbert, 2004:299; Govender, 2011b:1344; Lues & Lategan, 2006a:28; Newbury, 2002:149). According to Backhouse (2009:12), different models of doctoral education lead to different experiences and different opportunities to learn. For example, doctoral students in the pure sciences are more likely to work as part of a team, which gives them access to resources and support, and the opportunity to gain experience in large combined projects. Doctoral students in the humanities tend to work more in isolation and manage the research on their own under the guidance of a supervisor. All of these students, however, must be capable of transferring their intellectual and technical expertise to a wide-ranging global context. It is therefore important to recognise that global changes have influenced the postgraduate landscape in HEIs. Transition in the modes of learning are noted (Taylor & Beasley, 2005) from the traditional forms of learning to the current demand for students who can perform and contribute to the knowledge economy

characteristic of the globalised era. Doctoral education is not an isolated activity and needs to be understood from a global perspective and applied to the local context.

Research training of doctoral students must extend beyond the mere preparation for doing research. Crossouard (2008:52) states that the learning experience during doctoral studies has a powerful impact on individuals' views of themselves, both during their studies and after they have obtained their degrees. This learning process significantly influences doctoral students' self-worth and their professional ambitions (Leonard, Becker & Coate, 2005:145). Pearson (2005:119) makes a valuable contribution to the deliberations about doctoral education by stating that it opens up other concerns, such as the complex interactions with the university and research policy and practice, changes in knowledge production, variations in research practice across disciplines and the status of doctoral students. Thus, more profound intellectual issues must be addressed during the process.

It is important to create an environment that offers a variety of learning opportunities for supervisors. Postgraduate supervision development requires a continuous support system for academics to be kept informed regarding improved postgraduate supervision (Howe, 2003:485). Being a true scholar entails more than being an excellent researcher - Boyer (1990:16) makes the following statement in this regard: "Surely, scholarship means engaging in original research. But the work of the scholar also means stepping back from one's investigation, looking for connections, building bridges between theory and practice, and communicating one's knowledge effectively to doctoral students". Thus, apart from scholarship, theoretical and conceptual learning also must take place during doctoral education, as this enhances the preparation of the scholar (Shulman, 2010:B10), and is regarded as the first step towards

an academic career and the development of a professional scholarly identity (Baker & Pifer, 2011:5; Calma, 2007:92; Fillery-Travis, 2014:614). An issue which is commonly raised about doctoral education, is the question of whether the experience of earning the degree will prepare doctoral students for the professional and scholarly roles they will play (Shulman, Golde, Bueschel & Garabedian, 2006:25-26). Therefore, it seems that the postgraduate supervisor has the task of preparing students to develop a scholarly identity, which does not refer merely to research skills, but includes theoretical and conceptual learning too.

Bringing theoretical and conceptual learning into the debate raises the matter of the curriculum. Gilbert (2004:301) maintains that doctoral education tends to focus more on the processes of postgraduate supervision and not sufficiently on the content and outcomes of doctoral teaching-learning. McWilliam and Singh (2002:4) note that the conventional association of curriculum with coursework might lead to the assumption that the curriculum applies only to coursework degrees, but guiding individuals in research also contains curriculum-related elements. The content, concepts, meanings, purposes and the intended outcome of the research, known as the doctoral curriculum, is the systematic articulation of experience in order to produce the intended outcome of doctoral education (Gilbert, 2004:303). A curriculum for postgraduate programmes cannot be planned in the same way that it is done for undergraduate programmes – where it is planned and executed punctiliously, as it applies to a specific group of students who all strive to achieve the same outcomes. A doctoral curriculum needs to be adaptable, depending on the context of the research and the research training that the specific individuals require. Postgraduate supervisors therefore need to understand that teaching doctoral students to do research is not something that can be left to develop by itself, but that it is part of a curriculum, albeit a more flexible type of curriculum.

In the present context of the doctorate in South Africa, Backhouse (2009:120-123) identifies three different views of the doctorate, namely the scholarly view, the labour market view, and the on-going development view. These views bring about knowledge (the product) and a particular kind of graduate (the person). Each of the views has some commonalities with the others and infers different understandings of doctoral education. Table 2.1 summarises key characteristics of the three views of the doctorate, which are present in the South African context.

Table 2.1: Three views of the doctorate in South Africa (Backhouse, 2009:121)

VIEW	SCHOLARLY	LABOUR MARKET	ONGOING DEVELOPMENT
Product or output of doctoral education	<ul style="list-style-type: none"> • New knowledge • Independent scholar 	<ul style="list-style-type: none"> • A highly-trained human resource • Knowledge for the knowledge economy 	<ul style="list-style-type: none"> • A critical intellectual • New knowledge
Overall goal	<ul style="list-style-type: none"> • Increasing human knowledge 	<ul style="list-style-type: none"> • Supplying human resources to the labour markets 	<ul style="list-style-type: none"> • Making the world a better place
Assumptions	<ul style="list-style-type: none"> • Only a certain type of person is research material • PhD candidates already have research skills • Knowledge (of a certain kind) 	<ul style="list-style-type: none"> • People have identifiable careers which need identifiable skills • PhD comes near the beginning of the career • Knowledge must 	<ul style="list-style-type: none"> • All people have the ability to develop intellectually • PhD comes in at various points in people's careers • Personal development

	is valuable	be useful or profitable	contributes to social development
Discourses	<ul style="list-style-type: none"> • Modernist • Scientific • Rational man 	<ul style="list-style-type: none"> • Liberal • Market-driven • Knowledge economy 	<ul style="list-style-type: none"> • Critical • Social responsibility
Concerns	<ul style="list-style-type: none"> • Identifying new knowledge • Identifying people who are "research material" • Ensuring originality and independence 	<ul style="list-style-type: none"> • Identifying likely careers • Identifying necessary skills • Accreditation and certification • Efficiency 	<ul style="list-style-type: none"> • Facilitate personal development • Allow creative engagement with knowledge

Table 2.1 illustrates that the commonality of the three views of the doctorate is to produce new knowledge, but that they differ in the weight they assign to the outcome and to their focus (Backhouse, 2009:121). The scholarly view is mainly for researchers who are more inclined to do basic and applied research. The labour market view wants to see highly trained human resources to prepare them for careers in response to market requirements. The on-going development view (Backhouse, 2009:120-123) looks at the production of new knowledge and is concerned with personal and academic development of the student towards becoming a critical intellectual. In this regard, Lovitts (2005:138) states that students must be prepared for a lifetime of intellectual inquiry that manifests itself in creative scholarship and research. Though the common denominator of all doctorates is new knowledge, the degrees still

have to comply with the requirements of the NQF (SAQA, 2012) and the Higher Education Qualifications Sub-Framework (HEQSF) (CHE, 2013b).

In this section the researcher has pointed out the shift from “the process” to “the product”. This has an implication for doctoral studies which has to be informed by doctoral education. Regardless of the approach, the studies should be embedded in scholarship. This will contribute to a quality research output that will impact for example on business and industry. From this discussion of doctoral education as a learning process to enhance scholarship, it is clear that postgraduate supervisors as educators with specific subject knowledge must be capacitated and prepared in the mentioned components of doctoral education. In terms of the postgraduate supervision process, there is a real concern in the literature regarding the quality, ability and readiness of the postgraduate supervisor to execute the different aspects of doctoral education to enhance scholarship. Having provided an overview of the enhancement of scholarship during doctoral education, the next section will look into the complexity of the postgraduate supervision process.

2.3 THE COMPLEXITY OF THE POSTGRADUATE SUPERVISION PROCESS

For me, supervision is an intriguingly ambiguous object of research and practice: it is not only implicated in the liminal space between doctoral studentness and independent scholarliness, but it is also flavoured with intimacy and personality as much if not more than it is framed by institutional expectations and regulations (Grant, 2009:125).

The abovementioned views of supervision are indicative of the complexity of postgraduate supervision. It is widely assumed that postgraduate supervision is being compelled to take on a new role due to the changing nature of doctoral education.

If one considers the doctoral education value chain, then it is evident that one should have an understanding of the complexity of the postgraduate supervision process. To comprehend this one needs to study trends such as increased postgraduate enrolments, diversity of doctoral students, advanced level of teaching, lack of structure in the postgraduate supervision process, an uncertain and difficult process, and a lack of skills among doctoral students. These will be discussed in more detail.

i) Increased postgraduate enrolments

Postgraduate supervision has become more challenging in recent years, partly due to the increase in doctoral student enrolments. From 2000-2012, doctoral graduates increased from 834 to 1 879, a total growth of 125% (Cloete *et al.*, 2015:2) and in 2013, 2051 doctorate graduates were produced at HEIs (DHET, 2015:16). According to the DHET (2013:30), the goal is to have a head-count enrolment of 1.6 million students in HEIs in South Africa by 2030. This will naturally result in a rise of doctoral student numbers, but if the number of completed doctorates does not increase in relation to the envisaged increase in undergraduate enrolments, the shortage of able supervisors will increase too. In addition, a diversity of universities is needed to accommodate the needs of a large and still increasing (in numbers and diversity) student population. This planned expansion of access does not only require places being made available in education and training institutions; education and training must also be

affordable for potential students (DHET, 2013:9). Consequently, postgraduate supervisors must supervise more doctoral students than they did a few years ago and this increase poses specific challenges both to HEIs and to postgraduate supervisors. Examples of the challenges faced include the following:

- A shortage of academic staff with doctorates who are eligible to supervise (ASSAf, 2010:38; DHET, 2012:46).
- Postgraduate supervisors' lack of time to supervise large numbers of students, and at the same time having to teach undergraduate students and doing research for publication outputs (ASSAf, 2010:79; Mouton *et al.*, 2015:11).
- Doctoral students' lack of time and/or funding (ASSAf, 2010:80; Centre for Research on Science and Technology (CREST), 2009:18; Khodabocus, 2016:25).
- Completion time of studies of doctoral students (ASSAf, 2010:40).
- Pressures to deliver more doctoral students (DHET, 2012:40).

Postgraduate supervision is not a process of guiding and controlling large numbers of doctoral students: it is rather a process of guiding individual students. The individuality of each supervision situation challenges postgraduate supervisors, as each doctoral student and each thesis topic requires a different kind of individualised attention. This implies that postgraduate supervisors need to be prepared to have the skills to work on an individual basis with each one of their doctoral students. To balance this type of individualised education with their myriad of other responsibilities already poses a serious challenge for postgraduate supervisors and with increasing student numbers this challenge may easily get out of hand if not managed with insight and careful planning.

ii) Diversity of doctoral students

In a diverse country like South Africa, it is self-evident that increased enrolment will come with more diversity in the doctoral student population. Diversity among students covers a wide range of attributes such as age, language, as well as ethnic and cultural differences.

Apart from the importance of the supervisory relationship, there is often little formal institutional provision to support postgraduate supervisors and doctoral students to establish effective educational relationships (Lamm, Clerehan & Pinder, 2007:1166). In fact, the necessity of adaptability in the way that postgraduate supervisors supervise their doctoral students is important, and well-established support groups might help to provide a supportive environment to postgraduate supervisors while increasing research output on a regular basis – this could assist in obtaining long-term research sustainability (Christiansen & Slammert, 2005:1048). Social constructs in South Africa have undergone enormous changes over the past decade or two and supervisors need support to make appropriate paradigm shifts to accommodate the diversity in the student population. It is clear that systemic and sustained institutional support for postgraduate supervisors for successful postgraduate supervision is crucial.

Postgraduate supervision has become more important in academic departments of universities with the increased diversity of doctoral students and also postgraduate supervisors, as it is essential to have suitable supervisors to match the needs of different students (Baptista, 2011:3576; Boud & Tennant, 2006:294; Boud, Brew, Dowling, Kiley, McKenzie, Malfroy, Ryland & Solomon, 2014:443; Firth & Martens, 2008:279; Roed, 2012:32). Potential doctoral students come from a considerable pool of students with varying geographic, ethnic and

cultural backgrounds (see Chapter 3: 3.3.4; 3.5). With the varying levels of preparedness and readiness for research, the relationships between postgraduate supervisors and doctoral students are becoming increasingly complex (Doleriert, Sambrook & Stewart, 2012:733; Gatfield, 2005:312; Hugo, 2009:703; Lumadi, 2008:25; Mapasela & Wilkinson, 2005:1239; McCormack & Pamphilon, 2004:23; Pearson & Kayrooz, 2004:99). Since postgraduate supervisors and doctoral students may differ in terms of their needs, these relationships are full of individualities and uniqueness (Wadee *et al.*, 2010:71), for example different cultural lifestyles, family needs and work commitments within the research environment (Van der Westhuizen & De Wet 2003:186).

iii) Advanced level of teaching

Postgraduate supervision is “the most advanced level of teaching (see 2.5) in our education system (and) certainly one of the most complex and problematic”, and requires multiple knowledge bases (Bak, 2012:81; Connell cited by McKinley, Grant, Middleton, Irwin & Williams, 2007; Severinsson, 2012:216). Postgraduate supervision is not uniform across academic disciplines (Bitzer, 2011:856; Rau, 2004:88), and differences often are discovered in different ways as the research proceeds (Winberg, 2009:208). Therefore, although supervision in different disciplines may take a certain pattern, once the topic and methodologies have been identified, differences may come to the fore. The so-called coursework may focus on more generic aspects of studies such as academic writing skills, literature searches, identifying a topic, formulation of hypotheses and research questions, methodologies, the study proposal and the layout of the report (Hay, 2008:9). Once this has been done, more individualised supervision is required.

Although a fair amount of literature exists on supervision of doctoral students (Lategan, 2008; Lues & Lategan, 2006b; De Vos, 2002; Rossouw, 2003; Henning *et al.*, 2004) and a number of staff development courses at universities include this as a theme, a uniform set of guidelines for supervision is not contained in any specific course, and this contributes towards the complexity of the supervision process. Semeijn, Semeijn and Gelderman (2009:211) maintain that in literature and in academic practice generally, however, there appears to be a severe lack in terms of how postgraduate supervision should be carried out or organised by academic departments. Programmes that focus on increasing the effectiveness and confidence of academics to supervise doctoral students should be tailored to those that have yet to develop experience in postgraduate supervision (Callaghan, 2014:414). Academics may not perceive supervision as a teaching responsibility. This disregard for developing pedagogical expertise during graduate studies results in academics having little or no opportunity to learn how to support their own doctoral students (Golde & Dore in Abiddin, Ismail & Ismail, 2011:210).

This complex “teaching” role (Evans & Pearson in Bitzer, 2010:29) may include the roles of master and mentor, or the role might shift to ‘critical friend’ when doctoral students are highly experienced in their disciplines and/or professions. Lee (2008:272) alludes to postgraduate supervisors as performing the role of ‘gatekeepers’, choosing which gates to open, particularly in the early stages of the doctoral student's studies. The effective postgraduate supervisor will be the one who excels in flexibility in every supervision situation (Lee, 2008:274). Postgraduate supervisors need to be able to adapt to the needs of a particular student being supervised. Literature also takes a strong view on the importance of experience in postgraduate supervision – although guidelines and training are essential, to become excellent

supervisors, experience and practice are required as well. Therefore, in all cases the postgraduate supervisor has to guide the doctoral student through the scholarly network to examination, ensuring that he/she completes the research (Evans & Pearson in Bitzer, 2010:29).

iv) Lack of structure in the postgraduate supervision process

Another challenge regarding the postgraduate supervision process is the lack of structure. Most institutions do not have arranged schedules for postgraduate supervision, especially for the doctorate. It is the responsibility of the supervisor and the doctoral student to create structure by setting tasks, determining deadlines, and scheduling supervision meetings (Backhouse, 2009:219).

Project planning and management is essential to bear up against this challenge (see 2.9). The challenges of a lack of structure and a lack of time (and this is applicable to both supervisor and student) go hand in hand. The less structure, the slimmer the chances are that the student will be able to complete the study in the expected time. Once doctoral students have enrolled for a doctorate, they do not always realise the importance of a structured plan and good time management to the success of their endeavour. Therefore, it is essential that the supervisor guide the student to plan the project. Project planning takes place when the study proposal is prepared, and involves, *inter alia*, resource planning, planning one's time, planning how the information will be managed, and planning for funding (Holzbaur *et al.*, 2012:38; Muller, 2008:108-110).

In a study by Kam (cited by Hemer, 2012:1) on the style and quality of postgraduate supervision, the total supervision time (i.e. the number of meetings combined with the time duration of the meetings)

did correlate with the quality of postgraduate supervision. Postgraduate supervisors need to remind themselves about the importance of planning, as this will give structure to the process. They should encourage their students to create structure to ensure successful completion of the research.

v) Uncertain and difficult process

Grant (2005b:337) calls postgraduate supervision an 'uncertain and difficult' process and it is also referred to as a 'problematic issue', while Olivier (2007:1127) adds to this by saying that it is a 'complex, seemingly endless journey'. One reason for postgraduate supervision to be 'difficult' is that, in comparison with the group feeling that reigns in undergraduate teaching and learning, a certain loneliness is inherent in the process (Donnelly & Fitzmaurice, 2013:2). This may cause postgraduate supervisors and their doctoral students to experience alienation and frustration. Research study groups or support networks are one way in which this can be countered as these groups provide doctoral students the opportunity to discuss their projects and problems or fears with peers (Van der Linde, 2012:66). Such groups are useful and should be encouraged as problems such as isolation, stress and thoughts of discontinuing studies may be addressed in a safe environment in these groups. Supervisors can assist in setting up such groups in a department or faculty, or among groups who follow the same or similar research approaches (Holtzhausen, Maasdorp & Van der Linde, 2008:131).

It is important that the approach of the supervisor and the relationship within the process should enable the doctoral student to persevere to the point of becoming an independent researcher (Gardner, 2008a:326; Morris *et al.*, 2011:1). Green (2005:154) describes

postgraduate supervision as a 'field of identification', arguing that the transformational processes taking place in the supervisory space are about negotiating and re-positioning identities between doctoral students and postgraduate supervisors. Postgraduate supervision is thus the key in transferring the academic culture of teaching, research and scholarly communication to later generations (Strauss, 2012:1). It is important to keep this in mind when reflecting on postgraduate supervision.

vi) Lack of skills among doctoral students

ASSAf (2010:40) indicates that a major limitation of traditional systems of doctoral research training is seen by critics (Murray, 2000; Nerad, 2004:183) to be doctoral students' lack of key professional, organisational and managerial skills, which are required for successfully completing the research process. Some students have already mastered research skills, are independent and can work autonomously; but there are also those who need clear direction, much encouragement and detailed feedback. Therefore, the starting point for each student is different and the supervision process will differ accordingly.

In order to cope with the complexity of the postgraduate supervision process, it is evident that postgraduate supervisors should be skilled researchers, managers, educators and mentors. Lategan (2008:19-20;39) lists a series of responsibilities of supervisors, which include, *inter alia*:

- being informed as to the latest developments in their field of study;
- fostering research values;

- administering and managing the supervision process (e.g. scheduling meetings with the students, ensuring student access to resources, monitoring student progress, keeping record of consultations and meetings); and
- providing guidance in regard to the research process, institutional and disciplinary requirements, expected standards, time management, preparation of the report and other relevant matters.

In view of the complexity of the postgraduate supervision process at UoTs (see Chapter 1:1.6), it is evident that training for postgraduate supervisors cannot be avoided. Postgraduate supervisors may be skilled in subject knowledge, but they are not necessarily well informed about, or equipped for, the postgraduate supervision processes (Lessing & Lessing, 2004:73). Therefore, they should be provided with information on the science and practice of postgraduate supervision to empower them. This empowering process should be a continuing endeavour, as the field of HE is continuously evolving and new and better methods and ideas are constantly emerging. Institutions and HE authorities also regularly change or expand their requirements, rendering the continuous academic development essential for postgraduate supervisors to remain informed (McCormack & Pamphilon, 2004:23; Miller, 2007:29).

Becoming and staying informed in the light of the sustained complexity of postgraduate supervision involves much time and energy, and postgraduate supervisors should be aware of and prepared for this (Hadingham, 2011:36). One feature that deepens the complexity of postgraduate supervision is the teaching and learning that take place during the process: academics tend to accept that a good researcher will necessarily be a good supervisor, and then lose sight of the importance of the process leading to the product. An overview of the teaching in

postgraduate supervision presented in the next section also adds to the understanding of the complexity of postgraduate supervision.

2.4 TEACHING IN POSTGRADUATE SUPERVISION

Postgraduate supervision has changed significantly in recent years (McCallin & Nayar, 2012:63) and until recently was regarded as an extension of the research, rather than as a form of teaching (Manathunga & Goozée, 2007:309). During the postgraduate supervision process, the postgraduate supervisor is supporting the development of a student in a much more systematic and sustained way than is the case during master's degree studies. It is critical for postgraduate supervisors to think about what they are doing when they supervise – whether they think of postgraduate supervision as a teaching or a research practice, or a combination of the two (Brew & Pasetta, 2004:5).

The term 'supervision' therefore may take on different meanings for different supervisors, depending largely on each one's own experience, either as a doctoral student or postgraduate supervisor, or both (Mullins & Kiley, 2002:369; Wright, Murray & Geale, 2007:459). Lee and McKenzie (2011:69) maintain that postgraduate supervision is neither simply 'teaching' nor 'research', but rather an uneasy combination of both. In this regard, Bruce and Stoodley (2013:235) state that when supervisors experience teaching doctoral students as promoting learning to research, they direct their attention towards the student, in order to enable the student to reach the end goal of their research. Therefore, the purpose of postgraduate supervision must be to bring about learning of the highest form (Bruce & Stoodley, 2013:239). The result of postgraduate supervision therefore must be conceptualised as the outcome of both teaching and research, and that is *learning* (see Figure 2.1).

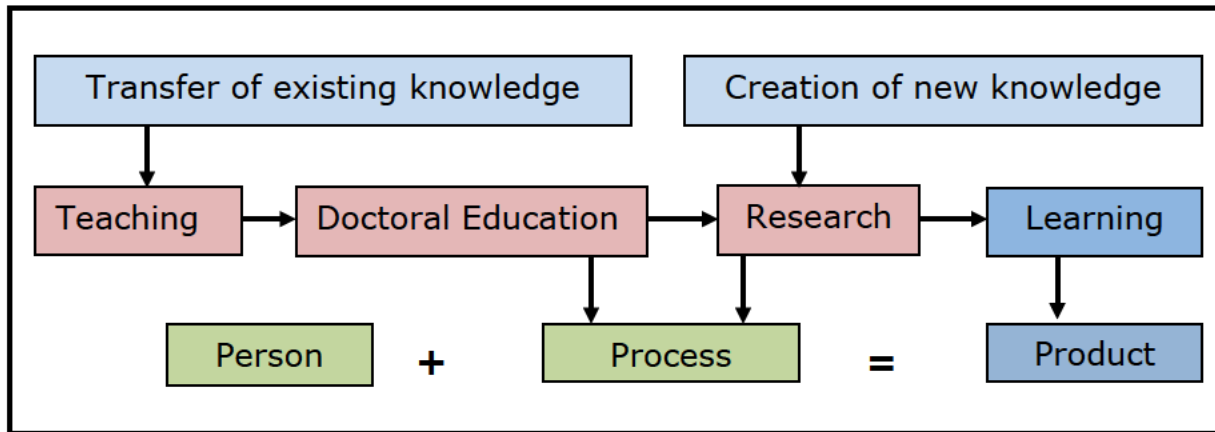


Figure 2.1: Postgraduate supervision resulting in learning

During the postgraduate supervision process, postgraduate supervisors *teach* doctoral students to do research (Halse, 2011:557) and this constitutes learning (Bruce & Stoodley, 2013:239; De Lange, Pillay & Chikoko, 2011:16; Jansen, Herman & Pillay, 2004:79). Maxwell and Smyth (2011:223) surmise that while some teaching is necessary, the emphasis has to be on learning. In this regard, Emilsson and Johnsson (2007:164) posit that postgraduate supervision is a sophisticated, high-level teaching process in which learning is central and certain teaching strategies may be used (Manathunga, 2009:343; Murphy, Bain & Conrad, 2007:209). It is further maintained that the reconceptualisation of postgraduate supervision as a particular kind of teaching may lead to improved postgraduate supervision. According to Ferman (2002), postgraduate supervision does include teaching because it involves an expert (the postgraduate supervisor) and a novice (the doctoral student), a curriculum (the development of the thesis) (see 2.3), a process of intellectual growth, the monitoring of learning, the provision of guidance to the doctoral student, the university and completion of a range of learning activities. A curriculum is indeed present in doctoral education whereby the supervisor, the student, the faculty and the university aim to develop new knowledge, skills and attitudes with “learning outcomes” ranging from employment skills through to higher level cognitive skills

and an original contribution to knowledge (González-Ocampo, Kiley, Lopes, Malcolm, Menezes, Morais & Virtanen, 2015:23).

The growth of postgraduate supervision has led to the recognition that it is an extremely challenging form of teaching and that 'good supervision is good teaching' (Ahern & Manathunga, 2004:239; Taylor, 2006; Vilkinas, 2002:130). Khene (2014:73) makes the following statement regarding teaching during postgraduate supervision: "At doctorate level, we teach students to surpass our own ability or knowledge as researchers, and teach them to discover their own niche as researchers within the discipline or, at times, across disciplines". In accordance with the conceptualisation of postgraduate supervision as teaching, postgraduate supervisors require teaching knowledge and teaching skills.

The doctorate as a "learning journey" (Trafford & Leshem, 2009:305) will challenge doctoral students' understanding of what it is to do a doctorate; and the postgraduate supervisor has the responsibility to facilitate this journey (Botha, 2013:2). However, all learning requires the learner to construct meaning and, therefore, the postgraduate supervisor should act as a facilitator in creating new knowledge in a process that is oriented towards the development of the doctoral student's academic competence (Hodza, 2007:1163). To create knowledge, the learner needs to construct meaning from information (Biggs & Tang, 2007:21, 28). Optimal learning is promoted when doctoral students can work alongside a more knowledgeable person – in this case the postgraduate supervisor (Liechty, Schull & Liao, 2009:483). This learning activity includes focusing on the topic, locating the relevant resources and constructing an argument. Although many universities position postgraduate supervision as a teaching and learning practice, postgraduate supervisors themselves generally consider postgraduate supervision as part of their research

endeavour, rather than part of their teaching undertaking (Lessing & Schulze, 2003b:165).

Teaching and research are interdependent and should not be viewed separately during the process of supervision. Furthermore, teaching is social in nature (Amundsen & McAlpine, 2009:331). The postgraduate supervision process requires both the postgraduate supervisor and the doctoral student to engage with each other in a learning environment. The learning process does not necessarily take place in a formal setting, which means that it can easily take place in informal contexts without prior planning. In this regard, Hemer (2012:4) states that some supervisory relationships are not always conducted in a single context, and may be conducted in a coffee shop or in an office. Having established that teaching and research are interdependent processes in the postgraduate supervision process, teaching is not just a matter of transmitting knowledge. Teaching is to engage the students in active learning in order for them to make meaning of the information they receive and build knowledge on the basis of what they already know – that is, to learn (Biggs & Tang, 2007:21).

Many writers believe that if teaching (pedagogy or education) is central to postgraduate supervision, certain processes will be present and outcomes will therefore improve (McCallin & Nayar, 2012:67). The quality of teaching and learning is influenced by the supervisors' pedagogical content knowledge. It is important that the postgraduate supervisor be able to adapt his/her teaching in accordance with the learning progress of the doctoral student. The student's successful completion of a doctoral study demonstrates the student's ability to master research and concomitant skills, and the required knowledge and attitudes through the teaching and learning in the supervision process. Having thus been empowered, the student will have the ability to research a problem,

record the research process and findings, and arrive at conclusions independently.

Postgraduate supervisors may have a strong discipline knowledge base, but they may lack both general pedagogical knowledge and pedagogical content knowledge, depending on a number of factors such as their own professional experience, for example. In this regard, Jansen (2011a:viii) states that no postgraduate supervisor can cover within their expertise everything a doctoral student needs to master through doctoral studies. This relates to the assumption that every postgraduate supervisor has the skills and ability to supervise doctoral students (see Chapter 3, 3.2). Thus the belief that all active researchers will be effective postgraduate supervisors cannot be supported. A supervisor needs specific pedagogical skills and knowledge to ensure success in supervision, due to the important role of teaching-research in the process. From the overview of postgraduate supervision, two perspectives have become evident: postgraduate supervision as teaching and postgraduate supervision as research which results in learning.

When contemplating the teaching and research that take place during the postgraduate supervision process, the postgraduate supervisor must evidently understand that this teaching process entails the most advanced level of teaching in the education system. It is an intensive form of teaching that consists of much more than merely transferring information. Supervisors cannot just assume that this teaching entails a conversation with the student and giving feedback on written work. Postgraduate supervision embraces sound pedagogical practice, ensuring that students are encouraged to master skills to study independently, involve students actively in the research, and guide them to master the required research, time-management and management skills. They also have to take cognisance of students' specific needs, and ensure the creation of an

environment that is conducive to learning (Sidhu, Kaur, Fook & Yunus 2013:134; Wilkinson, 2011:903).

It is thus clear why postgraduate supervision is regarded as such a complex task, involving teaching and research (the process) leading to learning (the product). Many roles and responsibilities must be fulfilled by the postgraduate supervisor and his/her skills and abilities are critical to the doctoral student's learning and eventual success. These roles and responsibilities require more attention and will be discussed in the next session.

2.4 ROLES AND RESPONSIBILITIES OF POSTGRADUATE SUPERVISORS

The South African National Development Plan (NPC, 2011:289) acknowledges that the number of doctoral students in the country is significantly lower than it is in equivalent developing countries. The need to increase the number of doctoral students places a burden on postgraduate supervisors. This envisaged increase will mean more students and more responsibilities for postgraduate supervisors.

Postgraduate supervisors' understanding of their different roles and responsibilities influences their supervision practice. The postgraduate supervisor has become the face of a faculty and hence contributes to the system (Grant, 1999; Ismail, Abiddin & Hassan, 2011:82). In literature one finds a range of views on the roles and characteristics of effective supervisors, namely those of supporter, guide, teacher, confidant, advisor, peacekeeper and competent researcher, exhibiting expertise in the research area and research methodology, and having good

interpersonal and communication skills (Lee, 2008:268; Lessing & Lessing, 2004:76; Ismail *et al.*, 2011:83; Vilkinas, 2002:130).

These are all valid views, but the critical role of the postgraduate supervisor is to facilitate the development of the doctoral student into an independent researcher. The crux of the argument is that doctoral students often do not have sufficient knowledge about the research process and therefore are dependent on their postgraduate supervisors for support. To address the multitude of complex interpersonal interactions involved requires of postgraduate supervisors to have specific professional skills and a conceptual understanding of what is involved in the postgraduate supervision process (Berman, 2013:2). In this regard, Mouton (2001:17-19) states that postgraduate supervision has four dimensions, namely the advisory role, the quality control role, the supporting relationship and the guidance of the doctoral student; he summarises the roles of the postgraduate supervisor as being:

- an expert in a particular disciplinary field;
- a quality controller, monitoring the doctoral student's progress and providing constructive feedback;
- a motivator for the student;
- approachable and available to the student;
- respected professionally by colleagues and students.

In addition to the role of the postgraduate supervisor, Woolderink, Putnik, Van der Boom and Klabbers (2015:217-218) describe in detail the major factors contributing to successful postgraduate supervision:

- personality, knowledge, skills, communication and coaching factors of the supervisor;
- respectful, good-quality feedback from the supervisor;

- a good match between supervisors and doctoral students;
- formally agreed-upon mutual expectations and responsibilities within the research project;
- an open and safe learning environment;
- organised meetings where supervisors can share experiences to learn from one another.

The postgraduate supervisor has to determine early in the supervision process whether the doctoral student is knowledgeable about the components of the research process, the variety of approaches available and the different methodologies. To be able to do this, the postgraduate supervisor should be acquainted with relevant and applicable research methodologies that would be suitable for the specific research, be knowledgeable about teaching principles in order to help the student overcome identified deficiencies, and have the skills and knowledge to guide the doctoral student through the research process once a decision has been made about the approach and methodology (Abiddin, 2007:381). Kamper (2004:234) affirms that a combination of poorly prepared doctoral students (in terms of language proficiency and knowledge of research methodology), and inexperienced and/or unavailable (often absent) postgraduate supervisors will seriously inhibit proper supervision and quality control. The supervisory style adopted plays a decisive role in such a situation.

Within this process there is a responsibility for the successful completion of the research between the doctoral student and postgraduate supervisor (Govender & Ramroop, 2012:1642). According to Mouton *et al.* (2015:2) one could argue that feedback is at the core of the quality-assurance responsibility of the postgraduate supervisor. The supervisor gives feedback to students on their initial doctoral proposals, to the first chapters on the literature review, on the proposed research design,

methodology and instrumentation and, finally, to the results and conclusions of the study.

Finally, postgraduate supervision requires the application of many skills and knowledge bases on the part of the postgraduate supervisor. To earn the respect of the doctoral student and to smooth the progress of the research process, the postgraduate supervisor must be aware of the essential skills needed to convey relevant information as well as his/her experience to the doctoral student. As previously mentioned, the traditional role of the postgraduate supervisor has changed because of universities operating in a changing environment.

Up to this point, the focus has been on the different roles of the postgraduate supervisor. It is important, however, also to examine the relationship between the postgraduate supervisor and the doctoral student.

2.6 THE POSTGRADUATE SUPERVISOR AND DOCTORAL STUDENT RELATIONSHIP

In the guidance process, the postgraduate supervisor may be the decisive factor in ensuring the success of the research project (Lee, 2008:267). He/she is the person who links the doctoral student to all the processes involved in doing research. The supervisory relationship is the heart of postgraduate supervision and plays a significant part in the completion of the research of the doctoral student (Adkins, 2009:167; Bradbury-Jones, Irvine & Sambrook, 2007:82; Deuchar, 2008:489; Hemer, 2012:1; Lamm *et al.*, 2007:1165; Nasir & Masek, 2015:268; Yarwood-Ross & Haigh, 2014:38; Wright, 2003:210). Another significant factor in this relationship

is the support provided to doctoral students (De Lange *et al.*, 2011:16; Trudgett, 2011:389), for example, administrative and financial support, and the availability of information sources (library, computer access, and so forth). These usually are the responsibility of the university, but the supervisor needs to inform students about how and where to utilise the support available.

When the only link between the supervisor and the student is via electronic mail, and when physical presence does not exist, the postgraduate supervisor should put even more effort into the relationship to make it work for both parties. The doctoral student should experience any approach from the postgraduate supervisor as supportive rather than demanding. In addition, the postgraduate supervisor should give the doctoral student collegial support, in the sense of making the student understand that they are partners/colleagues in the research. The supervisor should have a strong social presence together with the application of required skills and knowledge bases to form a successful relationship (Loureiro, Huet, Baptista & Casanova, 2010:151). The relationship should cultivate a spirit of adventurism in the doctoral student in terms of which he/she can venture into unexplored areas of academic interest (Hodza, 2007:1162). In this respect, the motivational role of the supervisor is utterly important. Not all postgraduate supervisors have the social skills to interact with their students on all of these levels. In some cases, they need to be sensitised regarding the way they ought to conduct their relationships with their students.

In institutional and policy terms, postgraduate supervision is a difficult and ambiguous matter and, in addition, there has been a history of privacy in the relationship between a postgraduate supervisor and a doctoral student (Lee & McKenzie, 2011:70). In this regard, Wolhuter (2011:129) concurs with Andresen (in MacKinnon, 2004:399) and Horsfall

(2008:6) that postgraduate supervision is a 'private affair' between the doctoral student and the postgraduate supervisor; in fact, according to Johnson *et al.* (2000:135), more private than any other teaching and learning situation. Postgraduate supervisors often rely on a 'gut' feeling that they will 'get on well' with the doctoral students whom they are going to supervise (Woolhouse, 2002:137). That however, will not suffice if a conscious effort is not made from both sides to establish and maintain a healthy relationship. Hodza (2007:1155) also is of the opinion that postgraduate supervision is an extensive, interpersonally focused, one-on-one relationship.

Hammond, Ryland, Tennant and Boud (2010:7), however, give a different perspective on this relationship, positing that postgraduate supervision is no longer a private situation between the postgraduate supervisor and the doctoral student, because increasingly, it is becoming subject to scrutiny and accountability (Al-Naggar, Al-Sarory, Al-Naggar & Al-Muosli, 2012:265; Emilsson & Johnson, 2007:165; Sidhu *et al.*, 2013:133). In the light of these findings, Bak (2011:1059) warns that regardless of how intimate, face-to-face, and dialogical such a relationship is, sight should never be lost of its professional nature.

A postgraduate supervisor aims to instil theoretical and practical knowledge in the student during the research process (Emilsson & Johnsson, 2007:165; Ngcongo, 2001:55), which should guide the doctoral student to becoming a competent and autonomous researcher (Coetzee, Elliker & Rau, 2013:28; Gurr, 2001:90). This task-oriented aspect of the relationship should be formed in the context of the nature of the particular programme of study and the characteristics of the doctoral student involved (Anderson *et al.*, 2006:149).

Taking cognisance of the styles of supervision, desired features of a healthy relationship between supervisor and student, and the personal and professional nature of this relationship, in the final analysis it cannot be denied that postgraduate supervision demonstrates an environment of unequal power relations (Manathunga, 2007:208). Literature indicates that this happens particularly in relation to gender (Eley, 2001:58; Green 2005:154; Li & Seale, 2007:512; Maxwell & Smyth, 2011:221). Manathunga (2007:208) argues that the issue of power remains an integral part of any form of pedagogy and that it plays an inescapable role within the postgraduate supervision relationship. Horsfall (2008:7) advises that, while the supervisory relationship initially may not be a relationship of equals, it should gradually become more equal as the research continues.

The literature has shown that a number of factors have an impact on the relationship between the postgraduate supervisor and the doctoral student. The nature of the relationship between supervisor and student may well be regarded as the core of postgraduate supervision, and is significant in the likelihood of successful completion of the research by the doctoral student. Therefore, the interests of both parties must be balanced to ensure success within the wider context of the university. The discussion thus far has shown that the skills, knowledge, experience and personal attributes of postgraduate supervisors play an important role in successful supervisory activities. To understand the role of the postgraduate supervisor better, it is now deemed important to explore postgraduate supervision as a development process.

2.7 POSTGRADUATE SUPERVISION: A DEVELOPMENT PROCESS

In order to discuss postgraduate supervision development, it is important to understand exactly what it is that postgraduate supervisors do, and also to understand that what they do is dependent upon an understanding of the nature of supervising doctoral students. Ibrahim and Hassan (2011:564) state that postgraduate supervisors should never neglect their own continuous academic development if they wish to continue producing doctoral students of a high standard.

The academic development of postgraduate supervisors often attends to the instrumental and administrative aspects of the doctorate, because these are "embedded and explicit in the systematic routines, procedures, policies and practices of universities", and can be easily coded, taught to and learned by postgraduate supervisors (Halse & Malfroy, 2010:88). Most literature on academic development concentrates on learning to be a university teacher and, then a researcher. However, the postgraduate supervisor's role is constantly developing in response to experiences with a variety of students, and reflection on this can contribute to professional learning (Wisker & Kiley, 2014:126).

Academics often take on postgraduate supervision without any training on how to do it. Many postgraduate supervisors base their supervision practice on their own experience of how they were supervised. It should not, however, be assumed that one's own research habits will necessarily be successful when used to guide others; indeed, it could disorientate and confuse doctoral students (Holligan, 2005:270). Due to the minimal training or induction (if any) of new postgraduate supervisors (Dietz *et al.*, 2006:11), students may suffer serious consequences. Therefore,

supervisors need proper training and academic development (Mutula, 2011:184) and there is an increasing demand from government and university management for the educational development of postgraduate supervisors (ASSAf, 2010:37; Manathunga, 2005b:18).

Erwee, Albion, Van Rensburg and Malan (2011:890) maintain that even successful postgraduate supervisors require support in enhancing appropriate supervision skills. Development, training and support programmes should provide the means for postgraduate supervisors to learn more about postgraduate supervision so that, during the research process, the doctoral student can also be transformed into an independent critical thinker and quality researcher (Franke & Arvidsson, 2011:8; Grover, 2007:12; Holtzhausen, Lategan, Hay, Jordaan, Truscott & Vermeulen, 2011:11). In this regard, Schulze (2013:33) states that if academics have not yet acquired the skills to supervise doctoral students, the question arises as to how the academics should be trained, developed and supported.

Implementation of institutional support has already been reported at some universities in the form of the provision of study leave and financial support to enable academics to attend a year-long series of workshops. Any skills development framework for postgraduate supervisors needs to be comprehensive, flexible, and on-going (Ferman, 2002), because the research environment is complex and challenging (Holzbaur *et al.*, 2012:13). Therefore, it is important to involve experts who have proven themselves as postgraduate supervisors to be involved in the development of postgraduate supervisors (Buttery *et al.*, 2005:10).

Literature on preparing researchers to do research gives an indication of issues, which are *ipso facto* applicable to supervisors too, namely the content and the structure of research courses, the methods of teaching,

and the importance of practical experience in research training and ways of organising it (ASSAf, 2010:37). The important aspect of transferable professional skills development is emphasised as well. Other aspects mentioned include the presentation and teaching of complex knowledge to a diverse group of students; how to write for several audiences; and how to manage time, people, projects and budgets (ASSAf 2010; Henning *et al.*, 2004; Rossouw, 2003). Whatever models of academic development are used to improve the quality of postgraduate supervision, it is important to bear in mind that it is a complex process, and especially because some postgraduate supervisors base their supervision on their own experience, they need proper training to stay abreast of innovative, and perhaps more appropriate and applicable, supervision practices.

Professional skills development of postgraduate supervisors should be designed to improve and support the quality and the process of postgraduate supervision. Universities therefore need to pay attention to the development of postgraduate supervisors and to assist them in terms of transferable professional skills development, which should be comprehensive, flexible, and on-going (Botha & Potgieter, 2009:246). It should be a long-term strategy, which takes account of the supervision process and how it might be improved. Having discussed the importance of supervisor development, the results of poor postgraduate supervision should also be taken into account.

2.8 RETENTION AND COMPLETION

Universities are challenged to recruit and retain adequate numbers of doctoral students to constitute the next generation of academics (Di Pierro, 2012:29; Altbach, 2009; Gilliam & Kritsonis, 2006:1), but have to cope with the undesirable situation that every year large numbers of

doctoral students depart from universities without completing their studies. Completing doctoral studies successfully is perhaps the most overwhelming of all endeavours undertaken by doctoral students (Govender & Dhunpath, 2011:88; Lindsay, 2015:184). Poor completion rates, as well as longer completion times, may often be attributed to poor supervision or weak institutional support (Wingfield, 2012:2). Since it is a national priority to improve the completion rates of doctoral students at universities, interventions from both academics and the university are necessary to determine how doctoral students' performance can be improved to get better doctoral student throughput (Davis & Venter, 2011:73).

Once students graduate with their first degree, doctoral studies represent 'more of the same', or 'taking things to the next level', and as a result there seem to be no obstacles in the way of transition to doctoral studies (O'Donnell, Tobbell, Lawthom & Zammit, 2009:27). It is presumed that doctoral students will carry on with their studies without any difficulties. This assumption could be one of the reasons why doctoral students leave university: the unexpectedly difficult transition from undergraduate to doctoral studies. Lovitts (2001) calls the departure of doctoral students from their studies the "invisible problem", because they drop out quietly without making much noise, and are silent about their reasons for leaving, internalising their exit as their own failure.

There are several reasons why doctoral students leave universities in South Africa. Lack of *finance* is a significant constraint to enrol and continue with postgraduate studies, as many students are under enormous financial pressure causing them to leave university and get a job as soon as possible (Cloete *et al.*, 2015:183; DHET, 2012:13). Students who are *older* at the time of enrolment seem to be at higher risk for non-completion (ASSAf, 2010:78), probably due to the impact of

financial and family obligations (Wright & Cochrane, 2000:182; Leonard *et al.*, 2005:142; Manathunga, 2005a:224). The lack of quality supervision that doctoral students receive has proven to be an important factor in the dropout rate of doctoral students. Dissatisfaction with postgraduate supervisors and explicit discouragement were given as top reasons for students' discontinuing their doctoral studies (Osburn, 2005:23). In this critical relationship, many doctoral students see the major obstacle to timely completion as inadequate postgraduate supervision (Buttery *et al.*, 2005:9; Halse, 2011:557; Khosravi & Ahmad, 2013:11; Lee & McKenzie, 2011:71; Leggat & Matinez, 2010:602; McCallin & Nayar, 2012:65; Miller, 2007:29; Pearson & Cryer in Pearson & Kayrooz, 2004:100; Vilkinas, 2008:298; Wadee *et al.*, 2010:10). However, doctoral students cannot expect the postgraduate supervisor to take the main responsibility for the research process. The student has to take responsibility to seek required help and support for the successful completion of his/her doctoral study (Barnes & Austin, 2009:300; Govender & Ramroop, 2013a:155; Govender & Ramroop, 2013b:60; Lee & McKenzie, 2011:71; Li & Seale, 2007:512; Magano, 2013:212; Murphy *et al.*, 2007:209; Peterson, 2007:476). The responsibility for completing a doctorate thus should be shared by the doctoral student, the postgraduate supervisor and the university to which they belong – albeit on different levels (Lubbe, Worrall & Klopper, 2005:241). The research success of a university is measured in terms of timely completion of research (Green & Bowden, 2012:66; Kiley & Mullins, 2005b:246; Malan, Erwee, Van Rensburg & Danaher, 2012:1; Morley, Leonard & David, 2002:264; Ngozi & Kayode, 2013:7; Roed, 2012:37).

Manathunga (2005a:219) explores the “early warning signs” of possible dropping out which are frequent changing of the topic, avoiding communication with their supervisor, isolating themselves from academics in their department and not submitting their work for review (Kearns,

Gardiner & Marshall, 2008:79). The characteristics of the supervisor–doctoral student relationship which promote timely completion are: open communication channels, availability of the supervisor, constructive feedback, experienced and interested supervisor, committed students, good interpersonal relationships, institutional support, student’s intellectual confidence, an environment conducive to the relationship to flourish, and clear roles of supervisor and student (Manathunga, 2005a:219). Lovitts (2001) comments that timely completion or not is determined by “... what happens to doctoral students after they arrive at the university to study”. Universities cannot predict who will successfully complete their doctoral studies based on undergraduate performance or even their performance in their first year as doctoral students.

Worldwide, attrition is considered as one of the major problems faced by universities (Ali & Kohun, 2007:35; Gardner, 2008b:126; Holley & Caldwell, 2012:243; Letseka & Maile, 2008; Manathunga, Peseta & McCormack, 2010:33). Students leave their doctoral studies at various stages and this is deeply imbedded in the organisational culture of a university (Carr, Lhussier & Chandler, 2010:280; Herman, 2011c:41). According to Mouton (2007:1080), “doctoral students in South Africa take too long to complete their studies”. Brynard (2005:364), in a study on the supervision of postgraduate students in Public Administration, attributes these failures primarily to inefficient supervision, while Hoskins and Goldberg (2005) found that a key determinant in perseverance was a match between the students' goals and expectations and the academic staff members' expectations and goals for the programme. In a study, De Valero (2001:342) found that in academic departments with high completion rates, the quality of orientation programmes and the supervisor support is higher than those found in ‘low completion’ departments.

Most universities have responded to this problem by placing greater emphasis on selection, assuming that if they could only make better admission decisions, the attrition rate would decline (Mouton *et al.*, 2015:11; Lovitts, 2001). Brynard (2005:366) reports that normally the basic entrance academic qualification for doctoral studies at South African universities is a master's degree and a suitable research proposal. This basic admission process is executed in two ways at different institutions and/or departments. The first is called provisional registration, which entails that a student be registered provisionally if satisfying the basic academic requirement of possession of a master's degree, on condition that an acceptable research proposal be submitted within a specified time: if these conditions are met, the student will be permitted to register fully. The alternative admission policy allows the student full registration, but only for one academic year, upon which an acceptable proposal must be submitted to apply for registration for the second year. This allows the student to have full access to the university library (which is only available to registered students) and thus the student has access to resources such as information on the topic, assistance from subject librarians and access to other information providers, which are important in developing research skills. This emphasis on selection means that universities believe that the problem does not necessarily lie with the university, but with the doctoral students themselves. Therefore, many universities have sought to tighten their selection processes as a way of improving completion rates (Manathunga, 2005a:219). However, Bowen and Rudenstine (in Hoskins & Goldberg, 2005) report that in the United States of America (USA), despite careful student selection processes, the high rate of attrition has remained at the same level for 40 years.

The main factors having an impact on the successful completion or failure of doctoral studies are:

- the degree of ease with which a student can transfer from undergraduate to doctoral studies (O'Donnell *et al.*, 2009:27);
- the efficiency of postgraduate supervision (Kärner & Puura, 2008:103);
- the specific characteristics of the student and supervisor and whether these are compatible (Manathunga, 2005a:219; Osburn, 2005:23);
- the willingness and ability to share responsibility (Barnes & Austin, 2009:300; Govender & Ramroop, 2013a:155);
- the degree to which the student has complied with selection criteria (Manathunga, 2005a:219); and
- the expectations of the student and supervisor (Hoskins & Goldberg, 2005).

Finally, given the documented concerns and challenges regarding completion and retention, it is indeed not surprising that many doctoral students who begin their doctoral studies fail to persevere and complete their degrees. Completion of a doctorate is a joint undertaking by the doctoral student, the postgraduate supervisor and the university. The university needs to have administrative processes and procedures in place to assist the process, as well as training for postgraduate supervisors (see 1.6). Postgraduate supervisors need to be acutely aware of factors that may impact on doctoral studies and the postgraduate supervision process (see 2.5). Doctoral students must be aware of what is expected of them during the research process (see 2.6).

However, it is important to recognise that completion and retention are not the only problems present in postgraduate supervision. Therefore, the planning and managing of the postgraduate supervision process will now be discussed.

2.9 PLANNING AND MANAGING THE POSTGRADUATE SUPERVISION PROCESS

The increasing workload of supervisors of doctoral students threatens the quality of research and the training of future researchers (Deuchar, 2008:489) and, therefore, it is important to manage the postgraduate supervision process competently. Thus a way should be worked out to find a workable balance among the three aspects involved here, namely time available (workload of the supervisor and the student), the quality of the research conducted, and the guidance provided to the student. This requires careful planning and management (Mohammad, 2014:35). Although each doctoral study is unique in one way or another, the one thing they do have in common is that both the postgraduate supervisor and the doctoral student must plan and manage the process (Doepker, 2007), just as any other project is planned and managed, using appropriate management methods. Therefore, in the initial planning the student must be made aware of these aspects (time available, quality of the research and training), and to that end the first step is to guide the student through the compilation of a proposal to bring home to the student exactly what the study process entails, and what planning and management will be required. The proposal is the instrument that indicates that the student has come to the realisation of what the research will entail, and how it should be managed (Bitzer & Albertyn, 2011:875). It needs to be borne in mind that doctoral students may start their research journeys from very different backgrounds, and that there may be huge variations in their levels of required skills. There will certainly also be variations in the time that it may take to acquire the necessary skills.

During the planning of the research project, it is important to ensure that agreement exists on the roles and responsibilities (see 2.8). Literature refers to various ways in which agreements can be formalised. However, the role of such agreements has been debated as sometimes being too rigid or too mechanistic: agreements should never be rigid or seen as a way of managing doctoral students (Hay, 2008:16). Another example of the way in which the management of the supervisory process can be eased is the use of a supervisor checklist or a memorandum of understanding (Hay, 2008:17-19). All of these aspects deserve to be considered and decided on together during the supervisory planning.

The doctorate is a project with a starting date and finishing date, although there may be variations in the time that doctoral students may devote to their research and to writing their reports. Bitzer and Albertyn (2011) designed a framework (see Table 2.2) for planning the postgraduate supervision process, based on the characteristics and benefits of alternative approaches to postgraduate supervision identified in the literature. This framework may be helpful in the planning of the roles of supervisors and the activities for doctoral students during their doctoral studies. If it contributes to better planning, it will lessen the pressure placed on postgraduate supervisors and at the same time contribute to the quality, efficiency and sustainability of the postgraduate supervision process. Success or failure of the postgraduate supervision process to a large extent depends on the planning and management of the process.

Building on from the idea of the planning framework, Bitzer and Albertyn (2011) provide an adapted framework for postgraduate supervision planning. The framework provides the supervisor and the doctoral student with an opportunity to make specific decisions about the supervisory process – the tasks of the student and the role of the supervisor in each. In this framework, the supervisor (in consultation with the doctoral

student) must indicate the role that he/she will play in the tasks of the doctoral student, and also what that role entails. Using such a framework may prove useful, as the overall planning is clearly set out for both supervisor and doctoral student, and may serve as a kind of contract as it explains the responsibilities of both parties. In terms of the approach that is indicated on the framework, the student obtains an overview of the roles of those people who might be, or might become, involved in the study (Bitzer & Albertyn, 2011). This framework will help to organise the roles of postgraduate supervisors and the processes and activities for doctoral students during their postgraduate studies. Application of this framework in the supervision process may help to ease the pressure placed on individual supervisors. It is recommended that such a framework should be adapted according to each specific supervisory process; although in most supervision processes it would not really be advisable to leave any of the mentioned aspects out of the planning process (see the adapted framework below in Table 2.2).

Table 2.2: Framework for postgraduate supervision planning
(adapted from Bitzer & Albertyn, 2011)

POSTGRADUATE STUDENT PROCESS	RESEARCH PROCESS						Research/ professional identity formation
	Preliminary preparation	Research proposal	Literature review	Empirical research/ fieldwork	Analysis	Synthesis	
SUPERVISOR							
Mentoring							
Specific subject expertise							

Intellectual development							
Completion of project							
Publishing							
Networking							
Conference presentations							
Assist in career goals							
Access to success							
Sponsor							
Assist with funding							
Identification of resources							
Identify administrative procedures							
Timeous achievement							
Network introductions							
Research practice access							
Progressing the student							
Monitoring progress							
Reviewing supervision arrangements							
Negotiating availability							
Initiating contact							
Devoting sufficient time							
Organised meetings							
Guidance on thinking processes leading to successful research outcomes							
Enriching student intellectual flexibility							
Timeous feedback							
Provide motivation							
Coaching							
Help to develop expertise while doing research							
Action planning for steps of research							

Advising on critical aspects of research							
Being directive when needed							
Continually evaluating							

The role of the postgraduate supervisor in the supervision process is complex: he/she must facilitate the teaching and research process and support the student’s development while at the same time continuing through his/her own learning journey (Maxwell & Smyth, 2011:219). Apart from having the tasks and responsibilities of the parties involved clearly spelled out during the planning process, it is also recommended that a type of formative assessment framework for the study report (dissertation or thesis) be compiled. Through this, it can be assured that the final stage of the study is well planned. Albertyn, Kapp and Frick (2007:1207) describe such an evaluative framework for the thesis that has been created for markers, but which could be introduced to the student early in the process. This framework is a form of formative assessment, as it gives an indication to students of the level of quality of their work, and if the framework is sufficiently detailed, the strengths and weaknesses of a student will become clear, which provides essential guidance to the supervisor and student to take steps to make required changes in good time. Formative assessment is also a learning experience for the student.

Thus, postgraduate supervision becomes a contractual agreement between the doctoral student and the postgraduate supervisor, and requires a firm set of teaching, research and learning practices. In order for HEIs to receive the maximum subsidy for completed doctorates, the postgraduate supervisor needs to ensure that the doctoral student completes the doctorate in time, although this could be at the expense of the intellectual development of the doctoral student (Hadingham, 2011:311). The student should also take responsibility for completion of

the research on time. The supervisor cannot do this on his/her own however, and should, during the planning and management processes, build in motivational, support and checking steps to keep the student on track and motivated. When planning the postgraduate supervision process, all possibilities should be taken into account. Planning should be an all-inclusive process to ensure that the workload is spread to allow supervisors to be efficient in their supervision practice.

Based on the information and discussion above, it is now possible to draft the framework for the skills development programme (see 2.10). In the next section, the components involved in the postgraduate supervision process will be placed in a framework for postgraduate supervision.

2.10 A FRAMEWORK FOR POSTGRADUATE SUPERVISION

In the postgraduate supervision process attention needs to be paid especially to the roles and responsibilities of the postgraduate supervisor as explained in Chapter 1 (see 1.5). Consequently, the focus should be on the *process* (see 2.3), consisting of postgraduate supervision, the postgraduate supervisor and the doctoral student. Bitzer and Albertyn (2011:882) refer to postgraduate supervision as the development of the whole person, with research as a process and not a product. In this regard, Coetzee *et al.* (2013:28) state that the process of postgraduate supervision manifests itself on two levels: the thesis as a *product* of the postgraduate supervision process, and the student as the *person* going through the *process*.

Concomitant with what has been stated in the previous paragraph (in accordance with the views of Bitzer and Albertyn (2011) and Coetzee *et al.* (2013), the new paradigm under which doctoral education resorts,

entails a process consisting of teaching and research, which constitutes the supervision process at the university, which results in learning. To conduct the process, a supervisor and the student becomes involved in teaching and research, and learning constitutes the result of the process. The final product can be said to be a scholar or at least a well-trained researcher and a research report of quality.

Figure 2.2 below is the beginning of the compilation of a framework for postgraduate supervision. In Chapter 3 and Chapter 4 more components will be added to the framework to complete the objective of the study, namely to develop a skills development programme for postgraduate supervisors (see 5.3) at a UoT based on the analysed and interpreted findings.

The following issues regarding the student and the supervisor was identified (see Figure 2.2 below):

- Roles and responsibilities (see 2.5)
- Planning and time management (see 2.9)
- Research training (see 2.7, 2.9)
- Guidance (see 2.2, 2.4, 2.5)
- Formative assessment (see 2.5)
- Skills development (Identity, Educational, Intellectual, Scholar) (see 2.7)
- Creating new knowledge (see 2.5)
- Curriculum (see 2.5)

The following issues regarding the university as a partner in the postgraduate supervision process were included (see Figure 2.2 below):

- Research culture (see 2.3)
- Funding (see 2.1, 2.3)
- Retention (see 2.8)
- Completion (see 2.8)

Regarding the product that will be produced at the end of the postgraduate supervision process, the following issues were identified (see Figure 2.2 below):

- Scholarship (see 2.5)
- Skilled and independent researcher (see 2.2, 2.3, 2.5)
- Quality research (see 2.2, 2.7)
- Knowledge generation and production (see 2.2, 2.4)
- Economic development (see 2.1)

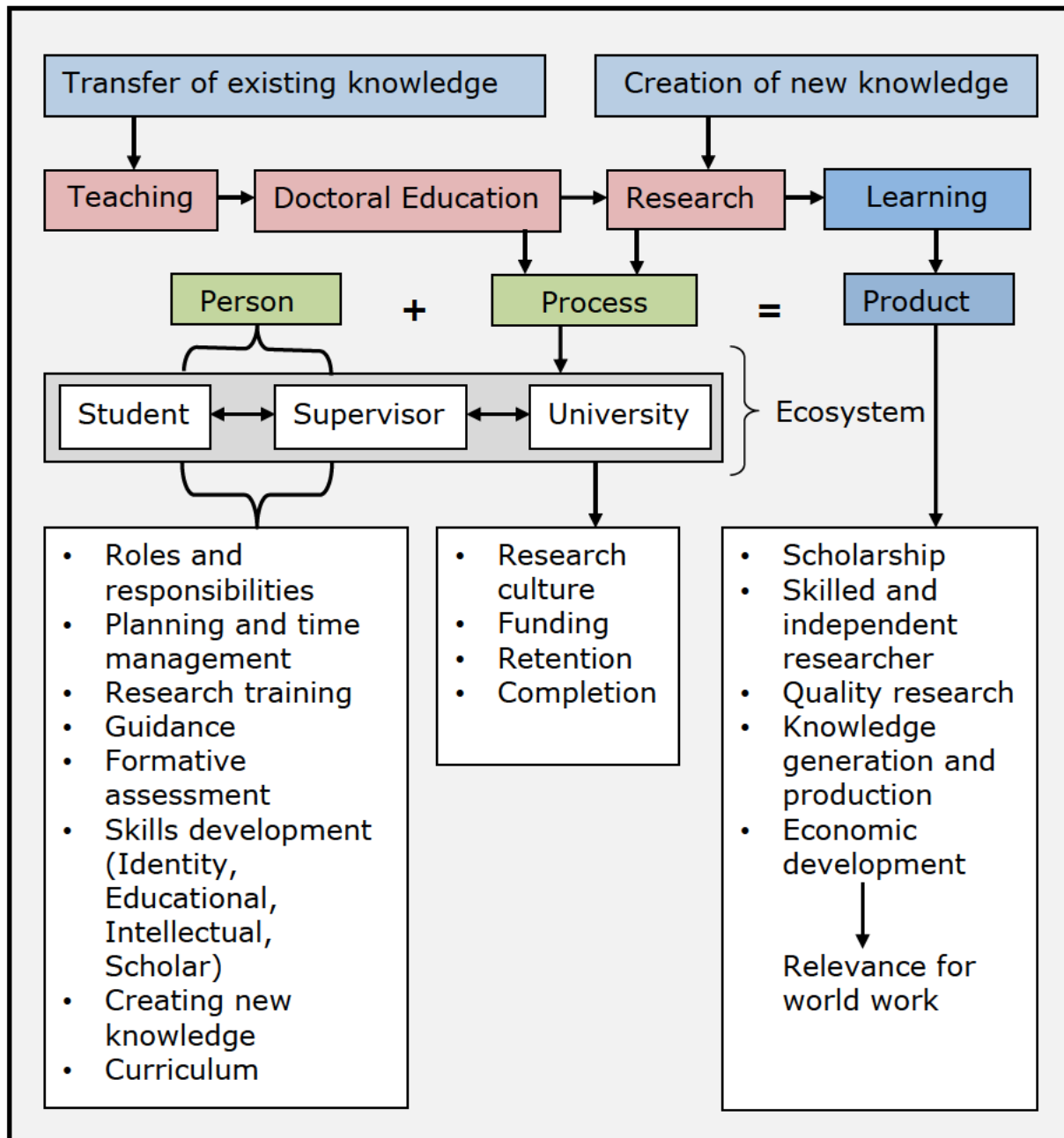


Figure 2.2: A framework for postgraduate supervision

This framework highlights the thinking of authors who have worked from a variety of perspectives on postgraduate supervision and the postgraduate supervision process in general. The skills development programme for postgraduate supervisors (see 5.3; Figure 5.2) will be developed according to this framework. In order to comprehend the

postgraduate supervision process, it was necessary to present a background to the postgraduate supervision process by means of a literature review. The fundamental issues of postgraduate supervision stated in Chapter 1 have been critically discussed in Chapter 2.

2.11 CONCLUSION

Universities are functioning in a changing environment; this has an impact on the postgraduate supervisor and his/her postgraduate supervision practices. During the course of doctoral education, the student's scholarly identity develops while the doctoral student is in interaction with the postgraduate supervisor and his/her environment. Since this relationship is socially constructed and unique, it means that there can be no single academic identity common to all doctoral students. Doctoral students come from varying geographic and cultural backgrounds, with different levels of preparedness and readiness for research. Hence, postgraduate supervisors must be aware of the complexity of the postgraduate supervision process, of which teaching, research, learning, the person and the product are essential parts.

This chapter aimed to investigate and describe some important components related to postgraduate supervision. The different aspects on which the focus was placed, included the changing context of HE, the enhancement of scholarship, the complexity of postgraduate supervision, as well as teaching and learning. It also considered the roles and responsibilities of postgraduate supervisors in the relationship between postgraduate supervisors and doctoral students. Doctoral retention and attrition were elucidated, as well as planning and managing the postgraduate supervision process. From this overview of the literature on postgraduate supervision, a framework was derived.

This chapter addressed one of the three research questions namely:

- Which skills and knowledge are required of postgraduate supervisors to supervise doctoral students (see Chapter 1:1.7.4)?

With a view to finding an answer to this question, the following objective was pursued in Chapter 2:

- To conduct a literature study to identify the skills and knowledge that are required of postgraduate supervisors to supervise doctoral students (see Chapter 1:1.7.4).

Chapter 2 presented a background to the changing nature of postgraduate supervision, which will have an effect on the composition of the development programme for postgraduate supervisors in all kinds of universities. Given the emerging nature of a research culture at UoTs, there is a dual challenge: to enhance the skills of postgraduate supervisors and to strengthen the capacity of universities. This dual challenge can be resolved by means of a skills development programme for postgraduate supervisors.

In the next chapter, the internal issues that have an influence on postgraduate supervision at universities in South Africa will be identified, presented and explored.

CHAPTER 3

INSTITUTIONAL PARTNERS IN POSTGRADUATE SUPERVISION

3.1 INTRODUCTION

In South Africa, the NPHE (DoE, 2001) is specific when it comes to the role that universities should play in research. One of the aims of this plan is to produce the graduates (including doctoral graduates) needed for social and economic development in South Africa, and to achieve equity and diversity in the HE system (DoE, 2001; Lues & Lategan, 2006b:108; Bitzer, 2006:377; NPC, 2011).

The high international demand for South African graduates necessitates an urgent increase in the production of doctoral students in order for the country to remain competitive and to be able to generate knowledge that is responsive to a wide range of societal needs (NPC, 2011:278; CHE, 2009a:1). Regarding the generation of knowledge, Nwaila (2010) makes the following statement: "A modern, knowledge-based economy demands human resources that are numerically and scientifically literate, technologically fluent, and skilled at problem solving, critical analysis and engagement". After receiving a doctorate, doctoral students should have acquired the necessary knowledge and skills to produce new knowledge and to strengthen the modern knowledge economy (see Figure 2.2).

In the light of the massification of HE, doctorates are also required to strengthen universities and to enable them to accommodate the large numbers of students flocking to universities. Without doctoral graduates, universities cannot produce sufficient academic staff to absorb these large

numbers (Singh, 2015:184) (see Chapter 1:1.6). To achieve these goals, the role that postgraduate supervisors play cannot be underestimated. In meeting the demands made on universities to deliver more doctorates, leadership, mentorship and guidance in research are required, and this is where the role of the postgraduate supervisor is so important. One of the objectives of this study was to conduct a literature study to gain a better understanding of postgraduate supervision in order to be able to identify the skills and knowledge that are required of postgraduate supervisors to supervise doctoral students. Therefore, the role, the skills and the knowledge required for the postgraduate supervision process needs to be elucidated (see 3.2.1).

Processes in both the internal and external environments of HE inform postgraduate supervision. Internally, three institutional components must be considered in order to understand the postgraduate supervision process. Cloete *et al.* (2015:24) state that the internal environment represents the role of the university in the postgraduate supervision process. The postgraduate supervisor and the doctoral student are part of the postgraduate supervision process, and the university itself is involved to provide the infrastructure (including human resources, physical resources, financial resources, policies, a research strategy and culture) for postgraduate supervision. These three components (university, postgraduate supervisor and doctoral student) are dependent on each other to function as a whole. All three components must be present to constitute the process of postgraduate supervision, which is the focus of the study.

The institutional issues regarding the postgraduate supervision process will be discussed in view of the research problems identified for this study in Chapter 1. The aim is to contextualise the postgraduate supervision process within the broader scope of the field of HE in South Africa. These

issues are part of a wider institutional, national and global picture of postgraduate supervision.

Having identified the institutional components influencing the internal environment, this chapter will scrutinise the three institutional partners, their different issues and how these issues contribute towards the framework for postgraduate supervision. The next section will look into the roles of the postgraduate supervisor in order to understand the postgraduate supervision process.

3.2 THE POSTGRADUATE SUPERVISOR

The role of the supervisor can only be clear if one has an idea of the skills required to be an effective and efficient postgraduate supervisor; one must at the same time consider the workload of postgraduate supervisors.

3.2.1 SKILLS OF THE POSTGRADUATE SUPERVISOR

"...the universities of higher learning are called upon to create skills... The transmission of knowledge is no longer designed to train an elite capable of guiding the nation towards its emancipation, but to supply the system with players capable of acceptably fulfilling their roles at the pragmatic posts required by its universities" (Jean-Francois Lyotard cited by Craswell, 2007: 377).

The successful completion of a doctorate is the illustration of the efficiency and skills of the postgraduate supervisor to guide and supervise

a novice researcher (Kärner & Puura, 2008:103; Wisker, Waller, Robinson, Trafford, Wicks & Warnes, 2003:385). When postgraduate supervisors supervise their doctoral students, they are in fact transferring research skills to their doctoral students (Smit, 2010:97). Writing a thesis can be a personal and intensive affair where internal and external conflicts influence the process and completion negatively (Ngozi & Kayode, 2013:6), with a range of emotions that may be associated with the requirement to write, such as agitation, resentment, despair and even fear (Kamler & Thomson, 2004:195). Postgraduate supervisors must consider these emotions when supervising their doctoral students; thus it is important to sensitise novice supervisors always to be on the alert for changes in doctoral students' emotional state, in order to identify the causes in good time to take remedial steps. In this regard, Manathunga (2005a:221) infers that highly effective postgraduate supervisors will remain alert for cues that their doctoral students might be experiencing some difficulty that could potentially limit their ability to submit their theses on time. This is a process consisting of a strong measure of emotional commitment and an understanding of diversity.

Transferable skills are skills explicitly gained through the process of completing a degree, which are also useful in a wide array of professions outside academia (see Chapter 2:2.8). Skills to supervise doctoral students are not a natural phenomenon; neither are they a matter of chemistry between people, or luck; rather, they are techniques that can be taught (Walker, Golde, Jones, Bueschel & Hutchings, 2008:99). Academic staff should not only possess the knowledge and skills to adapt their postgraduate supervision practices correctly to the type of student they are supervising, they must also have the ability to create an environment that supports the doctoral student's learning. Regarding the supportive environment, the university itself must establish a research culture (Kraak, 2006:148; Roebken, 2007:1054; Winberg, 2005:194).

While postgraduate supervisors concentrate on helping doctoral students to complete their research, they should not overlook the fact that they need to supervise the process in an effective way. This means introducing doctoral students to the world of research (Rip, 2004:153) and working with them in a way that will encourage them to undertake research (Jansen *et al.*, 2004:79). Taylor and Beasley (2005:3) have succinctly described an effective postgraduate supervisor as one who, "alone or with an advisory committee or co-supervisor", has the skills to enable the student:

- a) to initiate and plan the research;
- b) to acquire the research skills to undertake the research;
- c) to complete the research on time;
- d) to produce high quality research;
- e) to be successful in the examination of the research;
- f) to disseminate the results; and
- g) to lay the foundation for their future careers.

For both the novice and the experienced postgraduate supervisor, there is a need for introspection that will compel them to re-examine the past and the present, and to think about where they want to go with the doctoral student. This process encourages awareness of practices, because people cannot change practices if they are not aware of what they are doing (see Chapter 2: 2.7).

When postgraduate supervisors put in every effort to supervise their doctoral students, their overall workload becomes more demanding because of the pressure to assist students towards successful completion of their research. It is important to take the workload of postgraduate supervisors into consideration when discussing the issues surrounding postgraduate supervision.

3.2.2 WORKLOAD OF POSTGRADUATE SUPERVISORS

Over the past few years, academic staff in South Africa have experienced changes in the scope of their work as a result of increasing teaching and administrative workloads (De Beer & Mason, 2009:214), the need to deal with a rapidly changing student community, and pressures to transform curricula and teaching practices (Backhouse, 2009:49). Postgraduate supervision is a demanding role, because postgraduate supervisors need to lead, guide and assist doctoral students towards the successful completion of the thesis (Calma, 2007:91; Lategan, 2008:4; Lessing, 2011:931), and at the same time to promote the academic growth of the doctoral student (Wright, 2003:212). For Mouton (2007:1090; Mouton *et al.*, 2015:3), more pressing problems than low completion or high attrition rates are overburdened and inexperienced postgraduate supervisors, the substantial growth in the numbers of doctoral students, and the large proportion of students who are underprepared for doctoral studies. Supervisors complain that doctoral students cannot write scientifically, cannot do a literature search and lack the required quantitative and qualitative skills to do proper data analysis (Mouton *et al.*, 2015:3).

When calculating the workloads of academic staff, supervision responsibilities should be taken into account. Universities are challenged to increase the quantity of doctorates, yet their capacity to do this is limited by, amongst other things, funding constraints (Meadows, 2012:1-2; Stackhouse & Harle, 2014:176). The fewer academic staff a university can afford, the heavier the individual workloads. Bearing in mind that undergraduate teaching time is usually structured in time-tabled sessions, postgraduate supervisors have to fit their supervision tasks in elsewhere, often during times that they normally would not regard as part of their working hours. According to a report of the CHE (2009a:25) on

postgraduate studies in South Africa, postgraduate supervisors face an increasing burden as the average number of students to be supervised continues to increase.

In addition to the workload of academic staff and their postgraduate supervision responsibilities, other critical issues that should be taken into account are priorities and time (Pearson & Brew, 2002:148), which need to be managed carefully (see Chapter 2:2.10). Time constraints are a major challenge to academic staff and the greatest hindrance to sustained research activity (Christiansen & Slammert, 2006:26; Morris *et al.*, 2011:1). Indeed, research has shown that constant, thoughtful postgraduate supervision and availability is the key to successful completion of the doctorate (Heath, 2002:52; Ismail *et al.*, 2011:80; Singh, 2011:1021). In this regard, Kock (2009:30-39) argues that research is integral to the daily routine of academic staff and that time should be made for this.

Inexperienced, unavailable and overworked postgraduate supervisors are likely to compromise the quality of the postgraduate supervision. Harrison (2007) states that academic staff doing postgraduate supervision are often overburdened in terms of their workloads. The undergraduate teaching and administration load of an academic should not keep him/her from spending sufficient time with the doctoral student throughout the duration of the research process. To counter overburdening, it is important that the research and supervision responsibilities of academic staff members should be considered in workload preparation and planning. However, the matter of planning the workload of a department must make provision for equal workloads. Junior academic staff may sometimes be overburdened with undergraduate teaching, at the expense of their own research and postgraduate studies. In addition, a respondent in the ASSAf report (2010:78) had the following to say: "Working in an

academic environment with full-time teaching and learning responsibilities makes completing a doctorate in the expected time virtually impossible". Therefore, universities need to have policies and guidelines in place to safeguard the promotion of research and a balance between the teaching and supervision responsibilities of academic staff. These policies and guidelines should also be considered when departments do their workload planning.

In the above discussion of the postgraduate supervisor, the skills and workload of the postgraduate supervisor have been considered. It is important to examine the challenges of the postgraduate supervision process with the focus on supervision as a professional, specialised field of teaching (see 3.3.1), postgraduate supervision models (see 3.3.2), the quality of postgraduate supervision (see 3.3.3), development and training of postgraduate supervisors (see 3.3.4) and finally assessment and feedback (see 3.3.5). These challenges related to the postgraduate supervision process will be considered in the next section.

3.3 THE POSTGRADUATE SUPERVISION PROCESS

The postgraduate supervision process covers a complex set of issues with numerous interrelated variables that prevent a one-size-fits-all approach (see 2.3 and 2.4). How the individual supervisor inherits and reproduces what is considered good research within a discipline is dependent on traditions, customs, and beliefs (Grant, Hackney & Edgar, 2014:44). Todd, Smith and Bannister (2006:162) are of the opinion that supervisors interpret the "traditions of the academy and the notions of how to do 'good' disciplinary based research is based on academic disciplinary traditions, customs, and practices based on their own ontological, political, epistemological, and ideological background". Postgraduate supervisors usually have their own particular viewpoint on how they

interpret both the “institutional rhetoric and the hidden assumptions contained within their own cognate area” (Grant *et al.*, 2014:44).

Postgraduate supervisors face increased complexity due to increasing numbers of doctoral students, skills and expertise required, and their style of postgraduate supervision (Bitzer & Albertyn, 2011:875-876; Deuchar, 2008:490; Ngozi & Kayode, 2013:7). Nygaard, Courtney and Frick (2011:183) state that there are several processes involved in postgraduate supervision, namely engagement, collaborative learning, and the development, moulding and shaping of the doctoral student to become a new identity and to comply with assessment requirements.

While providing encouragement and support to a doctoral student is of major importance, rules and regulations of the university in question, as well as the HE authorities, should be taken into consideration (Ahern & Hawthorne, 2008; Malfroy, 2005:166; Platow, 2012:106). Equally important is guidance in the form of regular meetings and encouragement from the postgraduate supervisor to help the doctoral student to progress (Abiddin, 2007:380; Waghid, 2006:434). Furthermore, Feather and McDermott (2014:17) state that it is apparent that boundaries need to be established and learning plans developed at the initial meeting between the postgraduate supervisor and the doctoral student.

If we add to this the direct, straightforward tasks involved in supervision, such as guiding doctoral students in proposal preparation, methodological choices, documenting and publishing their research, while maintaining both supportive (Sambrook, Stewart & Roberts, 2008:72) and professional relationships (Bitzer, 2010:24), the enormity of the process is obvious. Once an academic has obtained a doctorate, the university expects of him/her to supervise other doctoral students. In departments with sufficient academic staff and wise leadership, it may happen that a

newly graduated doctorate will be assigned the task as co-supervisor first, because it is assumed that any academic with a doctorate can supervise doctoral students (Aranda-Mena & Gameson, 2004:98; Thani & Wessels, 2011:76; Wadee *et al.*, 2010:9). It is for this reason that training is important for the novice supervisor. Regarding this assumption, Du Pré (2009:17) states that as we move further into the information and knowledge age, academic staff will require training to sustain competitiveness. This poses an important challenge to HE. It is therefore no surprise that the government emphasises the role of human skills capacity development (DHET, 2013:61).

In an attempt to cast further light on the postgraduate supervision process, postgraduate supervision should be explored as a professional, specialised field of teaching (see 3.3.1), consisting of different supervision models (see 3.3.2). Quality training (see 3.3.3 and 3.3.4), assessment and feedback (see 3.3.5) are elements of supervision the novice supervisor might not have been confronted with before, and these need to be discussed to complete the picture of the supervisory process.

3.3.1 POSTGRADUATE SUPERVISION AS A PROFESSIONAL, SPECIALISED FIELD OF TEACHING

In Chapter 1, postgraduate supervision was defined as a multi-perspective process, enabled by institutional research policies and supported by a commitment to the provision of appropriate infrastructure, which involves knowledge creation and development, and ensures that the student has every opportunity to develop effective research skills. Halse and Malfroy (2010:83) made a useful contribution to the definition

of the postgraduate supervision process by describing it as a professional, specialised field of teaching, consisting of five facets, namely: the learning alliance, habits of mind, scholarly expertise, technical expertise, and contextual expertise. Although this represents only one view of what supervision entails (see 2.3 for a discussion on the complexity of the postgraduate supervision process and 2.5 for discussion on roles and responsibilities of postgraduate supervisors), these five facets show that postgraduate supervisors are supposed to have several competencies and skills, with the teaching, research and learning facets in postgraduate supervision being the main elements in postgraduate supervision. In the table below (see Table 3.1 below) the five facets are explained.

Table 3.1: Postgraduate supervision as a professional endeavour
(Halse and Malfroy, 2010:83)

FACET	EXPLANATION
LEARNING ALLIANCE	Agreement between postgraduate supervisor and doctoral student to work towards a common goal on the basis of responsibility, mutual respect and commitment
HABITS OF MIND	Building on the agreement between the postgraduate supervisor and the doctoral student: teaching and guidance from supervisor in research to result in learning on the side of student
SCHOLARLY EXPERTISE	Deep, fundamental knowledge of the postgraduate supervisor’s discipline gathered by conducting research and publishing and sharing this with the doctoral student
TECHNICAL EXPERTISE	Four essential technical competencies, namely the ability to: <ul style="list-style-type: none"> • improve the students’ writing skills • enhance the students’ ability to use resources • upgrade the students’ skills in information management and data analysis • guide students in time management and organisational skills
CONTEXTUAL EXPERTISE	Postgraduate supervisor’s knowledge and understanding of the institutional and disciplinary context of doctoral study

In Table 3.1 above, the five facets of the postgraduate supervision process are summarised. However, dealing with postgraduate supervision as a teaching, research and learning activity, the impact of learning should be emphasised. Postgraduate supervision provides an opportunity for reading and debating the latest literature, and learning about theoretical and methodological developments. With the escalation of academic workload and aligning their supervisory practices with work demands, postgraduate supervisors learn new ways of managing their time and the pressures placed on their emotional, physical and intellectual resources. Therefore, postgraduate supervisors learn to be increasingly disciplined in their interactions, management and pedagogical relationships with doctoral students (Halse, 2011:560-566).

According to a document on Improving Teaching and Learning Resources of the CHE (2004a:166), postgraduate supervision is a complex teaching and mentoring activity that includes a range of activities such as:

- assisting students to refine a research topic and design an acceptable research proposal;
- getting the proposal approved;
- providing guidance on appropriate literature;
- assisting with the determination of the research design and methodology;
- supporting students in collecting and analysing data and writing up the thesis or dissertation as a final product;
- providing detailed feedback to students;
- meeting reporting requirements on students' progress; and
- writing a final report on the research process for the external examiners and examining committee (CHE, 2004a:166).

For postgraduate supervisors, the implementation of these activities could be a challenge to comply with the requirements of the task. According to

Lahenius and Ikävalko (2014:429), this is due to the situation that usually no requirements for formal training to be a postgraduate supervisor exist, apart from the expectation of a doctoral degree. When considering the five facets mentioned by Halse and Malfroy (2010:83), it is evident that postgraduate supervisors must be made aware of, and supported to master, several skills to conduct supervision in a professional way.

3.3.2 POSTGRADUATE SUPERVISION MODELS

A variety of postgraduate supervision models are described in literature, and presumably more varieties are in operation at different universities. These models describe the purposes or aims of supervision and the main tasks of supervisors. The major features of some of these models have a bearing on the current discussion and are briefly explained.

During the supervision process, some postgraduate supervisors may feel obliged to 'over-direct' a student's research development in order to ensure successful completion (Holligan, 2005:268; Deuchar, 2008:490). Regarding the issue of over-directing, Witt and Cunningham (cited by Vilkinas, 2002:129) warn that postgraduate supervision should not be something one either imposes on or does for a student. It rather should be the sharing of mutually acceptable goals and plans with the doctoral student. Such errors of judgement might be attributed to a lack of guidance of the novice supervisor in bridging the gap between undergraduate teaching and postgraduate supervision – something that might have been prevented by an effective postgraduate skills development programme.

Having discussed guidance during the postgraduate supervision process, it is necessary to consider the roles of the postgraduate supervisor. These

roles are difficult to define because of the highly flexible character of the one-on-one teaching situation (Bartlett & Mercer, 2000:195), and therefore it is important to consider various models before deciding to follow a specific model. This means that as it is a task-oriented relationship, it should be viewed within the context of the nature of the particular programme of study and the characteristics of the doctoral student involved (Anderson *et al.*, 2006:149; Lessing, 2011:922). In its study on doctoral studies, ASSAf (2010:66-67) found that there are four main supervisory models in use in South Africa. These models are usually “not mutually exclusive”, and may have shared characteristics – some programmes, in fact, are typical hybrid models (ASSAf 2010:65).

In South Africa, the traditional apprenticeship model, inherited from the Oxbridge tradition, is still the favourite model of supervision (Bitzer & Albertyn, 2011:876; Cloete *et al.*, 2015:192). This is a learning-by-doing model, which involves the doctoral student working with a postgraduate supervisor who guides him/her in undertaking the research. While it may be an effective way to learn the craft of research, it has been criticised because individual supervision has the potential for exploitation, neglect and abuse (Grant, 2001). ASSAf (2010:64) suggests that this model might not be an efficient approach for increasing the production of doctoral graduates in South Africa. This model needs the availability of suitably qualified postgraduate supervisors because of the one-on-one supervision relationship. Taking into consideration that only about 39% of academic staff members at universities are in possession of a doctorate (Cloete *et al.*, 2015:115), it seems an immense task to deliver more doctorates.

An increase in the number of postgraduate supervisors could help with the improvement of the supervision process, for instance in the provision of a richer pool of knowledge (Van Biljon & De Villiers, 2013:1443). Co-

supervision can be advantageously employed with novice postgraduate supervisors. Having more than one postgraduate supervisor may mean that more complex or even multi-disciplinary studies can be completed. In this regard, the respondents in a study of Van der Linde (2006:89-90) felt that novice postgraduate supervisors should have a mentor while supervising their first student and that training should be compulsory to provide a license for postgraduate supervision. On the other hand, experienced postgraduate supervisors are not enthusiastic about co-supervision, because it may complicate the process and slow it down (Lessing & Schulze, 2003a:167). Therefore, honest, open and regular communication, clear working arrangements, responsibilities and expectations should be in place when a co-supervisor is appointed (Wisker, 2005). Hence, the correct approach to postgraduate supervision will play an important role in the doctoral student's academic development (Ismail, Majid & Ismail, 2013:166).

Another model, the coursework model, comprises a formalised curriculum in addition to individual supervision, providing input on epistemology, research methodology, critical thinking, and discipline-specific theory (ASSAf, 2010:64). A more formal, contractual and accountable relationship, such as that advocated in the coursework model and the contractual and directional approaches, has the advantage of protecting the postgraduate supervisor and the doctoral student from negative perceptions, for example the possibility of exploitative relationships (see Chapter 2:2.7).

In addition, the cohort-based model, which provides for a critical mass of doctoral students, could be a better option to increase doctoral production. It also provides structure, achievement benchmarks and opportunities to learn from one another while doing research. The doctorate by publication is a supervised research project; assessed on the

basis of peer-reviewed academic papers, published or accepted for publication. Table 3.2 provides a summary of the four most prevalent supervisory models in use in South Africa.

Table 3.2: Four models of supervising doctoral students (ASSAf, 2010:66-67)

Type of model	Description
The traditional apprenticeship model (individual mentoring)	<ul style="list-style-type: none"> • An informal, <i>ad hoc</i>, individualised, one-on-one mentoring relationship • Students learn required skills and competencies from supervisor • Occasionally supplemented by a co-supervisor
The coursework approach	<ul style="list-style-type: none"> • Formalised curriculum • Individual supervision • Provide input on epistemology, research methodology, critical thinking and discipline-specific theory
The cohort-based model	<ul style="list-style-type: none"> • Shared/group experience • Cohort of students, studying together through workshops within a specified time cycle; generally, includes coursework • Critical mass of students and supervisors • Provides structure, achievement benchmarks and opportunities to learn from one another
The doctorate by publication	<ul style="list-style-type: none"> • Supervised research project • Assessed on basis of peer-reviewed academic papers • Published or accepted for publication

According to Gurr (2001:86), a further model, the supervisor/student alignment model, takes the academic growth of the doctoral student into

account – an aspect of supervision that is not mentioned in the ASSAf report (2010). According to this model, as the postgraduate supervisor and the doctoral student progress during the research process, the postgraduate supervision process also needs to be adjusted to a more hands-off approach. Gurr (2001:86) and Nyika (2014) maintain that to improve the pass rate of doctoral students, the challenge is to provide postgraduate supervisors with descriptions of good practice as well as guidelines to improve the performance and quality of their postgraduate supervision. The emphasis is on supervisor development, rather than on a specific supervision model.

Up to this point, the focus has been on the different models in postgraduate supervision. However, it is important to recognise the four-quadrant supervisory management model of Gatfield and Alpert (2002:267-268). These authors emphasise the different supervisor support and structure levels, and the management skills of the doctoral student during their doctoral studies as well as their ability to communicate and work cooperatively (see Figure 3.1 below). They assert that the relationship between the postgraduate supervisor and the doctoral student should not remain the same from the beginning of the process to the end; it ought to change as the student progresses in his/her research. Postgraduate supervisors are inclined to assume that they know which elements of the supervisory process and management styles are more appropriate for success (Gatfield, 2005:313; Gatfield & Alpert, 2002). However, the relationship between the two parties will differ according to the characteristics of the doctoral student, the particular research design, the environment and the infrastructure of the university (McPhail & Erwee, 2000:77).

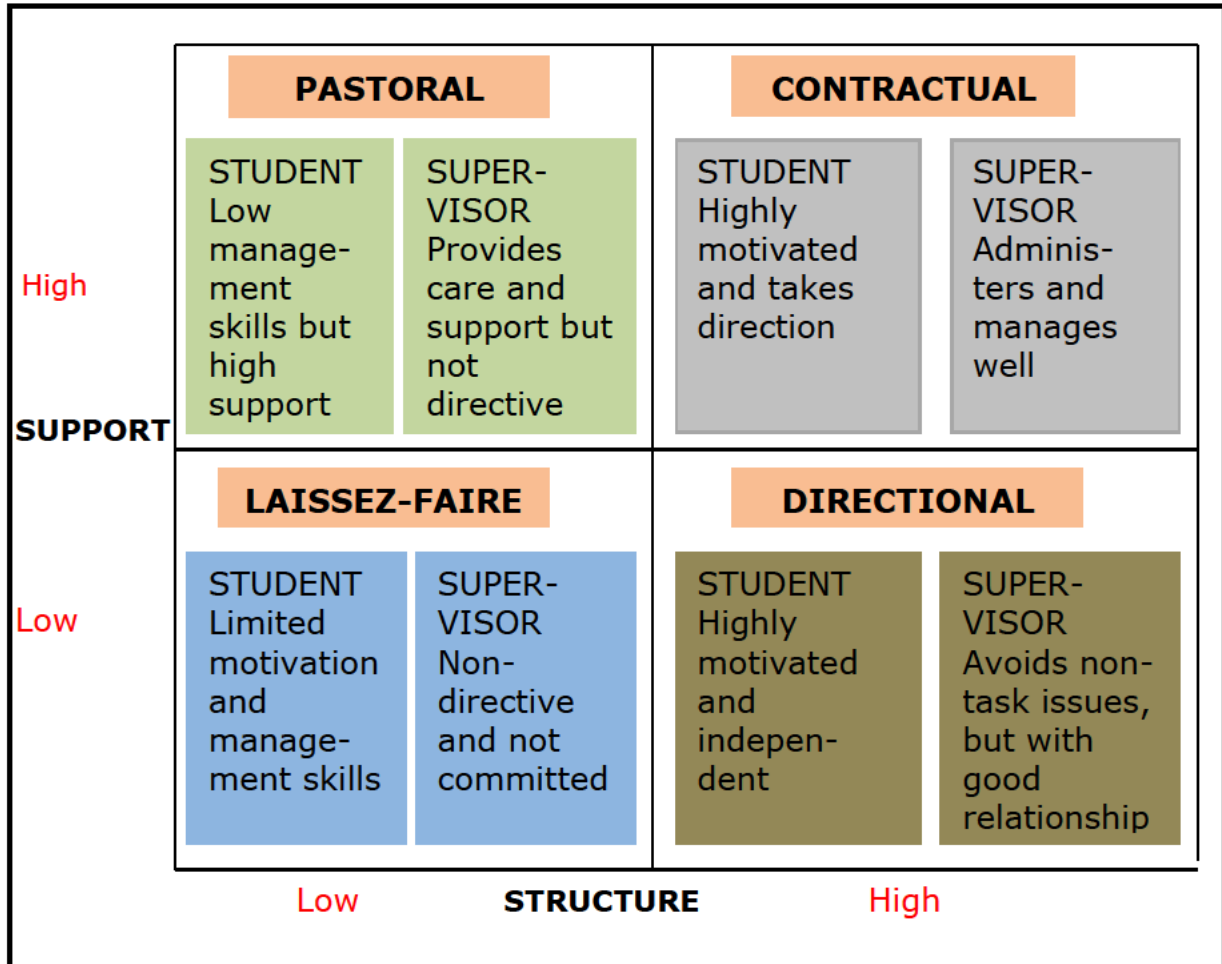


Figure 3.1: The supervisory management model (Gatfield & Alpert, 2002:267-268)

In considering the above-mentioned postgraduate supervision models, the doctorate by publication may be a viable model for UoTs. However, in terms of epistemology, the coursework model could be a viable model. The CUT does not currently have programmes consisting of coursework. Although such programmes could be developed, it will take some time to establish these. The cohort model in conjunction with industry could also be an option for UoTs. The ideal postgraduate supervision model should not necessarily focus on the roles of the postgraduate supervisor, but rather on the processes involved during postgraduate supervision.

From the literature, it is evident that the role of the postgraduate supervisor is far too complex to position it within certain categories. Postgraduate supervision practices changes as the process evolves, and supervisory arrangements are becoming more diverse, consisting of postgraduate supervisors, doctoral students, available infrastructure and policies. The proposed hybrid postgraduate supervision model for this study should be a combination and integration of at least the following components discussed above:

- The traditional apprenticeship model (a learning-by-doing model) consisting of capable postgraduate supervisors and a one-on-one supervision relationship (ASSAf, 2010).
- The supervisor/student alignment model which focuses on the academic growth of the doctoral student. As the research progresses, the postgraduate supervision process needs to be adjusted from an attached approach to a more detached approach (Gurr, 2001).
- The four-quadrant supervisory management model consists of the different support and structure levels in the postgraduate supervision process and the management skills of the doctoral student together with his/her ability to communicate and work cooperatively. The relationship between the postgraduate supervisor and the doctoral student ought to adjust as the research progresses (Gatfield, 2005).

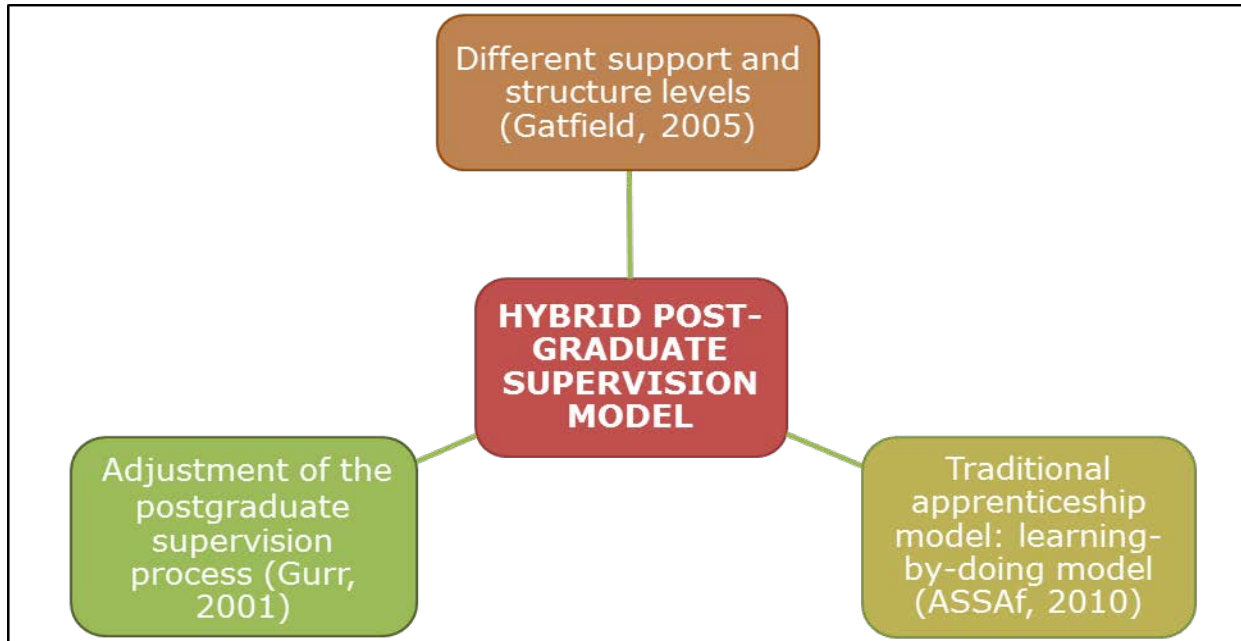


Figure 3.2 Hybrid postgraduate supervision model for UoTs (ASSAf, 2010; Gatfield, 2001 and Gurr, 2001)

Increased demands on postgraduate supervisors due to the changing work and HE environments challenge traditional approaches to postgraduate supervision. Postgraduate supervisors often tend to follow the same supervision practice that they have been experienced during their time of study. They therefore need to be aware of alternative approaches to supervision. The proposed hybrid model consisting of the traditional apprenticeship model, the supervisor/student alignment model and the four-quadrant supervisory management model offers benefits to doctoral students such as:

- Access to capable postgraduate supervisors in a one-on-one supervision relationship.
- Opportunity for doctoral students to engage and participate with the postgraduate supervisor in a learning-by-doing environment.
- An environment which focusses on the academic growth of the doctoral student.

- As the research progresses, the postgraduate supervisor needs to adjust the process from an involved relationship with the doctoral student to a more independent approach.

The hybrid postgraduate supervision model (see Figure 3.2 above) can provide novice postgraduate supervisors with the most important components of postgraduate supervision. Effective postgraduate supervision goes beyond the completion of the thesis – it also involves the broader intellectual development of the doctoral student. For universities and those responsible for the quality of research training and its coordination, supervision becomes a matter of providing a high-quality research-learning environment to doctoral students, which will be discussed in the following section.

3.3.3 POSTGRADUATE SUPERVISION QUALITY

Up to this point, the focus has been on different models of postgraduate supervision. In any model of postgraduate supervision however, there must be quality assurance (Fang, 2003:187; Rau, 2008:1). Therefore, attention should be given to descriptions of good practice and guidelines for postgraduate supervisors to ensure the quality of postgraduate supervision (Lee, 2007:684). Furthermore, Lee and Kamler (2008:511) note the low publication rates from doctoral degrees as a problem in the quality of doctoral education in terms of preparing students to participate in the research society. If the postgraduate supervision process is not well attended to, the integrity and the quality of the research may be called into question. Concerning the quality aspects in HE, the Higher Education Quality Committee's (HEQC) (CHE, 2015a:13) understanding of quality is:

- a) fitness **for** purpose – is the programme or university effectively carrying out its mission and vision and achieving its goals?
- b) fitness **of** purpose – is the mission, vision, or rationale for that university or programme appropriate to its context and to achieving broader national goals?
- c) value for money – are students receiving the education needed in the most efficient and effective way possible?

Therefore, to ensure that a programme is achieving its goals (fitness for purpose) and that students are receiving efficient and effective teaching (value for money), postgraduate supervisors should construct environments in which students can be guided to learn how to do research. Regarding quality assurance, Kamper (2004:234) maintains that inexperienced and/or unavailable postgraduate supervisors could compromise the quality of research. Quality, on the other hand, will be enhanced when postgraduate supervision includes complex interactions between departments, administration, the university and the external research environment (Reid & Marshall, 2009:145). The postgraduate supervisor must aim at both the production of a good thesis and the transformation of the doctoral student into a competent researcher, that is, the quality of the process itself as well as the outcome thereof.

Doctoral students are, or will be, knowledge workers, and therefore a knowledge-management approach could help to develop doctoral students to become competent knowledge transformers and managers (Zhao, 2003:191). The quality of research supervision will be enhanced if knowledge-management concepts are effectively integrated into the process. Such a framework suggests that research supervision is a process in which doctoral students develop new knowledge, theory and

methodology (**knowledge creation**) through “integrating, synthesizing and valuing existing knowledge (**knowledge transfer**), and in which candidates advance understanding and develop new insight into their area of investigation (**knowledge embedding**)” (Zhao, 2003:192).

This process requires innovation-oriented individuals (doctoral students) and a research-conducive environment with access to experts and knowledge technologies for knowledge creation, embedding and transfer. The outputs of postgraduate supervision are qualified researchers who successfully complete their research degrees by producing and presenting research outcomes with potential value to a knowledge-based society. For this reason, a postgraduate supervisor can only be successful in postgraduate supervision when the above-mentioned output is reached. The framework in Figure 3.3 shows the close synergy between the knowledge conversion process and the postgraduate supervision process (Zhao, 2003:192).

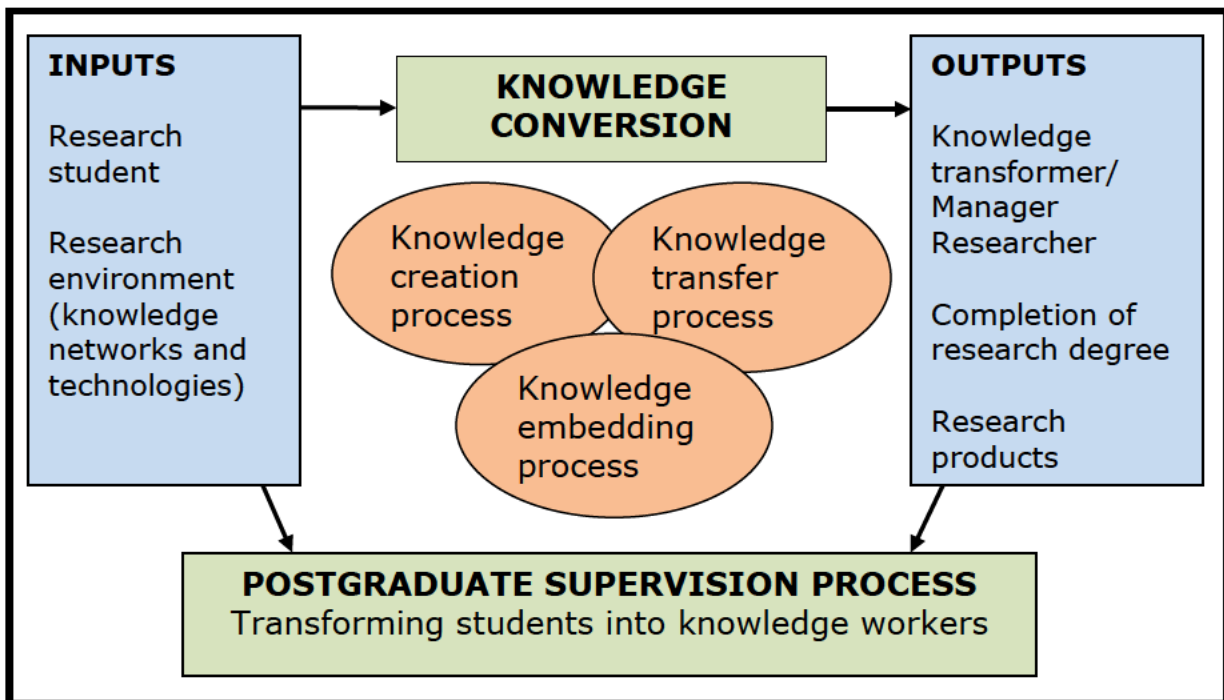


Figure 3.3: A knowledge management framework for the postgraduate supervision process (Zhao, 2003:192)

Since throughput and financial return have become driving forces at universities, postgraduate supervisors are increasingly being pushed towards more structured processes (see ASSAf, 2010). Kandiko and Kinchin (2012:6) point out that postgraduate supervisors face the challenge of combining aspects, for example supporting the doctoral student during the research process while also dealing with meeting the requirements regarding the progress of the doctoral student (Lee, 2007:686). Therefore, expertise in a variety of supervisory skills is required for supervising increasing numbers of doctoral students from diverse backgrounds (Harrison & Grant, 2015) to ensure the success (quality) of the postgraduate supervision process (see Chapter 2:2.8). The skills required for quality supervision need to be fostered through development and training, which will be discussed in the next section.

3.3.4 DEVELOPMENT AND TRAINING OF POSTGRADUATE SUPERVISORS

Academic staff need proper training and support if they want to carry out their postgraduate supervision responsibilities effectively (Boud & Lee, 2005:501; Craswell, 2007:377; Gilbert, 2004:301; Marsh *et al.*, 2002:318; Wadee *et al.*, 2010:10; Ward, 2013:42). In this regard, Lessing and Schulze (2003b:177) suggest that compulsory workshops on postgraduate supervision are essential for academic staff who are involved in this activity. Academic staff is trained up to the level of doctoral degrees, but may nevertheless lack the necessary skills and experience to lead others to similar heights (Machel, 2008:8). Leggat and Martinez (2010:602) are of the opinion that “in some cases training is required for supervisors, although experience in supervision continues to be acknowledged as important”. Therefore, any training programmes

must be reviewed to ensure that the differing needs of new and experienced supervisors are addressed (Davis, Brownie, Doran, Evans, Hutchinson, Mozolic-Staunton, Provost & Van Aken, 2012:103).

According to Van der Westhuizen and De Wet (2003:186), the ultimate aim of training postgraduate supervisors is to make the supervisory process more effective and it should result in a higher standard of research as well as higher completion rates and shorter completion times (Armstrong, 2004:600). A (natural) tendency among supervisors who have not received meaningful supervision training is to base their supervision on their own experiences of supervision. The untrained postgraduate supervisor might pursue (or consciously avoid pursuing) the qualities that their own postgraduate supervisor demonstrated to them when they were students (Bitzer, 2010:24; Chireshe, 2012:230; Lee, 2007:686; Mullins & Kiley, 2002:369). Wilkinson (2011:910) posits in this regard: "I have experienced that a large percentage of our lecturing staff is still teaching and supervising according to what they have experienced in their student days". In cases where this happens and the supervisory style is inappropriate, doctoral students may become frustrated and eventually give up their studies. Moreover, postgraduate supervisors and doctoral students must realise that a thesis forms part of a training process in which postgraduate supervisors have the responsibility of directing doctoral students between adequate training and the development of a new scholarly identity (Gardner, 2009:29; Malfroy & Yates, 2003:127; Manathunga *et al.*, 2007:19; Wellington, 2012:4). In this regard, Baker and Pifer (2011:6) see identity development as a crucial dimension of the postgraduate supervision process, whereby the academic staff member is positioning him/herself in the academic space (Schulze, 2014:2).

Postgraduate supervision and research training are a central part of the academic activities and they provide the link between teaching, research and learning. For this reason, it is clear that good postgraduate supervision needs to be the responsibility of all those involved in doctoral education, irrespective of whether they are teaching research methods or being the student doing the research (Page, 2001:19). If teaching, research and learning are core activities of universities and not just a means to an end, the need to address these issues at doctoral level is obvious (see Chapter 2:2.5). Overall, the benefits will be to the advantage of current and future doctoral students.

In summary, then, it is important to realise that academic staff need proper training and support if they want to be successful supervisors. In the study from which the ASSAf report (2010) ensued, concern was expressed by participating students over “possible lack of competence demonstrated by supervisors” and some students inferred that “supervisors have little idea about scope and completion of projects” (ASSAf, 2010: 77). Other studies examining the causes of doctoral student attrition quoted in the ASSAf report also identified the supervisor-student relationship as one of the causes of attrition (ASSAf, 2010: 77).

Taking cognisance of the limited supervisory capacity of universities in South Africa, and the general ageing of experienced and successful supervisors (ASSAf, 2010:97), the time is ripe to take steps to train novice postgraduate supervisors and to provide sufficient opportunities for academic development to ensure that they will be equal to the task of supervising doctoral students (Abdullah & Evans, 2012: 788).

3.3.5 ASSESSMENT AND FEEDBACK DURING THE POSTGRADUATE SUPERVISION PROCESS

Feedback to and assessment of doctoral students is integral to postgraduate supervision and form part of the teaching during doctoral education (see Figure 2.5). Postgraduate supervisors need support from the university as part of the quality assurance process, to make sure that correct procedures and criteria are used to measure performance and fairness in feedback and assessment during the supervision process (Dyason *et al.*, 2010:59).

A conceptual definition of assessment refers to how much learning has taken place because of teaching (Gibbs & Simpson cited by Kumar & Stracke, 2011:212). Assessment considers the learning outcomes – whether the outcomes meet the standards that have been established – and is seen as part of the process of obtaining a qualification. Criterion 11 of the Criteria for Institutional Audits (CHE, 2004b:14) states the following expectation regarding assessment: "The university has an assessment policy and clear and effective procedures for its implementation. The policy and its procedures ensure academic and professional standards in the design, approval, implementation and review of assessment strategies for programmes and modules, and for the qualifications awarded by the university".

Feedback is a form of communication by means of which learning and discovery take place (Kandiko & Kinchin, 2012:4; Winberg, Barnes, Ncube & Tshinu, 2011:1013). Constructive criticism during feedback is an essential element in the student's intellectual development that ensures progress in the student's written work and helps him/her to learn how to evaluate his/her own work and later become a supervisor him/herself.

According to Manathunga and Goozée (2007:310), doctoral students want to be 'filled up' with their supervisor's knowledge. Once they have experienced a good supervision process themselves, postgraduate supervisors may become more effective and as a result, may repeat the supervision style they experienced as a doctoral student (Caldwell *et al.*, 2012:910; Lessing & Schulze, 2003a:159; Wisker & Kiley, 2014:125). Poor performance of the doctoral student could be the result of the postgraduate supervisor not providing adequate assessment and/or feedback. Providing timely, positive and constructive feedback is one of the most critical tasks of a supervisor.

Without constructive and timely feedback, there is little drive for doctoral students to progress, to close the perceived gaps or to reach the level required to become members of a scholarly community (Kumar & Stracke, 2011:217). Feedback should be given to the doctoral student as soon as possible after work has been submitted to the supervisor. Postgraduate supervisors should first focus on what has gone well in the research and thereafter start discussing what has gone wrong. Feedback can take place face to face or electronically, using the track changes function of the word processor. Postgraduate supervisors need to reflect from time to time on how they give feedback to doctoral students, and also to discuss the matter with the student.

The first step in the assessment process is formative assessment. In order to eventually comply with assessment criteria when the thesis is judged and assessed, formative assessment in the form of feedback plays a critical role in the postgraduate supervision process. Feedback covers a complex set of issues in which several processes are involved. Doctoral students often go off course in an early stage and waste valuable time in pursuing avenues of inquiry that will not be fruitful. With early feedback, postgraduate supervisors can prevent this from happening (MacKinnon,

2004:101), and corrections can be continuously implemented (Kumar & Stracke, 2011:211). The formative assessment phase is a crucial step as it guides the student through the process of refining ideas and arguments. It is also at this stage that the doctoral student should be taught and mentored in the art of science writing, where ideas and arguments reach a stage of maturity and the student is able to articulate them. The postgraduate supervisor and the doctoral student must be willing to devote adequate time to the project (MacKinnon, 2004:101). It is important that the doctoral student reach this level of maturity before being subjected to summative assessment in the form of external scrutiny by means of a summative examiner's report. It is thus crucial that the student receive appropriate guidance during the formative part of the study. This places a huge emphasis on the supervisor who guides the student through the entire process (Leshem & Trafford, 2007:93).

To conclude, the literature in this section has addressed a number of significant issues on feedback and assessment, which show that these are an integral part of postgraduate supervision and that they form part of the teaching and learning during doctoral education. Poor performance of the doctoral student can be the result of not receiving adequate feedback. Providing timely, positive and constructive feedback is one of the most critical tasks of a postgraduate supervisor. Postgraduate supervisors must therefore be empowered by effective training, interpersonal skills and relevant university strategies to assist their doctoral students in developing the ability to deal with the continuous changes that take place in the research environment. The preceding section concludes the following: firstly, postgraduate supervision is a specialised field of teaching (see 3.3.1) and can take place in different supervision models (see 3.3.2). Secondly, the importance of the development and training (see 3.3.4) of the postgraduate supervisor to ensure quality (3.3.5) was

scrutinised, and thirdly, the importance of assessment and feedback (see 3.3.5) to the doctoral student were discussed.

Having examined the role of the postgraduate supervisor during the supervision process, it is now necessary to consider the doctoral student him/herself.

3.4 THE DOCTORAL STUDENT

The doctoral student too, as partner in a postgraduate supervision process, warrants some attention; therefore, a closer look will be taken of the supervisor-student relationship (see 3.4.1), the expectations (see 3.4.2) and research skills of the student (see 3.4.3), and the development of the student (see 3.4.4).

3.4.1 A COMPLEX RELATIONSHIP

At doctoral degree level, doctoral students need to be able to undertake research finishing in the acceptance of a thesis (Harrison, 2007). This, however, is a very superficial look at what the development to 'doctorateness' entails; it merely describes the outcome, namely being able to conduct research and report the process and findings, as well as complying with institutional and disciplinary rules and regulations. However, becoming a fully-fledged, successful doctoral candidate demands much more. It requires research at an advanced academic level, culminating in the submission, assessment and acceptance of a thesis. Students may also present peer-reviewed academic articles and papers, and, in certain fields, creative work such as artefacts, compositions, public performances and public exhibitions in partial fulfilment of the research

requirements. Coursework may be required as preparation for, or value addition to, the research, but does not contribute to the credit value of the qualification. The defining characteristics of obtaining a doctorate are that a higher order of thinking and reasoning has been attained and that a candidate has been able to make a significant contribution to the field of study (CHE, 2013b:40; DoE, 2007:29).

Having studied the requirements set out in these documents, and deliberating on the full extent of what it demands to obtain a doctoral degree, it is clear that completing doctoral studies successfully is possibly the most overwhelming of all accomplishments undertaken by students (Govender & Dhunpath, 2011:88; Tweedie, Clark, Johnson & Kay, 2013:382). A doctoral thesis is a challenging task and continues to be structured around the supervision relationship (Backhouse, 2009:289; Dysthe, Samara & Westrheim, 2006:300; Smit, 2010:97; Styles & Radloff, 2001:97; Waghid, 2006:427; Wisker & Robinson, 2013:301; Zhao, Golde & McCormick, 2005:1).

A growing body of research literature exists that explores the relationship between the postgraduate supervisor and the doctoral student (Hemer, 2012:1; Mainhard *et al.*, 2009:360), as well as the postgraduate supervision process itself (Boud & Lee, 2005, 2009; Halse & Malfroy, 2010; Ives & Rowley, 2005:536; Kehm, 2007:308; Lee, 2007; Strengers, 2014:547). Postgraduate supervision is an extensive, interpersonally focused, sometimes one-on-one relationship between the postgraduate supervisor and the doctoral student in which communication and interaction should take place frequently (Gottlieb, Robinson & Younggren, 2007:241; Hodza, 2007:1155). The models described earlier (see Table 3.2 and Figure 3.2) show the complex relationships between doctoral students and postgraduate supervisor(s).

Park (2007:29) refers to the postgraduate supervision relationship as a 'secret garden', in which the doctoral student and the supervisor work closely without a great deal of external scrutiny or accountability, especially at the initial stages of supervision. Wright (2003:211) maintains that this isolation places the doctoral student in a metaphorical goldfish bowl where there is usually only one, though sometimes two postgraduate supervisors on whom they depend for all their learning, guidance and support. According to Albertyn, Kapp and Bitzer, (2008:760) and Hortsmanshof and Conrad (2003), it is important to protect the intense one-on-one supervisory relationship, yet also to avoid the dangers of isolation and exploitation.

In addition to the above discussion on the postgraduate relationship, Grant (2005a:65-66) creates an awareness of the multi-layered relationship whereby neither the postgraduate supervisor nor the doctoral student can escape the influences of power because the postgraduate supervision relationship is productive ground. Power relations will have many effects on the supervision process, for example, through difficulties in communication and more seriously allegations and convictions of malpractice and abuse. The postgraduate supervisor and his/her doctoral student also meet as 'individuals' who are implicated in mutual relations, which stem from broader life experiences (Grant, 2005a:65-66). Figure 3.4 below (Grant, 2005a:63) illustrates the complexity (see Chapter 2:2.4) and non-linearity that reign during postgraduate supervision. It interweaves between past experiences, present actions, and future hopes. The relationship between the doctoral student and the postgraduate supervisor links up with a third element, that of 'knowledge', which presents the thesis. These three elements are in a constant state of flux as the research process progresses.

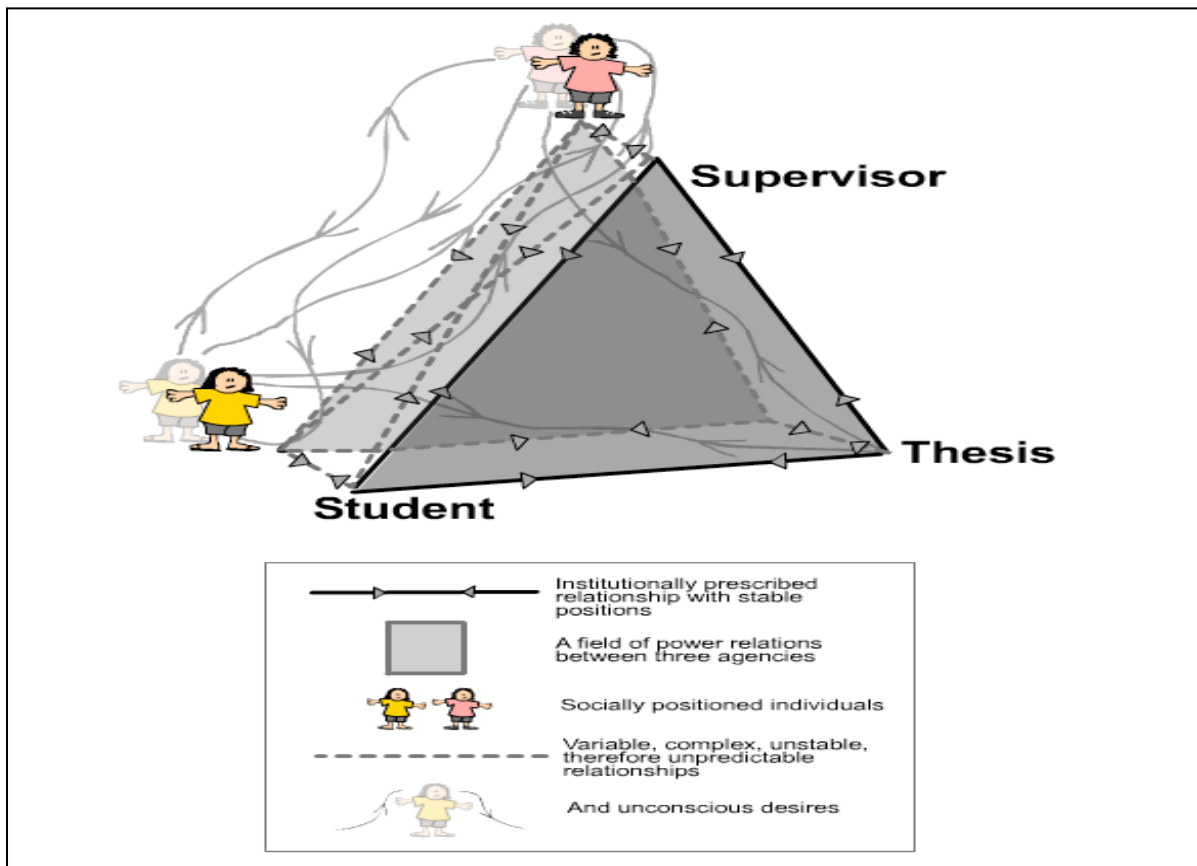


Figure 3.4: Student and supervisor multi-layer relationship
(Grant, 2005a:63)

Another interpretation that may apply to the relationship between the postgraduate supervisor and the doctoral student is that of mentoring. Mentoring takes place when an individual(s), usually older, always more experienced, helps and guides another individual during a developmental process; this guidance is not done for personal gain. Mentoring in the context of postgraduate supervision thus is a supportive activity in terms of which experienced postgraduate supervisors help to develop doctoral students' abilities by tutoring, steering, counselling, accepting, confirming and emotionally supporting them to develop their own professional skills (Dyason *et al.* 2010:47; Ngcongco 2001:53; Wadee *et al.* 2010:33; Wadesango & Machingambi, 2011:32). Mentoring is a process of informal transmission of knowledge that could be done by another academic staff

member and not necessarily the postgraduate supervisor (Bozeman & Feeny, 2007: 719). By placing postgraduate supervision in the category of mentoring, the hierarchical, problematic aspects of traditional forms of postgraduate supervision, where the postgraduate supervisor is the omnipresent master or guru and the doctoral student the compliant and devoted apprentice or protégé, are removed. Manathunga (2007:207) claims that effective postgraduate supervision is a form of mentoring when stating that "[Supervisors] guide and facilitate their students' gradual development into independent researchers through empathetic dialogue and by modelling appropriate disciplinary-based research behaviour". Indeed, some postgraduate supervisors adopt mentoring to enhance doctoral students' personal development: "We do not expect doctoral students to be passive recipients of information, but rather to engage with their supervisors in order to construct meanings, do detached and rigorous analyses, reflect, and disclose the unexpected, that is, to learn" (Waghid, 2006:427).

It is critical for postgraduate supervisors to support doctoral students in finding practical ways to accommodate their individual learning needs and career goals (Pearson & Brew, 2002:138). The doctoral student must trust the postgraduate supervisor (Yarwood-Ross & Haigh, 2014:41), and must be willing to voluntarily surrender some decisional or informational autonomy to the postgraduate supervisor based on the expertise, reputation, and power of the postgraduate supervisor (Jordan & Gray, 2012:298). Since postgraduate supervisors provide the bulk of academic support of doctoral students, an effective, transparent and accountable relationship between the two parties should be established. For this reason, a skills development programme could enable the supervisor to establish a good working relationship with his/her student.

3.4.2 EXPECTATIONS OF DOCTORAL STUDENTS

In the discussion of expectations of doctoral students, three matters come to the fore: (i) the expectations the doctoral student has of the study endeavour, (ii) expectations of the doctoral student regarding the supervision process, and (iii) how the doctoral student needs to mature through the postgraduate study endeavour.

i) Expectations of doctoral students regarding their studies

Doctoral students undertake doctoral studies for different reasons and with certain expectations, usually related to their work experiences or to the line of work they intend to undertake in the future. They want to study further and to generate knowledge, often in the interest of solving or understanding particular problems. For some it is just the next obvious step after having obtained a master's degree, especially for doctoral students who already hold academic positions or aspire to such appointments. In the end, the doctoral qualification of a student may serve as a benchmark for a higher-level appointment in the public sector or an executive position in the business world (Du Toit, 2012). Doctoral students and postgraduate supervisors often have different expectations of doctoral education (Strengers, 2014:546). A mismatch between what doctoral students expect and what they acquire from doctoral education may emerge and be problematic in the supervision process (Backhouse, 2009:288).

Broadly speaking, doctoral students have the following expectations when entering in the postgraduate supervision relationship with their supervisor:

- The postgraduate supervisor should value and transmit high professional standards in research.
- The postgraduate supervisor should provide guidance in all aspects of the doctoral student's research.
- The postgraduate supervisor should meet with the student regularly.
- The postgraduate supervisor should provide prompt feedback when work is submitted, including drafts of the thesis.
- The postgraduate supervisor should clarify expectations regarding cooperation, meetings, authorship, publications and conference presentations.

According to Wisker, Exley, Antoniou and Ridley (2008), postgraduate supervision may fail to meet the desired expectations and outcomes for doctoral students for many reasons, one of them possibly being the lack of supervisory skills on the part of the postgraduate supervisor. Doctoral students also require guidance with regard to the overall planning of the research in terms of the approach to follow; for example, whether they should follow a qualitative or a quantitative methodology for their research (Lessing & Schulze, 2002:148). When postgraduate supervision fails to meet such expectations, an effective intellectual and affective rapport cannot develop as it should.

ii) Expectations of the doctoral student regarding the supervision process

The postgraduate supervisor remains the specialist in the field of study in which he/she supports the maturation of the doctoral student from novice to expert as part of the research process (De Lange *et al.*, 2011:19). Doctoral students must have an attitude of appreciation of

academic modes of knowledge and quality, evidence-based research. They may be required to develop skills to engage and critique the work of others while planning and conducting their research. They must be able to formulate coherent, substantial claims supported by data and arguments and make a significant and original academic contribution in their discipline or field. Knowledge about the major developments, concepts and debates in their field as well as a broad knowledge of adjacent subjects is expected from the student. They must learn how to supervise and evaluate the research of others in the area of specialisation concerned. It is the responsibility of the supervisor to prepare and guide the student to master the attitudes, skills and knowledge to conform to these expectations, which are summarised in Table 3.3 below (Backhouse, 2009:250).

Table 3.3: The expectations of the doctoral student regarding attitudes, skills and knowledge

ATTITUDES	SKILLS	KNOWLEDGE
Doctoral graduates have: <ul style="list-style-type: none"> • an appreciation of academic modes of knowledge • respect for evidence-based research • disciplinary understandings of quality research. 	Doctoral graduates can: <ul style="list-style-type: none"> • engage with and critique work of others • plan and conduct a research project • formulate coherent, substantial claims supported by data and arguments • demonstrate high level research capability • express themselves in the appropriate academic discourse • make a significant and original academic contribution in their discipline or field. 	Doctoral graduates know: <ul style="list-style-type: none"> • about major developments, concepts and debates in their field • the subject field of their speciality • broadly the content of adjacent subjects • which research methods are appropriate • how to supervise and evaluate the research of others in the area of specialisation concerned.

The thesis is the most substantial piece of writing undertaken by doctoral students, and the final proof that they are worthy researchers who may bear the appellation of doctorate. Research is the process through which doctoral students are initiated in depth to the discipline in which they are doing their research (Nsibande, 2007:1118). They are learning something that 'is not yet there' (Granata & Dochy, 2013) and this does not happen without human intervention. Postgraduate supervisors believe that a doctoral student will display evidence of an attitude of engaged commitment to the dissertation (Anderson *et al.*, 2006:158; Heeralal, 2015:89) and a sense of personal ownership (Kiguwa & Langa, 2009:52; Wisker & Kiley, 2014:125). Doctoral students should take ownership of their studies and manage the investigation themselves (Phillips & Pugh, 2000:1), though under the guidance of the postgraduate supervisor.

iii) Growth and scholarly maturity of the doctoral student

As doctoral students grow and mature throughout the study process, their expectations will vary. Regarding the growth and learning of doctoral students, Grover (2007:12) has developed a maturity model (see Figure 3.5 below) that shows how doctoral students experience different challenges and expectations as they pass through the stages of exploration, engagement, consolidation and entry.

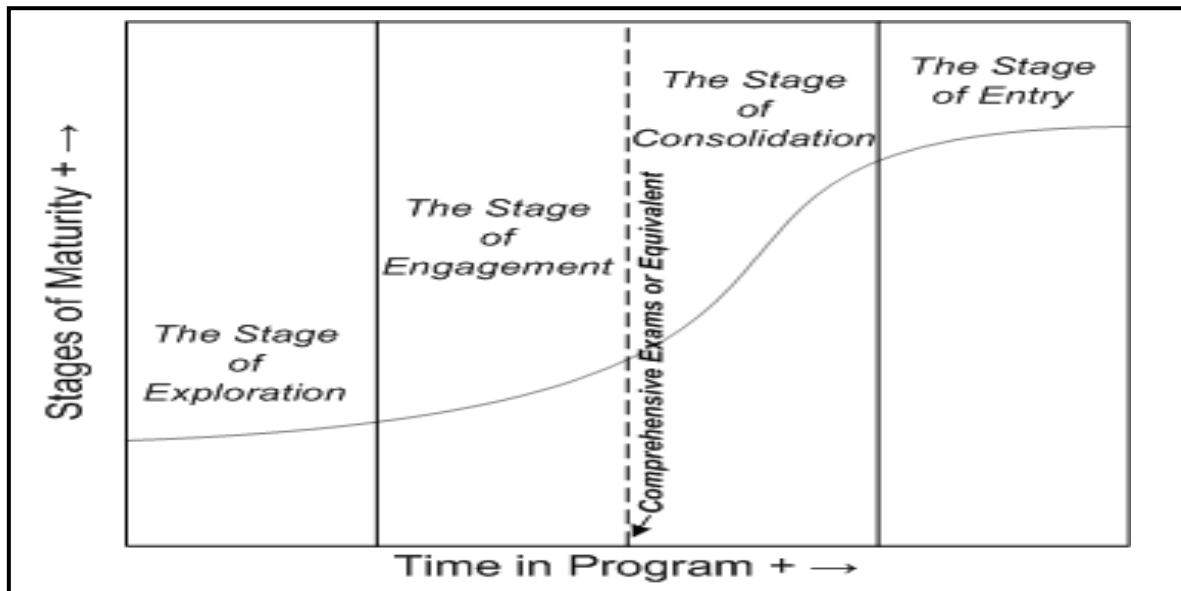


Figure 3.5: Scholarly maturity model of student growth (Grover (2007:12))

In the first stage of this model (see Figure 3.5), that of exploration, postgraduate supervisors have more knowledge to direct the doctoral student towards a particular topic. Students realise that doctoral studies differ fundamentally from master's studies, and that they need to assume responsibility, get to know the supervisor and other academic staff and find out about the available resources, and also that they need to position themselves in this context in order to be successful. Once the doctoral student decides on a topic, the balance of guiding and shaping of the project becomes a complex matter (engagement stage). The postgraduate supervisor needs to make sure that the objectives, proposed methods and implementation of the process are aligned with the established research practices. Doctoral students start making more use of the available resources, and (should) cultivate a good relationship with the supervisor. During the early stages of the project, postgraduate supervisors recognise that doctoral students often lack the confidence to carry on with the research. Therefore, expectations that doctoral students will act

autonomously during the first stages of the research should be limited. As they gain experience and confidence, the need for the postgraduate supervisor to be proactive will be reduced (consolidation stage). The challenge now is “to engage in deep research and establish ties with professionals in the field” (Grover, 2007:15). The last stage, the stage of entry, is particularly challenging in terms of time management – the cumulative effect of completing their research, sometimes holding part-time teaching jobs, completing the thesis, and preparing their curricula vitae to apply for positions may take its toll and requires effective time management (Grover, 2007:12-17).

In the discussion on the learning expectations of doctoral students, several issues have been considered, such as the expectations that the doctoral student has of the study endeavour, the expectations of the doctoral student regarding the supervision process, and how the doctoral student needs to mature through the postgraduate study endeavour. As it is no clear-cut matter that all of these expectations are always met, it is obvious that in order to create a well-managed and better structured supervision process, novice supervisors need to be aware of these issues, and a structured way to inform them may be a solution. Backhouse (2009) (see Table 3.3), the SAQA level descriptors (2012) and the HEQSF (CHE, 2013b), emphasise the research skills that doctoral graduates are supposed to have mastered, and therefore this aspect warrants more attention.

3.4.3 RESEARCH SKILLS OF DOCTORAL STUDENTS

In South Africa, doctoral studies are usually embarked upon after having completed a master’s degree. Obtaining a doctorate may be viewed as a unique and highly personal experience, during which major development

of the doctoral student occurs (Lepp, Remmik, Karm & Leijen, 2013:402). Many doctoral students see it as advancing their careers for personal satisfaction and growth, while they find themselves to be in their mid-career years (Leggat & Martinez, 2010:601).

During the postgraduate supervision process, the doctoral student must develop a deep understanding of the subject field and learn about related knowledge areas, particularly where their research overlaps with other disciplines. Findings must be reported in a manner that is acceptable to the discipline and to the wider academic community (Backhouse, 2009:250), while a range of higher order thinking skills must be developed to produce new knowledge (Karlsson, Balfour, Moletsane & Pillay, 2009:1098; Niemann, 2013:37; Rossouw, 2003:10-11). According to SAQA’s level descriptors for the NQF (SAQA, 2012:12-13), to obtain a doctoral degree the student must demonstrate “expertise and critical knowledge, the ability to conceptualise new research initiatives and create new knowledge, demonstrate a high level of proficiency in research, deliver original work that makes a significant contribution and must meet the highest peer-review and publication standards (SAQA, 2012).

The NQF level descriptors (SAQA, 2012:12-13) list the following as knowledge, skills and attitudes a doctoral graduate should be able to demonstrate:

Table 3.4: Abbreviated level descriptors for level 10 (PhD)

Level descriptor categories	Level 10
Scope of knowledge	<ul style="list-style-type: none"> • Can demonstrate expertise and critical knowledge in an area at the forefront of the field, discipline or practice • Have the ability to conceptualise new research initiatives, and create new knowledge or practice
Knowledge	<ul style="list-style-type: none"> • Have the ability to contribute to scholarly debates

literacy	around theories of knowledge and processes of knowledge production in an area of study or practice
Method and procedure	<ul style="list-style-type: none"> • Have the ability to develop new methods, techniques, processes, systems or technologies in original, creative and innovative ways appropriate to specialised and complex contexts
Problem solving	<ul style="list-style-type: none"> • Can apply specialist knowledge and theory in critically reflexive, creative and novel ways to address complex practical and theoretical problems
Ethics and professional practice	<ul style="list-style-type: none"> • Can identify, address and manage emerging ethical issues • Can advance processes of ethical decision-making, including monitor and evaluate the consequences of these decisions where appropriate
Accessing, processing and managing information	<ul style="list-style-type: none"> • Can make independent judgments about managing incomplete or inconsistent information or data in an iterative process of analysis and synthesis, for the development of significant original insights into new complex and abstract ideas, information or issues
Producing and communicating information	<ul style="list-style-type: none"> • Can produce substantial, independent, in-depth and publishable work which meets international standards considered to be new or innovative by peers • Can make a significant contribution to the discipline/field/practice • Can develop a communication strategy to disseminate and defend research, strategic and policy initiatives and their implementation to specialist and non-specialist audiences, using the full range of resources of an academic and professional/occupational discourse
Context and systems	<ul style="list-style-type: none"> • Can understand theoretical underpinnings in the management of complex systems to achieve systemic change • Can design, sustain and manage change independently within a system or systems
Management of learning	<ul style="list-style-type: none"> • Can demonstrate intellectual independence and research leadership • Can manage research and research development in a discipline, field or practice
Accountability	<ul style="list-style-type: none"> • Can operate independently and take full responsibility for his/her own work, and where appropriate can lead, oversee and ultimately be held accountable for the overall governance of processes and systems

Based on the expectations of the NQF (see Table 3.4 above), one can conclude that a doctoral degree requires a doctoral student to undertake high-level, quality research at the most advanced academic levels culminating in the submission, assessment and acceptance of a thesis and making a significant and original academic contribution at the frontiers of a discipline or field. In addition, Backhouse (2009:253) states that the individual character of the doctorate and postgraduate supervision in South Africa makes it unlikely that doctoral students will develop uniform skills as mentioned in Table 3.4 above. It remains the case, however, that many doctoral students are not well informed about the basic principles of research or the requirements of the process (Barnes & Randall, 2012:48). Therefore, the mentioned skills must be learned from the postgraduate supervisor so that doctoral students are given the opportunity to develop their research skills to supervise other doctoral students. The importance of teaching doctoral students in the abovementioned skills cannot be underestimated.

If universities are to produce future researchers capable of solving the complex problems of the twenty-first century, they will need to design doctoral programmes that will develop students' interdisciplinary knowledge, skills and attitudes (Manathunga, Lant & Mellick, 2006:376). However, it must be acknowledged that it would be difficult to cover every possible skill that might be needed in every possible career. Any teaching must encourage the transformation of doctoral students into independent, trained researchers, future colleagues and supervisors (Morris *et al.*, 2011:1). Doctoral students' understanding and awareness of research must be developed by engaging in the process (Deem & Lucas, 2006:11). Nulty, Kiley and Meyers (2009:6) recommend that postgraduate supervisors must make sure that doctoral students develop alignment between their research methodologies and approaches to the discipline, because there are no clear steps to follow regarding how to do research.

It is therefore important that research training prepare students:

- to think about research as a dynamic process (Backhouse, 2009:210);
- to appreciate the many factors, for example personal, ethical, theoretical, political, technical and social factors, that shape the research (Backhouse, 2009:280);
- to obtain a sense of what it means to do 'good' research (Backhouse, 2009:210); and
- to understand the purpose of research (Backhouse, 2009:8).

In addition to research skills, doctoral students also need to master specific generic skills to a very high level to enable them to comply with the requirements for a doctorate qualification. Very important in this regard are communication skills, written as well as spoken, because these are the principal channels through which doctoral students communicate their ideas and the basis upon which their degree is awarded (Cotterall, 2011:413; Kozar & Lum, 2013:A134; Phillips & Pugh, 2000:67). Problems with academic writing skills among doctoral students are reported, both internationally and nationally (Aitchison & Lee, 2006:265; Brown, 2007:239; Ho, 2005:2; Holtzhausen, 2005:90; Maher, Feldon, Timmerman & Chao, 2014:700; Robinson-Pant, 2009:425), and writing skills are frequently treated as separate from the real work of research and every so often neglected or taught inadequately (Golde, 2007:344; Kamler & Thomson, 2008:507).

Writing at doctoral level is something that academic staff recognise when it begins to occur, but they generally find the process difficult to explain to a student in advance (Holbrook, 2007:1020). More proficient writing skills will be acquired gradually, mainly through feedback on written drafts, therefore the more structured models are more suitable for students with backlogs regarding their generic skills (e.g. the coursework

model). Postgraduate supervisors are under increasing pressure to guide a constantly growing number of students who lack training and experience in writing logically and correctly (McFarlane, 2010:149).

The question may be asked as to what skills and competencies doctoral students must acquire during the research process. The diversity of methods, the purpose of the research, the application of research and the many disciplines make it difficult to answer this question. Generally speaking, doctoral students are expected to understand and acquire knowledge of basic principles of research, be able to apply a range of research methods, manage and interpret the research data, publish the research and present the results at conferences and/or colloquiums. Equally important are the writing skills of doctoral students. Not all of the abovementioned skills are easily come by, and there are no prescriptive solutions as to how to go about teaching these to doctoral students. The way that doctoral students learn to do research includes and extends beyond the knowledge of how to complete the research (Jansen *et al.*, 2004:79). While doctoral students are being taught how to do research, they are also learning new skills, a developmental process which needs to be discussed in more detail. To this point, the discussion has been on the skills of the doctoral student, particularly in addressing the specific knowledge, skills and attitudes a student should be able to demonstrate after completion of the doctorate. However, it is important to recognise the importance of the training of students to do research and these issues will now be considered.

3.4.4 DEVELOPMENT OF DOCTORAL STUDENTS

Doctoral students' motivation – or its absence – to participate in research training is a key issue in students' learning to do research, as research training makes a particularly important contribution to postgraduate

research. Coate and Leonard (2002:24) note that the doctorate provides neither sufficient methodology training for students who go into academia, nor continuing academic development for those who go outside. While doing research for one's own studies, one usually focuses on the methodology applied, not paying attention to other methodologies, and therefore training might be too narrow to enable such a doctoral graduate to become an effective and efficient supervisor.

Firstly, doctoral students' lack of previous research experience and their perspectives on the different methodologies may hinder their progress in doing their doctorate. In this regard, Lubbe *et al.* (2005:247) maintain that much of the first study year could be wasted, if doctoral students are not equipped to begin doctoral work without the provision of substantial training in research methods and research design. Doctoral students may become resistant if they feel that the research training is disrupting the progress of their research. They may experience this as 'a deviation from their real purpose' (Deem & Brehony, 2000:157), namely the completion of their doctorate. Therefore, they should undergo research training with an emphasis on methodology early in the study period, before the research can start in earnest.

Secondly, there is the question of whether the training in different research methodologies should be similar for every doctoral student, in other words, whether doctoral students should receive training in quantitative and/or qualitative research methods, regardless of the students' academic background. It is important to deal with this in good time to ensure that the students make informed decisions when deciding on their research approach and methodology. The research training needs to be structured in such a way as to facilitate the appropriate balance of academic learning and practical experience. Thirdly, one of the major contributors towards successful research training is the student 'wanting

to learn' – who feels motivated and has a sense of purpose and clear intentions (see Chapter 2:2.5). Universities should ensure that they are aware of the different ways in which students want to and should have access to research training, as this may help them to introduce adjustments to the way in which students are supervised and trained (Deem & Brehony, 2000:162).

Fourthly, the craft of research is mastered mainly through practical experience and active participation in a research community (Pallas, 2001). In undertaking research, the doctoral student is no longer a bystander and should develop a feeling for research. According to Hasrati (2005:558), there is a lack of an analytic framework to capture the relationship between postgraduate supervisors and doctoral students with regard to doctoral students' learning. In this regard, Waghid (2006:434) suggests that doctoral students can learn authentically if and when postgraduate supervisors create enabling conditions in which students can connect with other students to discover "untapped possibilities". Learning by doing, learning from experience and learning from mistakes entail one of the dimensions of successful learning in general and of successful research in particular. In other words, learning (both skills and content) does not happen automatically, but is promoted by the active participation of the individuals involved in the supervisory relationship (Hadingham, 2011:37). Therefore, the postgraduate supervisor should provide a supportive environment to students to give them opportunities to learn and to prepare themselves to become better researchers.

Fifthly, the diversity of academic backgrounds and professional experience of doctoral students might require the development of alternative courses of study for those with different career interests and needs. A lack of exposure to research during their undergraduate and master's studies (Olivier, 2007:1129) and diversity of practice with regard to their learning

experiences during their postgraduate studies (Backhouse, 2009:272) may make it difficult for universities to use one generic research training programme for all doctoral students that enrol. Students should review, describe and comment on the work of other researchers and identify aspects of the current state of knowledge that they are lacking, and then seek to address such gaps by making use of the training offered. The methods used to address the knowledge and skills gaps may vary according to disciplinary understandings of research.

The preparation of doctoral students to become researchers takes place within local communities of research practice (Pallas, 2001:9), although the acquisition of research skills does not occur simply by being exposed to a particular community of practice – teaching from the side of the supervisor(s) and active involvement from the side of the doctoral student are required to ensure research development. A necessary precondition for the advancement of cognitive development is that doctoral students should also be actively engaged in their discipline (Van Schalkwyk, 2010:215). Creativity and critical thinking, too, are definite inherent and integral factors required for the successful completion of a doctorate, and therefore students should be provided opportunities and be encouraged to think and act critically and creatively during the supervision process. Creativity is a precondition for producing new knowledge to ensure the success and survival of universities and a discipline, and critical thinking is a prerequisite for evaluating and judging information used in the process of knowledge construction (Lovitts, 2008:297).

Doctoral students will study according to their personal interests, the research interests of the postgraduate supervisor, the current concerns of the discipline and the sources of funding available. The experience of doctoral education and research will not be the same for all doctoral students and disciplines. For example, doctoral students in the natural

sciences are more likely to work as part of a team that gives them access to resources and support, as well as experience in large joint projects. However, doctoral students in the humanities work more in isolation and learn to handle their research more on their own. Knowledge in chemistry is cumulative and requires convergent thinking and collaboration, while education “calls for a divergent way of thinking to progress itself” (Chiang, 2003:19). Differences between disciplines and universities, too, make standardisation of doctoral education challenging (ASSAf, 2010). Differences across different disciplines in terms of knowledge produced are summarised in Table 3.5 below (Backhouse, 2009:273).

Table 3.5: Knowledge produced across different disciplines
(Backhouse, 2009:273).

MATHEMATICS AND APPLIED MATHEMATICS	ENGLISH STUDIES	CIVIL AND ENVIRONMENTAL ENGINEERING	PUBLIC AND DEVELOPMENT MANAGEMENT
<ul style="list-style-type: none"> • Introduce or investigate mathematical objects • Derive equations to describe phenomena • Model natural phenomena and develop modelling tools • Philosophical reflections 	<ul style="list-style-type: none"> • Reflect on literary concepts • Critique the work of an author • Compare the work of two or more authors • Discuss culture as reflected in literature (broadly interpreted) 	<ul style="list-style-type: none"> • Investigate engineering and environmental problems • Model real-world phenomena and develop modelling tools • Develop guidelines and protocols • Write software for decision making or optimisation 	<ul style="list-style-type: none"> • Critique policy and policy implementation • Assess the impact of policy • Explain the results of policy • Investigate the sustainability of policy
Theoretical knowledge with emphasis on solving theoretical problems	Theoretical knowledge with emphasis on critique	Knowledge focused on practice with emphasis on improving practice	Knowledge focused on practice with emphasis on critique

These differences (Backhouse (2009:273) summarises in Table 3.7, are indicative of differences among disciplines, for example a focus on theoretical knowledge and a focus on knowledge that relates to practice. Some focus solely on critique, while others do not merely critique problems, but seek to solve them too (Backhouse, 2009:272). The research conducted by Backhouse (2009) also identifies some common features of PhD theses. These can be summarised as follows:

- Reviewing the current state of knowledge.
- Identifies an aspect in current knowledge that is lacking.
- Composes a proposal to address the knowledge gap.
- Selects a method (conforming to the disciplinary understandings of research) to address the knowledge gap.
- Seeks evidence through research.
- Uses inductive and/or deductive reasoning to draw conclusions from the evidence found.
- Records intentions, methods, evidence and conclusions.

What can be added is abductive reasoning since it can be identified as the ground-state, or default, mode of cognition. As such, it deals with the issue of reasoning toward meaning (Shank, 1998:841).

Thus, although differences exist among doctoral studies in different disciplines, there are also similarities, and with a view to supervision, these are the aspects to start with. How the supervision process will unfold from there on, can then be decided.

Besides these issues of learning, training and diversity, there is one final obstacle: epistemological access. Morrow (2009:78) offers valuable insights into epistemological access in explaining that epistemological access is neither a product that one can buy or sell, give to someone or

steal, nor is it some kind of natural growth, such as the growth of plants or bodies. Epistemological access cannot be supplied or 'delivered' or 'done' to the learner, nor can it be 'automatically' transmitted to those who pay their fees, or even to those who also collect the hand-outs and attend classes regularly. Epistemological access is learning how to become a successful participant in an academic practice. "In the same way in which no one else can do my running for me, no one else can do my learning for me" (Morrow, 2009:78). In considering epistemological access, it is important to remember that not every doctoral student has had access to quality education and, therefore, research training should be compulsory in pursuing a doctorate. Thus it is important that universities engage with ontological (the nature of existence) and epistemological (the nature of knowledge) issues in all their complexity, including their implications for research, methodology, scholarship, learning and teaching, curriculum and pedagogy. The challenge that is presented is that of creating a culture that genuinely respects and appreciates differences and diversity – whether class, gender, national, linguistic, religious, sexual orientation, epistemological or methodological in nature (HESA, 2014:6-7).

To conclude, when doctoral students commence their doctoral studies, they might not have the necessary experience in all the research methodologies to do the research on their own. Additionally, doctoral students should want to learn how to do research by active participation in the research process. It is important to realise that doctoral studies will be different for doctoral students in terms of the university they attend, the degree they undertake and the skills and competencies that are expected of them to finish the research. Finally, not every student has had access to quality education and training in doing research. Clearly, postgraduate supervisors need to be aware of the differences among them as well as the lack of skills of some doctoral students when they

start supervising them in order to assist in and enhance students' development.

Having examined the doctoral student involved in a complex relationship with his/her postgraduate supervisor (see 3.4), together with expectations (see 3.4.2), research skills (see 3.4.3) and the development of the doctoral student (see 3.4.4), it is now necessary to consider the university as a partner in the postgraduate supervision process.

3.5 THE UNIVERSITY AS PARTNER IN THE POSTGRADUATE SUPERVISION PROCESS

Among the responsibilities of universities are the generation of new knowledge through research and the development of a research culture to increase research output and deliver doctoral students with the ability to do research (Erasmus, 2008:7; Koen, 2005:32). In addition to the research culture of a university, postgraduate supervision is also a fundamental component of university life (Buttery *et al.*, 2005:7). Academic staff at UoTs focus on delivering on-site education and research enriched by industrial and business experience (Winberg, 2005:198), with an emphasis on delivering employees to be ready for the world of work, and curricula and research programmes that are application driven (Du Pré, 2009:19). UoTs should provide students with opportunities to master specific skills and knowledge to render competent and employable graduates (Callaghan, 2014:406; Mowbray & Halse, 2010:653). Therefore, it is important to support collaborative efforts with the private sector and create programmes that link universities with industry, not only for the increase of supervisory capacity but also for equipping

students with transferable skills and expertise relating to the knowledge economy (Herman, 2011b:515).

The overarching function of universities is to provide teaching, learning, research, training, assessment and feedback. Universities must engage (and ensure success) in research because the reputation and competitiveness of any university depend on the outputs and quality of its research performance. Although most of the tasks of the university are delegated to faculties, departments, units, and so forth for implementation, in the final analysis the university is the responsible body. From Figure 3.6, it is apparent that postgraduate supervision requires postgraduate supervisors to be experts in their disciplines and in research methodology, and to have mastered a variety of skills. The doctoral student enters postgraduate studies as the novice. Specific knowledge and several skills are required of both the postgraduate supervisor and the doctoral student to produce the product, which is a successfully completed doctoral study, resulting in a doctoral degree awarded by the university.

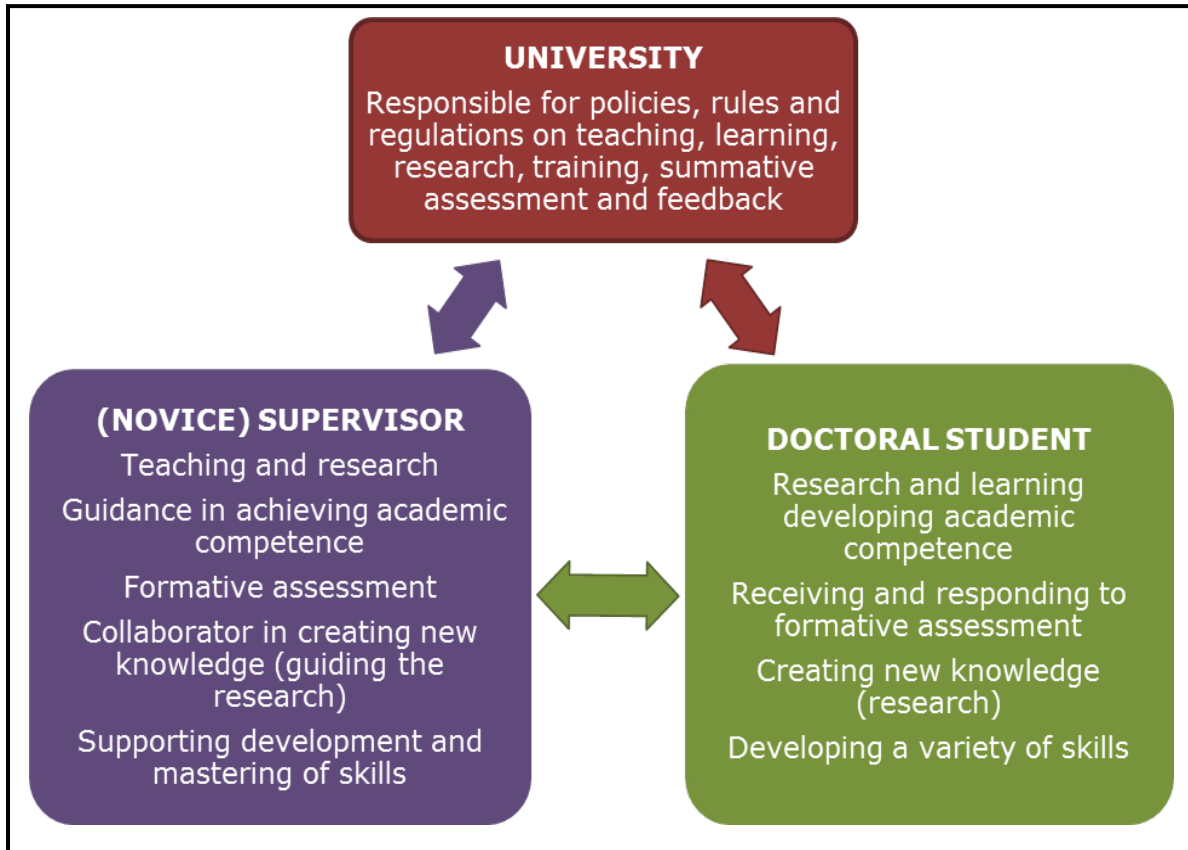


Figure 3.6: The roles of the university, the novice supervisor and the doctoral student (3.2, 3.3, 3.4, 3.5)

Universities, including UoTs, need well-trained academic staff in order to gain a competitive edge; therefore, academic staff with doctorates are required. Low enrolments in postgraduate programmes are a concern (ASSAf, 2010:21), and UoTs need to pay attention to using research as an enabler for increased participation of students at master's and doctoral levels – students who have the potential to stay on at UoTs as academic staff. Thus, the university has a personal interest apart from serving the student population – more doctorates might mean that better-qualified academic staff will be available to provide supervision.

Another important role of the university is to provide opportunities for cooperation and collaboration with other research universities. Because of the emphasis on the area of strategic and applied research, it is expected

that UoTs will develop strong cooperative and collaborative networks with industry. UoTs have a specific focus on applied research – this is research aimed at solving specific problems that business, industry and society face. This is in contrast to the focus of traditional universities that mostly engage in basic (or fundamental) research. In order for applied research to benefit business, industry and society, there needs to be active cross-disciplinary cooperation between the various stakeholders (SATN, 2008:26-27). In solving organisational and/or societal problems, multi-disciplinary and inter-disciplinary research are needed, as finding solutions to problems often requires inputs from various disciplines. This necessitates that a culture of innovation should be encouraged especially at UoTs as this leads to enhanced competitiveness and new knowledge generation.

In the final analysis, the university, by means of its committee structures and responsible dignitaries, is responsible for the policies, rules and regulations governing and regulating undergraduate and postgraduate studies. Admission policies, prerequisites for students and supervisors, duration of studies, medium of instruction, language in which theses are to be produced, and requirements for admission to assessments count among the matters decided on by the university. They are the providers of support in terms of infrastructure, such as libraries, offices, lodging, lecture rooms and information technology. The university also provides bursaries, information and technology support, suitable postgraduate supervisors, help with registration and approval of the study, and eventually the awarding of the degree.

Clearly, UoTs are facing unique challenges regarding their research activities. Given the history of UoTs as former technikons, it is difficult to reach the benchmarks for doctoral student enrolment, since not all academic staff have the necessary postgraduate qualifications to produce

research outputs. Former technikon staff was recruited for their technological skills and industrial experience and it was never anticipated that they would be expected to create new knowledge. This requires UoTs nowadays to be creators of new, applied knowledge.

In the next section, the issues regarding the institutional partners will be added to the framework to complete the objective of the study, namely to develop a skills development programme for postgraduate supervisors at a UoT.

3.6 A FRAMEWORK FOR POSTGRADUATE SUPERVISION

In Chapter 3, the roles of the postgraduate supervisor (see 3.2), the postgraduate supervision process (see 3.3), the doctoral student (see 3.4) and the university as partner in the postgraduate supervision process (see 3.5) were outlined. Based on opinions in the literature on postgraduate supervisors, doctoral students and universities, a number of issues have been highlighted and added to the framework.

Concerning the student and the supervisor, the following issues came to the fore (see Figure 3.7 below):

- Disciplinary understandings (see 3.4.4, 3.5)
- Commitment of student and supervisor (see 3.3.1, 3.4.2 (ii))
- Hybrid postgraduate supervision model (see 3.3.2)

The following issues regarding the university as a partner in the postgraduate supervision process were included (see Figure 3.7 below):

- Support infrastructure (see 3.3, 3.3.1, 3.3.4)

- Policies, rules and procedures (see 3.3, 3.4.1)
- Summative assessment (see 3.3.5)
- Quality assurance (see 3.3.3, 3.3.5)

Regarding the product that will be produced at the end of the postgraduate supervision process, the following issues were identified (see Figure 3.7 below):

- Transferable skills (see 3.5)
- Competent and employable graduates (see 3.5)
- Ability to supervise (see 3.4.2 (ii), 3.4.3, 3.4.4)
- Original academic contribution (see 3.4.2 (ii), 3.4.3)
- Applied research (see 3.5)
- Epistemological access (see 3.4.4)

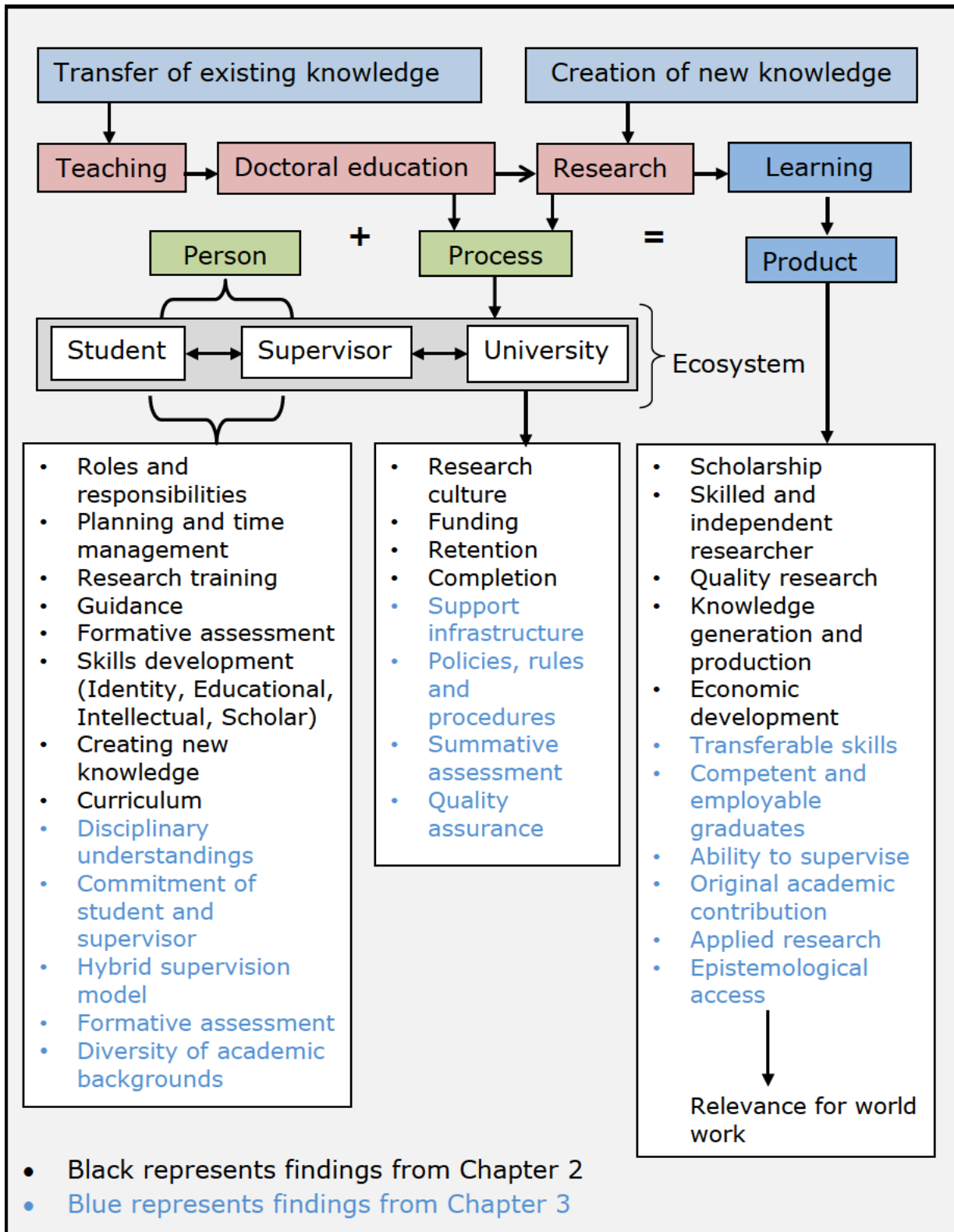


Figure 3.7: A framework for postgraduate supervision

3.7 CONCLUSION

In this chapter the institutional issues regarding postgraduate supervision and the importance of the three partners in the process, namely the postgraduate supervisor, the doctoral student and the university have been discussed. Each partner plays a specific role in the postgraduate supervision process.

The first of these relates to the postgraduate supervisor and his/her research skills and workload. The various aspects of the postgraduate supervision process have been discussed, and the training of postgraduate supervisors regarding assessment and feedback has been scrutinised. The provision of postgraduate supervision that will fulfil the needs of the doctoral student is a complex and vague process. The literature attempts to present a description of the postgraduate supervision process, but also presents various supervision models that have been discussed (see 3.3.2). However, failure to acknowledge the uniqueness of the supervision relationship that takes place within a singular set of gender, racial, and disciplinary conditions at a university is likely to render the process more complex (see 3.3 and 3.4.1).

Secondly, the doctoral student has been analysed with special reference to the complex postgraduate supervision relationship (see 3.4.1) with special reference to the expectations, research skills and the development of the doctoral student. An important challenge for the doctoral student is his/her endeavour to master research skills and take ownership of the research topic. The final section of the chapter dealt with the university as the third partner that provides a certain type of infrastructure without which the other two partners in this relationship cannot function.

This chapter aimed at providing a realistic and holistic view of the institutional issues of postgraduate supervision to answer the following research question:

- What are the essential components that should be included in a skills development programme for postgraduate supervisors (see Chapter 1:1.7.4)?

Thus, the following objective was pursued in Chapter 3:

- To identify the essential components to be included in a skills development programme for postgraduate supervisors by means of a literature survey (see Chapter 1:1.7.4).

This objective was accomplished by means of the literature overview in Chapter 3. Best practices in the literature on postgraduate supervision were taken into account and grouped in four main sections, namely the postgraduate supervisor (see 3.2) of which the postgraduate supervision process (see 3.3) is an important feature, the doctoral student (see 3.4) and the university as partner in the postgraduate supervision process (see 3.5). Hybrid postgraduate supervision, which consists of the traditional apprenticeship model (see 3.3.2), the supervisor/student alignment model (see 3.3.2), and the four-quadrant supervisory management model (see 3.3.2), can assist postgraduate supervisors to help in providing a high-quality research learning environment to doctoral students. This is a very complex process with no clear-cut boundaries of best practices in regard to postgraduate supervision. Postgraduate supervision is essential for universities to build their research sources and profiles. The success and quality of postgraduate supervision depends largely on the input of the three partners in the process, namely the postgraduate supervisor, the doctoral student and the university; this has been discussed. The postgraduate supervisor's role determines the doctoral student's general satisfaction, retention and completion. However, the doctoral student

needs more support and guidance especially in the early stage of his/her studies. A lack of progress can be the cause of apathetic and anxious students.

The skills necessary for postgraduate supervisors to supervise doctoral students were examined. Because of the diversity of students and the changing environment of the university, postgraduate supervisors at UoTs require additional skills to supervise doctoral students. It is therefore evident that a doctorate provides students with subject knowledge, but not necessarily knowledge on the postgraduate supervision process. In Chapter 4, the policy issues in postgraduate supervision will be discussed.

CHAPTER 4

POLICY ISSUES IN POSTGRADUATE SUPERVISION

4.1 INTRODUCTION

Postgraduate supervision is informed by processes within both the internal and the external environments. Postgraduate supervision practices are not simply prescribed by institutional policies. They also form part of a fluid process determined by continuity and change (Grant *et al.*, 2014:44). Across the globe, universities are focusing on improving their research and teaching endeavours to be competitive in the global and national rankings (Bundy, 2005:90; Van de Schoot, Yerkes, Mouw & Sonneveld, 2013:1). In this regard, universities are increasingly comparing their own programmes and ways of teaching with those of other universities, also in the field of doctoral education (Kehm, 2007:308), mainly due to strong competition among HEIs.

Chapter 2 was concerned with setting the scene to understand postgraduate supervision in general, providing a background against which Chapter 3, the institutional issues related to postgraduate supervision, were discussed. In this chapter, a closer look will be taken at the external issues in postgraduate supervision with the origin and growth of the doctorate. Flowing from this, doctoral studies at UoTs will be examined. Subsequently, developments in the relationship between the government and universities, with the national qualifications framework as a quality mechanism for doctoral studies, will be examined with reference to accountability for staff development, funding, diversity and standardisation in doctoral studies.

4.2 THE DOCTORATE

The doctorate, as an academic qualification, has a long history. It took more than a century to arrive in Britain after it was first introduced in Germany in the early nineteenth century. During the 1600s and early 1700s, the European universities – Oxford, Cambridge, Paris, Bologna and Berlin among the more significant – educated most of the prominent education leaders who created the world's first colleges – universities such as Columbia, Harvard, William and Mary, Pennsylvania, and Yale. They awarded only baccalaureate degrees in the preparation of teachers and ministers (Archbald, 2011:8-9).

The American doctorate-granting university did not develop until the second half of the nineteenth century. Prior to this, America's top college graduates travelled abroad to German universities to accomplish advanced graduate study, because of their strong reputation in science and scholarly investigation. America's graduate schools ultimately adopted the German model of doctoral education, which was done through lectures, reading, recitation, and reproducing others' writings. At German universities, doctoral study was oriented toward scholarly inquiry and research. Growing numbers of scholars, particularly the Germans, began to view the role of graduate study as training students to think critically, empirically, and creatively (Archbald, 2011:8-9).

In South Africa, the doctorate has a long history. Since the first doctorate was awarded at the University of the Cape of Good Hope in 1899, South African universities have awarded nearly 30 000 PhD degrees, about two-thirds of which in the past two decades. Since the transition to democracy in 1994, doctoral education has increased and diversified due to changes in university-industry-government relationships, government policy, the growing demand for postgraduate education and a diverse student

population (Herman, 2011d:i). Subsequently, doctoral education has been drawn into the policy debate and has become a focus of the research fraternity. In 1996, the National Commission on Higher Education (NCHE) developed a quality assurance system within the NQF as part of the process of creating a single qualifications network for HE qualifications under the umbrella of SAQA (CHE, 2000:60), with programme differentiation rather than institutional differentiation (Herman, 2011a:167). The White Paper 3 on HE specifically proposed the creation of a single coordinated system of HE that is planned, governed and funded as a single system (DoE, 1997). According to Bundy (2006:11) this would lead to “increased participation, greater responsiveness and increased co-operation and partnerships”.

In addition to the discussion of a single coordinated system in HE, Wolhuter (2011:126) points out that doctoral education is regarded a core activity of universities and a topic of immeasurable importance. Thus, in order to achieve global competitiveness, it became necessary to make resources available for innovation, research and skills development at doctoral level. The production of university graduates, and especially doctoral students, is an essential component of the national system of innovation of modern industrialised societies (CHE, 2009b:1).

Herman (2011b:508) emphasises the importance of concentrating on increasing the capacity of the HE system in South Africa to produce more doctorates (Govender, 2011a:170; Govender & Ramroop, 2012:1642). In terms of doctoral production, South Africa's performance is well below that of other emerging economies (McKune, 2009:83). South Africa is producing 26 doctorates per million of the country's total population, which is low compared to advanced countries such as United Kingdom with 288 doctorates per million and the USA with 201 doctorates per million. Brazil, an upper-middle income country, produces 52 doctorates

per million, while Mexico produces 28 doctorates per million (ASSAf, 2010:46). The National Development Plan (NDP) (South Africa, 2013) has set a target to produce more than 100 doctoral graduates per million per annum, and to increase the percentage of doctoral qualified staff at universities in South Africa from the current 34% to over 75% by 2030 (NPC, 2012:318). To achieve these targets decisive action and a coordinated effort are necessary to match policy with practice and aspiration with reality in order to achieve a national strategy for producing quality doctorates.

Since the greater part of new research and development capacity currently comes from historically white campuses, providing resources to increase their numbers of doctorates could be seen as further advantaging them at the expense of the historically black campuses (DHET, 2012:8). The number of master's graduates increased by 45% from 4 179 in the 2009 academic year to 6 076 in the 2012 academic year, and doctoral graduates increased by 36% from 1 380 doctoral graduates to 1 879 over the same period (DHET, 2014:30). According to the 2013 Higher Education Management Information System database (HEMIS) (DHET, 2014:16) master's degrees increased to 10 809 and doctoral degrees to 2 051. This is a notable contribution towards the national aim to produce more than 100 doctoral graduates per million per annum by 2030 as envisaged by the NDP and the recently published White Paper for Post-School Education (DHET, 2013).

However, without increasing the country's research and development capacity, development and growth targets will remain an ongoing problem. The production of doctorates among the black student population provides the solution to both improving the demographic profile of academic staff at the historically white universities and providing the human resources needed to improve the quality of historically black

universities. Furthermore, doctoral education is also a contributor to industrial and social resources and a vehicle for addressing the gap between doctoral study and the needs of the labour market. If a knowledge system wants to reproduce itself, it will depend on the ability of the system to produce new doctorates at a suitable rate for the system (ASSAf, 2010: 35).

Although there is improvement, there is still cause for concern in the production of more doctorates, given the retention and completion rates (see 2.9), time-to-degree and supervision of doctoral students (Cloete *et al.*, 2015:77; Ngozi & Kayode, 2013:6; Grant, 2009; Halse, 2007:325). Full-time residential doctoral students are the exception rather than the rule, which has an effect on completion rates. In addition, the age at completion also has an effect on the potential contribution that these graduates can make to the scientific and HE systems. In delivering the Department of Science and Technology's Budget Vote for 2014/15 in Parliament on 22 July 2014, Minister Naledi Pandor said: "Currently we lack research-supervision capacity and the doctoral-student pipeline is too narrow. We need to support researchers who are capable of supervising doctoral students and to create appropriate incentives for students to remain in the system up to doctoral level" (Pandor, 2014).

The NDP's target for doctoral graduates by 2030 is perhaps a little too ambitious, however (NPC, 2011:278). One constraint for doctoral students is funding for their doctoral studies, especially full-time study. At many South African universities, the availability of research infrastructure, facilities, and equipment is a constraint on the enrolment and production of doctoral graduates (HESA, 2014:6). However, infrastructure is not the only challenge; postgraduate supervision capacity and institutional capacity to manage escalation in doctoral student numbers also are challenges. During the period 2011 to 2013, the national ratio of doctoral

graduates to staff holding doctorates at all South African universities increased from 0.25 in 2011 to 0.28 in 2013 (DHET, 2013). On average, every academic staff member with a doctorate at a South African university 'delivers' a doctorate in about three and a half years. In 2013, at the best performing universities (Stellenbosch, Western Cape, Pretoria, Rhodes and Wits), each academic staff member with a doctorate was producing a doctoral graduate in fewer than three years (Cloete *et al.*, 2015:77).

In conclusion, the former technikons did not focus on research as a primary activity, due to academic staff with limited experience in research and in supervising doctoral students. In effect, the labour market has become a skills market and learning should therefore lead to the achievement of new skills by means of which the economy can benefit. The modern economy has a need for innovation and constant progress in applied research, along with highly skilled and qualified academic staff in several disciplines. Developing entrepreneurial skills at UoTs should be a major aim in order to facilitate the employability of graduates. Therefore, to assist inexperienced supervisors, and from time to time underprepared students, skills development programmes can add to the improvement of the current postgraduate throughput rate. Having examined the origin and position of the doctorate in South Africa, it is now necessary to consider the doctorate at UoTs in South Africa.

4.3 THE DOCTORATE AT UoTs

In terms of the NPHE (South Africa, 2001), technikons were either converted into UoTs, or merged with universities to become comprehensive universities. The third group of universities remained in the traditional mould (see Chapter 1:1.6). In terms of those now

classified as UoTs, however, it was apparent that these new universities lacked a philosophy, and specific attributes were not clearly formulated by the DoE. In addressing research outputs, it is important to recognise that there are not enough doctoral students or supervisors with supervisory experience to address the problem. Institutional differentiation, the under-preparedness of doctoral students and supervision capacity at UoTs also contributed to low doctoral production.

Building from the idea that UoTs are small contributors to doctoral production, this section illustrates that UoTs did not emerge from a homogeneous group of universities (Cooke, Naidoo & Sattar, 2010:146). The political ideology at the time supported purposeful and differential allocation of financial resources to designated universities, which resulted in pressure in the HE sector and created negative public perceptions about the status, standing and quality of graduates of some universities and technikons – an inheritance that took years to overcome. As a result, the challenge of defining quality at UoTs cannot be seen in isolation from QA (Cooke *et al.*, 2010:147). Even universities that are recognised as strong research universities could benefit from a review of the quality of their postgraduate supervision practices. Since the transition from technikons to UoTs, the HEQC looks critically at UoTs to make sure that they adhere to the HEQC quality assurance systems. QA must be incorporated into all academic and administrative functions of universities and maintained by having a culture of quality. The increasing numbers of students entering universities have placed a responsibility on UoTs to fulfil their roles and responsibilities in terms of producing quality education (SATN, 2008: 38).

The three main categories of university, namely UoTs, comprehensive universities and traditional universities, make HE in South Africa unique. The focus of UoTs is mainly on applied research and innovation to

advance technology transfer, as well as on ways and means of solving specific problems that exist within commerce and industry. The focus should be on improving the quality of teaching, research and learning, particularly for those universities that specify postgraduate research in their institutional mission. Academic staff and students are to demonstrate mastery of relevant modern technology and contribute through the practice of technology, to the various steps of technological innovation (Van Eldik & Fowler, 2004:138). UoTs are seen as a unique type (typology) of university and are intended to be vocational and career-focused (HESA, 2014:10). Mentz, Kotzé and Van der Merwe (2008:29) add to this statement by stating that technology defines the uniqueness of a UoT.

Figure 4.1 below shows that teaching and learning, research and innovation and community engagement (which together form the goal of the current day university) in UoTs are tailored to satisfy the needs of the labour market and industry (Du Pré, 2009:53). On the other hand, there are students with specific needs in terms of a qualification, to serve the market place. The outcome of undergraduate studies at UoTs is a technologist at diploma level or a technician at degree level. Students need support in order for them to be equipped with the skills to devise innovative strategies through technology and knowledge to find new solutions. The operational implications for managers in a UoT environment require that the characteristics of a UoT be measurable criteria which must serve as indicators against which progress can be measured. Management must create innovative, forward-thinking universities with strong 'traditional' academic values, entrepreneurial business management practices and an essential customer focus (Du Pré, 2009:53).

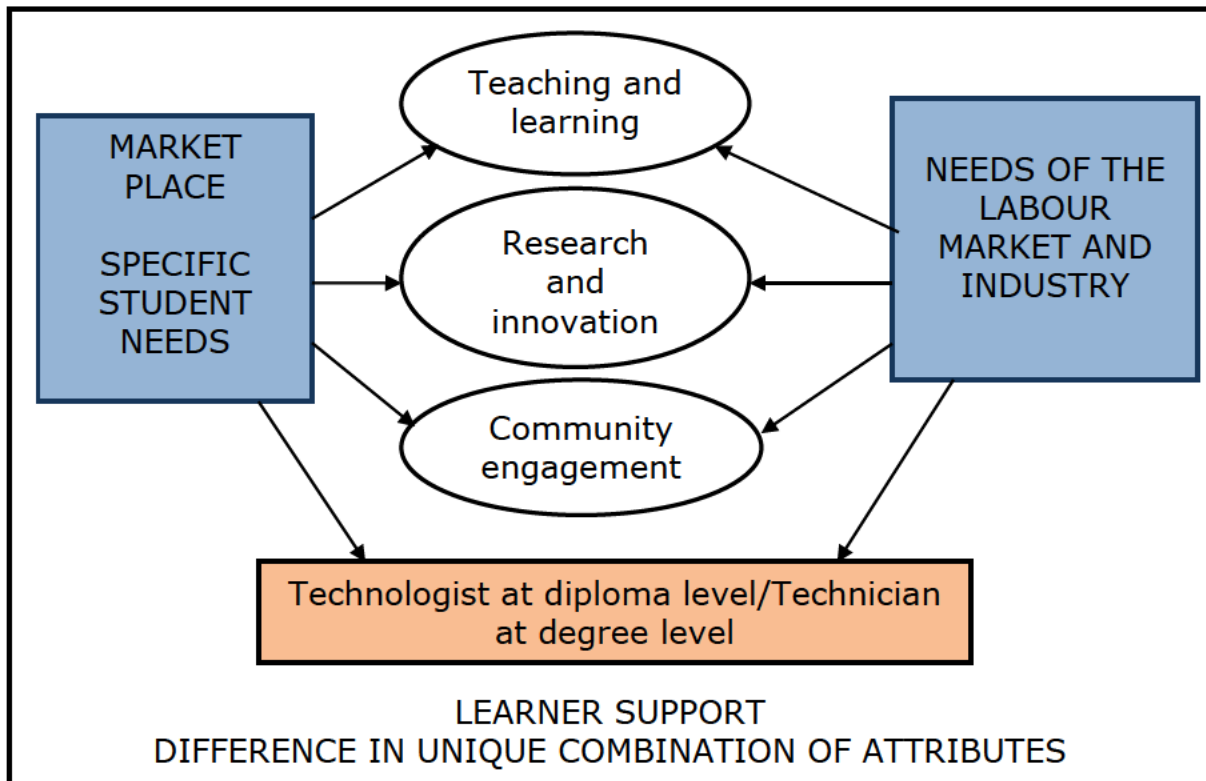


Figure 4.1: UoT typology (Du Pré, 2009:53)

The above makes UoTs a distinct and unique type of university, markedly different from the traditional universities in South Africa. The world of work is continually changing with growth in knowledge and information. In advancing into the information and knowledge age, the labour force will require sophisticated education and training to withstand competitiveness and responsible development. Postgraduate supervisors at UoTs need to consider the mentioned challenges when supervising their doctoral students. In response to this challenge, HE needs to restructure to relate to the needs of society and industry. In the context of the discussion on HE in South Africa, it is appropriate to look at the developments in the relationship between the government and universities.

4.4 DEVELOPMENTS IN THE RELATIONSHIP BETWEEN THE GOVERNMENT AND UNIVERSITIES

“Notions of quality, purposes and procedures of quality assurance, as well as the scope and level of quality reviews differ from country to country depending on the national and systemic context in which higher education operates” (Van der Westhuizen & Fourie, cited by Griesel, Strydom & Van der Westhuizen, 2002: 3).

As the government plays a major role in HEIs, it is important to examine the relationship between the government and universities regarding the most important qualification a student can attain at a university, namely the doctorate. The changing relationship between universities and the government has been highly controversial internationally and is often contested by academic communities (CHE, 2007b). In South Africa, the government’s approach has not only reinforced the call for universities to be responsive, but has also emphasised what is expected of them. All of the stakeholders who are involved should understand and agree to satisfy these expectations.

The post-apartheid government developed policies aimed at changing the HE system to bring it into line with the vision of government. The principal HE policy documents to date, particularly the White Paper 3 on HE (DoE, 1997), the Higher Education Act, Act no 101 of 1997 (South Africa, 1997), and the NPHE (South Africa, 2001), established a framework for government, steering through planning, regulation and funding, and aimed at transforming HE (DoE, 2003). These policies seek to address the need for high-level skills to heighten South Africa’s global

competitiveness, but with the added mandate of addressing economic disparities and unemployment in the country.

The culture of being a research-intensive university takes years to develop. If universities are differentiated in terms of their mission, then the research and development policy for the DHET can be aligned accordingly. Given the differential capacities of certain universities, this is recognised by the funding formula, which provides for research development funds to assist those universities that do not meet the common benchmark (DHET, 2012:44-45). Universities with lower levels of research output must be supported through planning and funding to develop their research capacity in particular areas of specialisation, as well as to develop a research culture (DHET, 2013:35). Besides, the NDP (2011:267-277) proposes that the HE system in South Africa should allow for diversification to allow universities to build areas of excellence and specialisation, as no single university can serve all the needs of society.

The NPHE (South Africa, 2001) provides the implementation framework for achieving the White Paper's vision of a single national coordinated HE system that is affordable, sustainable and which is responsive and contributes to the human resource and research needs of the country. The National Planning Commission (NPC) (2011:267) has set out key features of the education, training and innovation system for 2030 in the NDP. The following issues will be the focus points to achieve this vision by 2030:

- Each university should have a clear mission that sets out its contribution towards knowledge production and national development.
- Universities need to be efficient, characterised by higher knowledge productivity units, throughput, graduation and participation rates.

- Universities must identify areas of strength and develop centres of excellence in response to the needs of their immediate environment, the African region and global competitiveness.
- Universities should welcome supportive environments for black and female students and researchers. Significant progress regarding gender and racial transformation should be made in order to reduce gender and racial disparities (NPC, 2011:267).

National policies play a role in the process of postgraduate supervision and there is pressure on universities to produce high quality original research during doctoral studies. Regarding the promotion of research excellence, the Quality Enhancement Project (QEP) was implemented at HEIs. The QEP follows on from the comprehensive decade-long programme of institutional audits by the HEQC in which HEIs were assessed in three core areas: research, teaching and learning and community engagement. These audits helped to initiate the development of quality assurance systems within HEIs (CHE, 2015a:11). The aim of the QEP is to improve student success and to upgrade academic staff through academic development, reward and recognition, fair workload, conditions of service, and performance appraisal. Improving the number of quality graduates is one of the goals of the QEP, together with the developing of an HE system that is continuously improving as members of the HE community collaborate to share good practices and solve shared problems (CHE, 2015a:11). The CHE is concerned about low throughput rates and is mindful of a range of interventions put in place by HEIs together with the DHET through the teaching and development grants to address this challenge. The CHE played a crucial role in these interventions through Higher Education Learning and Teaching Association of Southern Africa (HELTASA), particularly in recognising excellence in teaching and research at universities in this country (CHE, 2015b:9).

The postgraduate policies, procedures and regulations of the CHE (2004c:14) support the policies of the White Paper 3 on HE (DoE, 1997), the NPHE (South Africa, 2001), and the development of new institutional documents which address the need for high-level skills. In the document on the Criteria for Programme Accreditation (CHE, 2004d:7, 17), criteria 9 and 16 (see Table 4.1 below) of the policy implementation (see Chapter 2:2.2) can be seen as evidence of the importance of quality in research in South Africa. Criterion 9 (CHE, 2004d:7) of the Criteria for Programme Input explicitly stipulates that postgraduate programmes must be accompanied by appropriate policies, regulations and procedures for the admission and selection of students, the selection and appointment of supervisors, and the definition of the roles and responsibilities of supervisors and students.

Regarding the role of the postgraduate supervisor, he/she must have a relevant qualification in the field of study higher than, or at least at the same level as, the exit level of the postgraduate programme he/she is supervising. An appropriate research record of accomplishment, experience, and expertise and peer recognition in the field of study are essential. Inexperienced or new supervisors must have on-going staff development and support, and joint supervision is explored as an option. Therefore, the development of a skills programme will fulfil this need.

Table 4.1: Criteria for programme input and process (CHE, 2004d: 7, 17)

<p>CRITERIA FOR PROGRAMME INPUT: CRITERION 9 Postgraduate policies, regulations and procedures</p>	<ul style="list-style-type: none"> • Policies, regulations and procedures • Equity and access • Preparation of students
<p>CRITERIA FOR PROGRAMME PROCESS: CRITERION 16 Delivery of postgraduate programme</p>	<ul style="list-style-type: none"> • Manage the postgraduate programme • Assessment • Policies for student admission and selection • Criteria for selection and appointment of supervisors • Guidelines on roles and responsibilities of supervisors and students

Table 4.1 also presents one of the criteria for the programme process, namely criterion 16, the delivery of a postgraduate programme (CHE, 2004d:17), which stipulates that a postgraduate programme should be managed properly, offer opportunities for students to develop research competence, and should ensure that research is properly assessed. Policies for student admission and selection, criteria for the selection and appointment of supervisors, and guidelines on the roles and responsibilities of supervisors and students, as well as other matters relevant to the performance of research, must be implemented effectively. In terms of the roles and responsibilities of postgraduate supervisors and doctoral students stipulated in criterion 16, the following are important for this study:

- The nature, format and expected turnaround time for work submitted to the postgraduate supervisor must be clear.
- Forms of assessment and the communication of feedback to the doctoral student must be clear and must include:

- the periodicity of contact between student and supervisor;
- the schedule for the submission of progress reports and written work;
- research ethics, code of conduct, regulations on plagiarism and intellectual property rights; and
- examination and qualification requirements (CHE, 2004d: 7).

Through the Criteria for Institutional Audits of the CHE (2004b:14), it is evident that the development of excellent postgraduate supervision by means of multiple, specific interventions is a priority. If the abovementioned requirements are adhered to, they will lead to effective management of the postgraduate programme, and doctoral students' research skills will be fully developed. The first standard, namely criterion 16 (CHE, 2004b:17), requires research functions and processes to be supported and developed to assure and enhance quality, and increase research participation, research productivity and research resources (see Table 4.2 below). Universities must have clear policies and regulations in place to indicate the role and nature of research conducted, and these must be effectively implemented (Davidson, 2007:1186; Halse, 2011:557; Le Grange & Newmark, 2002:50; Lessing & Lessing (2004: 74). Criterion 17 relates to quality arrangements for doctoral education, according to which clear policies, regulations and criteria in relation to the quality of doctoral education must be in place (CHE, 2004b:17). These audit criteria point to the recognition of the CHE (and by implication, the South African government) that the development of quality postgraduate supervision through certain interventions as listed above is a priority and demonstrates a national commitment to the growing of the postgraduate community.

Table 4.2: HEQC audit system criteria (CHE, 2004b: 16-17)

<p>CRITERION 16 Research functions and processes developed to enhance quality, increase research participation, research productivity and research resources</p>	<ul style="list-style-type: none"> • Policies and regulations on research including research on teaching and learning, research proposals, development of new researchers, especially black and women researchers, access to funding • Mechanisms for quality assurance • Efficient central research information system for reporting and planning • Strategies for development of research and capacity development for new researchers • Strategies to evaluate outcomes and impact of research and research management
<p>CRITERION 17 Efficient arrangements for quality assurance, development and monitoring of postgraduate education</p>	<ul style="list-style-type: none"> • Policies and regulations for quality • Effective structures to quality assure postgraduate education, research, funding, complaints of doctoral students, development in postgraduate education • Effective research information system • Clear policies and strategies to facilitate development, support and improvement of postgraduate education and development of new supervisors • Review of effectiveness of quality assurance, development and monitoring

The White Paper on HE (DoE, 1997) places a strong emphasis on the need to develop research capacity and to increase research productivity (see criterion 17, Table 4.2 above). In this regard, Lategan (2004:85) concurs that universities have to be engaged in research. However, the current capacity, distribution and outcomes of the HE research system, including graduate throughput rates, remain a concern (Wolhuter, 2015:1). The aim to escalate the number of well-trained high-level academic staff in South Africa raises fundamental questions about national capacity, critical partners, innovative programmes, strategic investments and cross-

sectoral cooperation. To improve the quality of postgraduate supervision, several authors (Charlesworth, Grossman, Hadingham, Janks, Mycock & Scholes, 2007:12-14; Dietz *et al.*, 2006:26; Lessing & Schulze, 2002:148; Mouton, 2001:18-19; Severinsson, 2014:196) suggest documenting procedures and expectations of postgraduate supervision in handbooks, agreements, research contracts or supervision plans. According to Mouton (2007:1078), institutional audits of the HEQC over the past years have demanded that universities look more closely at various aspects of the quality of doctoral studies. "Informal feedback has revealed that most universities, including the more established research universities, are not doing enough to ensure that the necessary conditions are in place to ensure quality of doctoral studies across the board" (Mouton, 2007:1078). Therefore, HEIs need to engage in quality matters regarding teaching, research and learning to improve quality (Cloete *et al.*, 20125:15).

Traditionally, postgraduate supervision is not an area that has been systematically quality assured (CHE, 2007a:24). The QA process has usually been left to the trusted professionalism of the individual supervisor, with minimal guidance and 'interference' from the university. The reason for this is that postgraduate supervision has traditionally been seen as something that any academic could and would do effectively without a need for development or reward; therefore, it is an important priority at most universities to develop researchers (Choy, Delahaye & Siggers, 2015:19). The postgraduate supervisor, therefore, should have the ability to guide doctoral students in improving their research skills (Blunt, 2009:853).

Worldwide, HE has gone through changes in structure, function and financing, which has brought about an emphasis on the quality of HE. Students studying in the twenty-first century are doing so within a

university culture that is increasingly dominated by accountability and QA measures (Blackmore cited by James, 2012:43; Green & Usher, 2003:40). Consequently, universities have put in place institutional procedures aimed at ensuring that they produce doctoral students of the highest possible quality. The internal procedures vary from one university to another, but in general the first step is the screening of potential doctoral students at the admission stage so as to enrol candidates with the necessary educational background (DoE, 2001:25; Nyika, 2014:2).

Finally, to achieve fitness for purpose as a UoT, the upgrading of staff qualifications is a necessity. A quality and sustainable postgraduate programme is linked to qualified academic staff who are active in research and postgraduate supervision. In the foregoing discussion, the developments in the relationship between the government and the university have been considered, with special emphasis on demands made by HE authorities on behalf of the government. The most important criteria in terms of QA were discussed. These criteria regarding QA will be incorporated in the skills development programme. Having explained this, the NQF as quality mechanism for doctoral studies will be examined.

4.5 THE NATIONAL QUALIFICATIONS FRAMEWORK AS A QUALITY MECHANISM FOR DOCTORAL STUDIES

The NQF is organised as a series of levels of learning achievements, arranged in ascending order from one to ten. All qualifications in South Africa must be registered on the NQF to be recognised. SAQA is the body with overall responsibility for the implementation of the NQF. The three sub-frameworks within the NQF are the General and Further Education and Training Qualifications Sub-Framework; the HEQSF; and the Trades

and Occupations Qualifications Sub-Framework. Each sub-framework has its own terminology for its qualification types. While there could be overlapping or duplication, the registration of large numbers of qualifications that are not used by providers and learners must be avoided (DHET, 2013:70-71).

The NQF comprises ten levels, of which only levels five to ten are relevant to this study, as they cover further and higher education (see Table 4.3). Each of these six levels (levels 5-10) are described in the SAQA level descriptors (SAQA, 2012) which provide guidelines for differentiating the varying levels of complexity of qualifications on the framework. The purpose of level descriptors five to ten of the NQF (further and higher education) is to ensure quality and coherence in learning achievement in the allocation of qualifications and part qualifications to particular levels, and to facilitate the assessment of the national and international comparability of qualifications and part qualifications (CHE, 2013b:3).

Table 4.3: National Qualifications Framework (CHE, 2013b:6)

LEVEL	SUB-FRAMEWORK AND QUALIFICATION TYPES
10	Doctoral degree Doctoral degree (Professional)
9	Master's degree Master's degree (Professional)
8	Bachelor Honours degree Postgraduate Diploma Bachelor's degree
7	Bachelor's degree Advanced diploma
6	Diploma Advanced certificate (Occupational Certificate level 6)
5	Higher certificate (Occupational Certificate level 5)

At doctoral degree level, doctoral students need to be able to undertake research at an advanced level, culminating in the submission, assessment and acceptance of a thesis and making an original contribution to

knowledge (SAQA, 2012). The reason for including this information here is to indicate that the HEQF has initiatives to improve the quality of doctoral education at universities in South Africa. This is confirmation of a national commitment to growing a postgraduate community capable of contributing to the knowledge economy of the country.

The HEQSF (CHE, 2013b) makes it clear that programmes that do not comply with the SAQA level descriptors (SAQA, 2012) will not be accredited. Therefore, it is important for supervisors to pay attention to the level 10 descriptors for doctoral studies to ensure compliance with the expected quality before a degree may be awarded. For elucidation purposes a condensed version of the level 10 descriptors is provided in Table 3.6. This is an effective way of ensuring quality in qualifications and to guarantee comparability of qualifications obtained at different universities (CHE, 2013b). Universities should take ownership of the system of QA, which includes all of the above (Muller, 1997:60). Therefore, in order to be successful, UoTs should ensure that they promote teaching, research and learning, as well as quality in doctoral education in particular.

Up to this point, the discussion has been on policies and QA in teaching, learning and research. However, it is important to recognise the importance of staff development at HEIs to ensure the quality of doctoral education.

4.6 ACCOUNTABILITY FOR STAFF DEVELOPMENT

Staff development is a traditional, well-established function within universities and is usually understood in terms of processes, structures and programmes aimed at harmonising individual and institutional

interests towards mutual growth (Botha & Potgieter, 2009:251). HEIs must pay serious attention to staff development in order to keep pace with universities across the world and to ensure that suitable and expert teaching and research capacity is available. According to the CHE (2015a:22), universities need to be accountable for the quality of their teaching. Therefore, greater attention to the appraisal and development of academics as teachers is one means of improving the quality of university teaching.

Universities will remain a place for academic development – for the provision of formal and non-formal programmes. However, the challenge in the development of academic staff lies in how universities deal with the requirements to improve qualifications and manage to retain highly trained academic staff at the same time. In this regard, the NPC (2012:318) states that the most important factor that determines quality is the qualifications of academic staff. The NDP wants to raise the qualifications of academic staff, thus increasing the number of academics with doctorates and therefore improving the quality of doctoral student outcomes. This will improve throughput as well as the capacity to supervise doctoral students and research productivity.

The academic development of academic staff remains problematic, mainly because staff members have to remain at the forefront of their disciplines, and therefore have limited time for academic development efforts. Academic staff must teach and do research, guide doctoral students' research and manage the administrative tasks assigned to them, while at the same time pursuing their own studies. Their contribution to knowledge creation is critical and they are obliged to attend conferences and publish research findings worldwide to make known their research findings. For the sustainability of HE, academics need to be conversant in their professions – that is, their discipline and academic development.

Other initiatives that the DHET (2012:46) recommends are the renewing of the academic profession by increasing the number of young academics, addressing racial and gender imbalances by increasing the number of black and women academics and researchers, and upgrading of the teaching qualifications of academics. Added to these initiatives, the proper staffing of universities is a serious concern, critical to the quality of programmes (CHE, 2004d:6). Policies need to be developed, focusing on the need to recruit and retain academics, ensuring that academic careers are attractive, assisting academics to improve their qualifications, improving conditions of service, and attracting academics from other countries where necessary (DHET, 2013: xiv). Criterion 3 was formulated to be implemented by universities to ensure quality in all programmes (see Table 4.4).

Table 4.4: Criteria for programme input: Staffing (CHE, 2004d:6)

Criterion 3	<ul style="list-style-type: none">• Qualifications• Teaching experience• Assessment competence• Research profile• Staff development
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Academic staff responsible for developing and teaching in programmes must be suitably qualified with relevant teaching experience. Their assessment competencies and research profile also need to be adequate for the nature and level of the postgraduate programme. In order to meet criterion 3, the following requirements must be met:

- At least 50 per cent of the academic staff for postgraduate programmes must have relevant academic qualifications higher than the exit level of the programme in which they teach and guide

doctoral students, and these qualifications must have been awarded by recognised universities.

- The majority of full-time academic staff should have two or more years of teaching experience in areas pertinent to the programme.
- Academic staff members must have research experience through their own research and/or studies toward higher education qualifications.
- The institution should provide orientation and induction opportunities in which newly appointed academic staff members must participate.
- Provision must be made for regular staff development opportunities (CHE, 2004d:6).

UoTs must implement (iv) and (v) of criterion 3, according to which orientation and induction opportunities should be provided to newly appointed academic staff. In addition, provision should be made for regular academic development activities to enhance competencies and to support academic growth (see Figure 4.2). Both of these requirements are essential components of a skills development programme for postgraduate supervisors (see Chapter 1:1.7.4). Although there is general agreement about these requirements, in many instances universities do not have clearly articulated implementation plans to comply with these requirements. The criteria that are highlighted in criterion 3 illustrate what is expected of academic staff, but do not necessarily contribute towards the solution. The formulation of these criteria demonstrates the difference between undergraduate and doctoral studies and therefore the need for the existence of these specific interventions.

In this section, the importance of the development of academic staff was discussed, as well as the requirements to which academic staff must adhere. Another significant factor influencing postgraduate supervision is

the funding that universities receive from government, in other words, the issues related to increased government support for research and for academic staff incentives to secure proper supervision, with the focus on funding.

4.7 FUNDING

According to Styger, Van Vuuren and Heymans (2015:260), HEIs have a primary goal of providing education; they are however also business entities that must remain financial viable. For this reason, funding has been a way to encourage and support academic development at universities as well as providing adequate financial support for doctoral students (DHET, 2013:32). In 2003, a new funding framework was introduced by the DoE to allocate government funding to universities. According to Mouton *et al.* (2015:2), since the funding framework was introduced, a direct reward was awarded to universities for the number of doctoral graduates produced. Universities saw the value of producing more doctoral graduates as an additional source of income, and since the new funding framework came into effect, statistics for doctoral output have shown a steady increase (Cloete *et al.*, 20125:15; Mouton *et al.*, 2015:2). Any improvement in actual research outputs because of research development funding is to the benefit of a university (DoE, 2014:15).

Postgraduate supervision is a key contributor to the funding of universities. Within this funding framework, the government is no longer prepared to be the 'funder of last resort', but rather sees its role as being "to pay for the delivery of teaching and research-related services which contribute to the social and economic development of the country" (DoE, 2003). A basic feature of the funding framework is that it links

government funding to national and institutional planning. This makes the new funding framework a goal-oriented mechanism for the distribution of government grants to individual institutions, in accordance with national planning and policy priorities, the quantum of funds made available in the national HE budget, and the approved plans of individual institutions (Ministry of Education, 2004:3).

In a number of universities, despite some awards for teaching, the reality is that disciplinary research, particularly in its traditional manifestations, remains the predominant route to status and access to funding. While the technikons historically placed more weight on teaching, it appears that UoTs are increasingly emphasising research and consultancy in an effort to establish new identities (CHE, 2007b:64; DHET, 2013:6). With increasing competition for allocation of research funding and declining public funds for HE, universities around the world are facing increasing pressure to increase research outputs (Kehm, 2007:315; Singh, 2011:1191).

Traditionally, when UoTs were still technikons, they played a minor role, which was evident in the uneven distribution of government funding. The steering mechanism for government funding with its new focus on teaching inputs, institutional factors, actual teaching outputs and actual research outputs contributes to pressure for UoTs to enrol quality students and increase throughput rates. Regarding the focus areas in the new funding framework, HEIs need to have a range of services in place to support and develop doctoral students, supervisors and early career researchers (Singh & Zheng, 2014:254). The funding formula is designed to reward performance of universities through graduation rates and research outputs. With the allocation of research funding, HEIs are under pressure to produce more research outputs. However, the performance indicators for UoTs do not take into consideration the process of skills

training of students. For example, work integrated learning at UoTs does not receive funding from government. Similarly, the question of what constitutes research at a UoT does not include patents, innovation and intellectual property rights (Perumal, 2010:56).

Given the history of UoTs as former technikons, the increased enrolment of doctoral students is placing more pressure on academic staff. As previously mentioned, the former technikon staff were recruited for their technological skills and industry experience rather than their ability to produce research outputs. UoTs may not have the critical mass presently, but they need the flexibility to proceed progressively and strategically towards a realistic target to produce doctoral students in the future (Perumal, 2010:56). As a result, UoTs will receive funding from the research outputs generated.

Clearly, funding to universities presents a number of challenges and these have been outlined above. Issues related to diversity and standardisation in doctoral studies will now be considered in the next section.

4.8 DIVERSITY AND STANDARDISATION IN DOCTORAL STUDIES

Just as a university has different procedures (Taylor & Beasley, 2005), so do postgraduate supervisors differ in their views of their role as supervisor. (Dietz *et al.*, 2006; Lessing & Schulze 2002:140; Malfroy 2005:169; Mouton 2001). One appropriate starting point for considering postgraduate supervision is the fact that there are fixed disciplinary differences between the hard sciences and the humanities. Each discipline at a university has its own requirements and this makes it difficult to have

one standard requirement for all disciplines, although commonalities do exist (Backhouse, 2009:299).

Nevertheless, although disciplines vary because of the differing nature of the content and often different approaches to research, the fundamentals of postgraduate supervision remain the same. The basic challenges (see Chapter 1:1.6; Chapter 2:2.1) in postgraduate supervision are related to an increased focus on accountability, completion rates, the diversity amongst doctoral students, modes and context of knowledge production, original contribution of doctoral research, development of generic skills and ontological development of students (Bitzer, 2011:856; Gilbert, Balatti, Turner & Whitehouse, 2004:375).

Again, with the lack of emphasis on postgraduate qualifications and published research in the former technikons, UoTs could face a scarcity of suitably qualified and experienced academic staff to supervise doctoral students. These challenges will have an influence on the outcome of the postgraduate supervision process and it is therefore important that postgraduate supervisors be informed of different approaches to postgraduate supervision to overcome these challenges.

One university may consider a thesis as proof of excellent research while another might view it in an opposite manner. The HEQSF (CHE, 2013b) and the SAQA level descriptors (SAQA, 2012), however, address the expectations of all qualifications in HE in South Africa, and in that respect comparability of the qualifications of different universities ought no longer to be an issue. Although universities have general programmes with basic research components to build a foundation for problem solving and applying knowledge to find solutions, programmes should also be discipline-specific.

Nevertheless, postgraduate supervisors modify their supervisory style according to the doctoral students and the stage of the student's work – thus a postgraduate supervisor may begin as an expert guide and move towards being a delegator as the doctoral student gains skills and confidence. Each postgraduate supervisor uses his/her own style of postgraduate supervision in the process. Any change in the style of the postgraduate supervision process may have a positive or negative effect on the process (see Chapter 3:3.2.2). Despite claims that changes are beneficial for developing doctoral students, there appears to be resistance to change in this area, as well as concerns about compromising standards of academic excellence (Samuel, 2000:64).

Up to this point the focus has been on the different policies according to which postgraduate supervision is governed, namely the NDP (see 4.2, 4.4), the NQF and the HEQSF, particularly in addressing quality in doctoral studies. However, it is important to recognise that these policies do not always address the challenge of postgraduate supervision. The policy issues that have an influence on postgraduate supervision have therefore been considered in Chapter 4, and included in the framework for postgraduate supervision (see Figure 4.2).

4.9 A FRAMEWORK FOR POSTGRADUATE SUPERVISION

In Chapter 3, the postgraduate supervisor (see Chapter 3:3.2), the postgraduate supervision process (Chapter 3:3.3), the doctoral students (Chapter 3:3.4) and the university as partner in the postgraduate supervision process (Chapter 3:3.5) were discussed.

It was concluded from the literature in Chapter 4 that the following issues regarding the policy issues in postgraduate supervision should be included in the framework (see Figure 4.2):

- NQF (see 4.5)
- Staff development (see 4.6)
- Funding (see 4.7)
- Diversity and standardisation (see 4.8)

These additional issues from the literature were incorporated in the framework to finalise the design of the framework (see Figure 4.2) to be included in the skills development programme in Chapter 5.

The issues identified from each chapter are represented in different colours, namely:

- Black represents issues from Chapter 2 (see 2:11)
- Blue represents issues from Chapter 3 (see 3.6)
- Green represents issues from Chapter 4 (see 4.9)

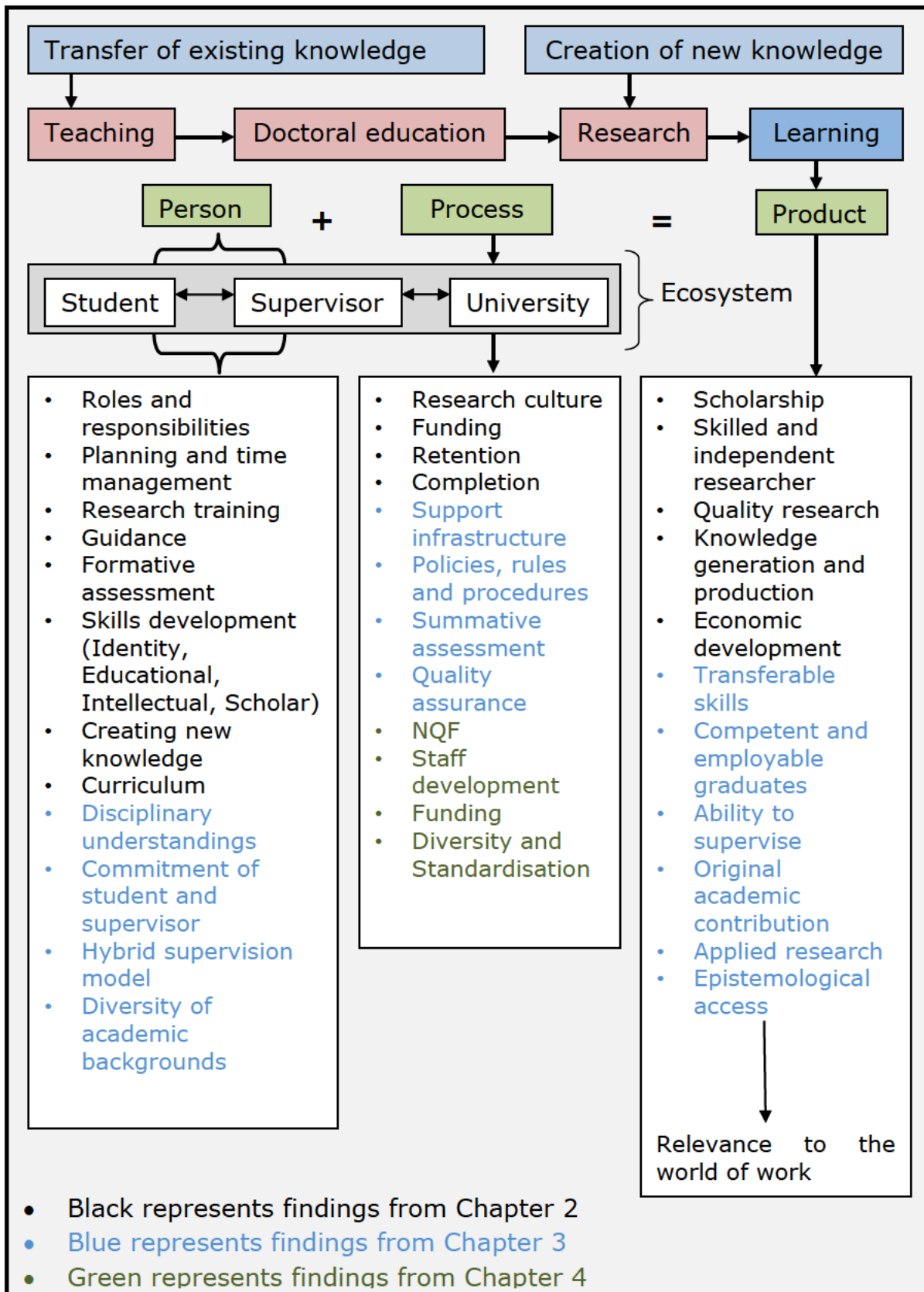


Figure 4.2: A framework for postgraduate supervision

4.10 CONCLUSION

Chapter 3 aimed at providing a realistic and holistic view of the *institutional issues* of postgraduate supervision. In this chapter, the external issues that have an effect on universities, and, in particular, on postgraduate supervision, were explored. In order to comprehend the functioning of postgraduate supervision in South Africa, it has been necessary to provide an insight into some of the documents, policies and procedures that are prominent in the South African HE environment. Universities cannot function in a vacuum and they must adhere to these policies and procedures to ensure quality. Much attention was paid to the formulation of policies, but without an indication of how to translate the policy into a measurable outcome. These documents – principally the White Paper 3 on HE (DoE, 1997), the Higher Education Act (South Africa, 1997), the NPHE in South Africa (South Africa, 2001) and the NDP (NPC, 2011) – appeal for an increase in postgraduate enrolments as a driver for the South African economy. The appeal for increased enrolment will place pressure on academic staff to produce research outputs. Therefore, the implementation of a skills development programme will address this appeal from government.

This chapter aimed at providing a representative and general view of the *policy issues* of postgraduate supervision in search of an answer to the following research question (as in Chapter 3):

- What are the essential components that should be included in a skills development programme for postgraduate supervisors (see Chapter 1:1.7.4)?

To find a solution to this research question, the following objective was pursued (as in Chapter 3):

- To identify the essential components to be included in a skills development programme for postgraduate supervisors by means of a literature survey (see Chapter 1:1.7.4).

The literature overview discussed in Chapter 4 helped to achieve this objective. It begins with the origin of the doctorate in general (see 4.2) and development of the doctorate at UoTs (see 4.3). Thereafter, the development of the relationship between the government and universities, with special reference to the criteria of the CHE in the HE environment, was discussed (see 4.4). The policies which were discussed all deal with pedagogic and governance issues in the South African HE sector and which assist in regulating the functioning of universities and in ensuring quality. The NDP (see 4.2, 4.4), the NOF and the HEQSF as a quality mechanism for doctoral studies (see 4.5), accountability for staff development (see 4.6), funding (see 4.7), and diversity and standardisation in doctoral studies (see 4.8) were examined. Although HEIs in South Africa are functioning well, the vision of the nation regarding academic staff who are sufficiently qualified is not well articulated (NPC, 2011). With insufficiently qualified postgraduate supervisors, a skills development programme can assist in advancing postgraduate supervision practices.

In Chapter 5, the third research question (see Chapter 1:1.7.4) will be addressed with the intention of developing a skills development programme for postgraduate supervisors at the CUT through synthesising the literature discussed in Chapters 2, 3 and 4. The findings of the literature study will be utilised in order to construct the skills development programme.

CHAPTER 5

A SKILLS DEVELOPMENT PROGRAMME FOR POSTGRADUATE SUPERVISORS

5.1 INTRODUCTION

In this chapter the outcome of the study, namely a skills development programme for postgraduate supervisors at UoTs, will be presented. The foundation for the skills development programme came from the literature reviewed in Chapters 2, 3 and 4. All of the various concepts and processes of postgraduate supervision as gathered from the literature review will be incorporated in the skills development programme. It may be concluded from the literature study that, in order to be an effective postgraduate supervisor, an academic will need support at all levels.

The proposed skills development programme will facilitate high quality supervision by the postgraduate supervisor, so that both supervisor and doctoral students will reach their full potential at the same time. This in turn will enhance the research capacity and reputation of universities. Against the background of the Frascati research classification, this research can be framed as applied research [Organisation for Economic Co-operation and Development (OECD), 2015:29], which is undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective which is the skills development programme for postgraduate supervisors (Kama, Winter & Stoll, 2015:61). It is evident that the framework can be regarded as a practice-based user-oriented framework.

Chapter 5 will develop systematically by taking the information from the literature review into account and will conclude with the presentation of a skills development programme for postgraduate supervisors at UoTs.

5.2 A SKILLS DEVELOPMENT PROGRAMME: PURPOSE, FUNCTION AND IMPLEMENTATION

Until now, postgraduate supervisors have become qualified to supervise doctoral students simply by virtue of having achieved their own research degree. It is generally believed that their ability to supervise rests on their disciplinary expertise, and that they do not need in-depth knowledge of research education. It seems clear from the literature, however, that a doctorate is not enough to give any person sufficient skills to make them a good postgraduate supervisor (see Chapter 2:2.5, 2.8; Chapter 3:3.2.1; 3.3.2; 3.3, 3.3.2, 3.3.4; Chapter 4:4.2). Therefore, training for postgraduate supervisors is necessary to make the supervisory process more effective and to provide the needed support (see Chapter 2:2.4(f), 2.8, 2.9, 2.10, Chapter 3:3.3.1, 3.3.2, 3.3.4, Chapter 4:4.7, 4.8). It should be borne in mind that supervision at any university ought to be more than just the relationship between the postgraduate supervisor and the doctoral student (see Chapter 2:2.2(b), 2.5, 2.6, 2.7, 2.9). In the light of the challenge of new demands in the postgraduate supervision environment, skills can be acquired if postgraduate supervisors engage in skills development programmes that are focused on improving postgraduate supervision practices. As the postgraduate supervisor grows in knowledge and skills, so he/she can provide better supervision to students.

Many types of skills development programmes are possible and can be implemented in different ways; they may vary in scope, sequence and presentation. Skills are “the learned capacity to carry out a particular action” (Holzbaur *et al.*, 2012:1) which postgraduate supervisors use to supervise their doctoral students. These skills can be generic, such as time management skills, teamwork, self-motivation and leadership skills, or specific, such as scientific writing, planning skills and communication skills (Holzbaur *et al.*, 2012:1). The intention in this chapter is to present the conceptual tools available to postgraduate supervisors as they engage in postgraduate supervision as a teaching and research process resulting in learning. The critical issue is to have a skills development programme that is a response to the needs of the students, the requirements of the university and the strengthening of the supervisors’ ability to conclude the supervisory process.

Novice postgraduate supervisors should have access to a user-friendly skills development programme covering the basic aspects of postgraduate supervision or possible approaches to it. They already have an understanding of their discipline, and the skills programme should help them to contextualise the existing emphasis on skills needed to provide supervision to doctoral students. This could help postgraduate supervisors to see other aspects of postgraduate supervision, which they could use. Thus, a skills development programme for postgraduate supervisors includes the following purposes:

- to understand what doctoral education is;
- to help postgraduate supervisors to understand their role in postgraduate supervision;
- to practise postgraduate supervision as a teaching and research activity, leading to learning;

- to ensure that postgraduate supervisors adhere to university policies and procedures on postgraduate supervision (see Figure 5.1 below).

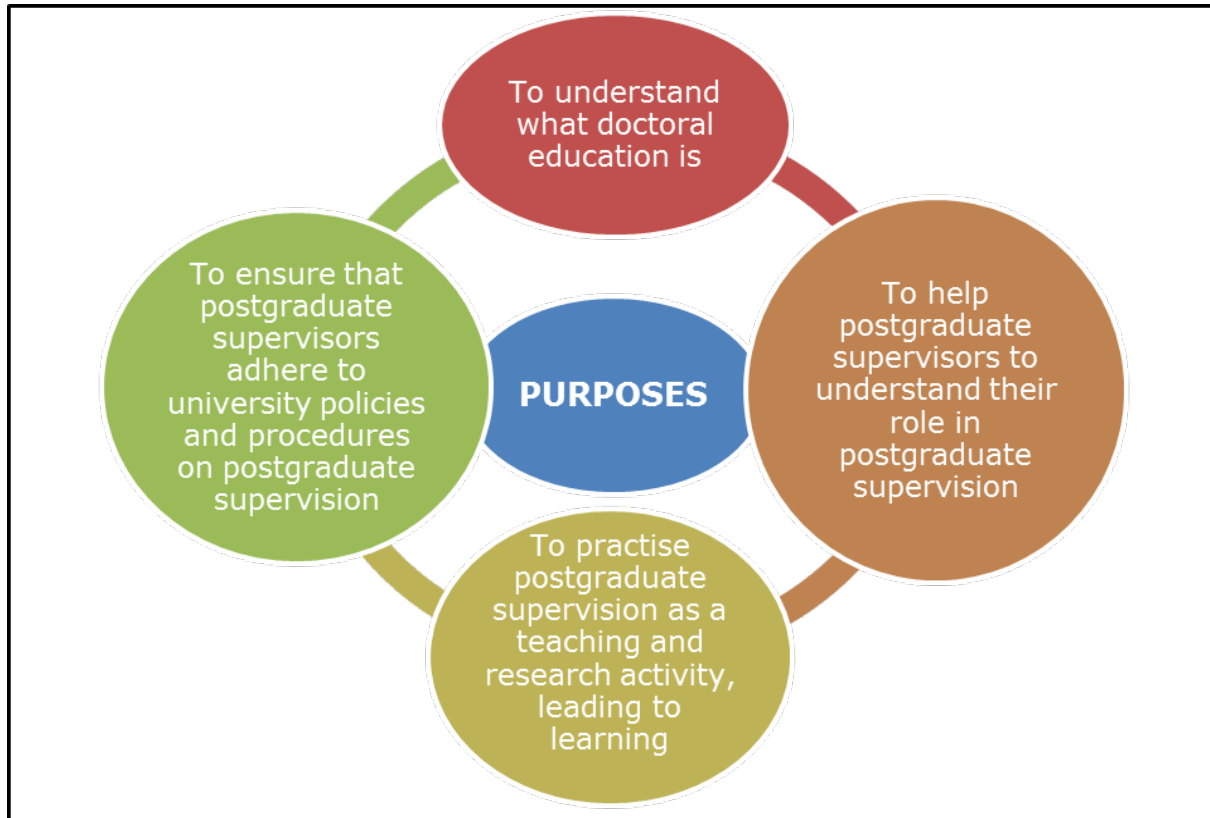


Figure 5.1: The purposes of a postgraduate skills development programme (2.2, 3.2, 3.3, 4.4, 4.5)

Postgraduate supervisors need to understand why the skills development programme is important, how to use the information provided in the programme, and where the information from this programme fits in with the knowledge they already possess. Clear benefits must be demonstrated to novice postgraduate supervisors to ensure a high rate of participation. The delivery of the programme must be an institutional responsibility of universities and it should be compulsory for academic staff to participate. For the successful implementation of a skills development programme, the support of management is important and should be secured. The attendance and participation of academic staff

ought to form part of promotion criteria. If the sessions are compulsory, the involvement of academic staff will be considerably boosted.

The approach used in the sessions is practical, making it useful and easy to follow. Activities in the sessions provide postgraduate supervisors and doctoral students with the opportunity to reflect, discuss and share their views. The sessions are compiled in a structured manner with the same format and consist of:

- the exit learning outcome (what the postgraduate supervisor will be doing in the session);
- the specific outcome (the specific outcome of the session);
- the format of session (whether it will be a group session or individual session);
- the overview (referring back to the literature in the chapters);
- activities (activities that postgraduate supervisors will be doing in a group or on their own); and
- assessment criteria (what the postgraduate supervisor has done in the session).

After each session, there will be opportunity for postgraduate supervisors to reflect in the following manner:

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

<p>How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.</p>

The issues identified from the literature in Chapters 2, 3 and 4 are presented in Table 5.1 below.

Table 5.1: Issues identified from the literature in Chapters 2, 3 and 4

CHAPTER 2: UNDERSTANDING POSTGRADUATE SUPERVISION	IDENTIFIED ISSUES FROM THE LITERATURE IN CHAPTER 2
<p>Chapter 2 contains an overview on postgraduate supervision, which includes the changing context of HE, the enhancement of scholarship, the complexity of postgraduate supervision, as well as teaching and learning. The roles and responsibilities of postgraduate supervisors in the relationship between postgraduate supervisors and doctoral students together with retention, completion,</p>	<ul style="list-style-type: none"> • Roles and responsibilities • Planning and time management • Research training • Guidance • Formative assessment • Skills development (Identity, Educational, Intellectual, Scholar) • Creating new knowledge • Technical skills • Academic competency • Curriculum • Research culture • Funding • Retention

<p>planning and managing the postgraduate supervision process are explained.</p>	<ul style="list-style-type: none"> • Completion • Scholarship • Skilled and independent researcher • Quality research • Knowledge generation and production • Economic development
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<p>CHAPTER 3: INSTITUTIONAL ISSUES IN POSTGRADUATE SUPERVISION</p>	<p>ISSUES IDENTIFIED FROM THE LITERATURE IN CHAPTER 3</p>
<p>Chapter 3 explores the institutional issues in the postgraduate supervision process, namely the postgraduate supervisor, the doctoral student and the university. The relationship of the doctoral student with the postgraduate supervisor is analysed with special reference to the expectations, research skills and the development of the doctoral student. The third partner, namely the university that provides the resources without which the other two partners in this relationship cannot function, is discussed. Each</p>	<ul style="list-style-type: none"> • Disciplinary understandings • Commitment of student and supervisor • Hybrid supervision model • Diversity of academic backgrounds • Support resources • Policies, rules and procedures • Summative assessment • Quality assurance • Transferable skills • Competent and employable graduates • Ability to supervise • Original academic contribution • Applied research • Epistemological access

<p>partner plays a specific role in the postgraduate supervision process.</p>	
<p>CHAPTER 4: POLICY ISSUES IN POSTGRADUATE SUPERVISION</p>	<p>ISSUES IDENTIFIED FROM THE LITERATURE IN CHAPTER 4</p>
<p>Chapter 4 discusses policy issues influencing the process of postgraduate supervision. The origin of the doctorate in general and that of the doctorate at UoTs, together with the development of the relationship between the state and universities, with special reference to the policies of the CHE, are explained.</p>	<ul style="list-style-type: none"> • NQF • Staff development • Diversity and standardisation

Figure 5.2 below illustrates the framework of the postgraduate supervision process that was developed in this study. During the information analysis process the researcher carefully read through the information again, and divided the information into themes. Information from the literature in Chapters 2, 3 and 4 was selected to form a clear understanding of the postgraduate supervision process. The most important themes were then used in the framework for the skills development programme for postgraduate supervisors. The process begins with doctoral education that consists of teaching by the postgraduate supervisor on how to do research. During the postgraduate supervision process, a product (the thesis) is produced and learning takes place.

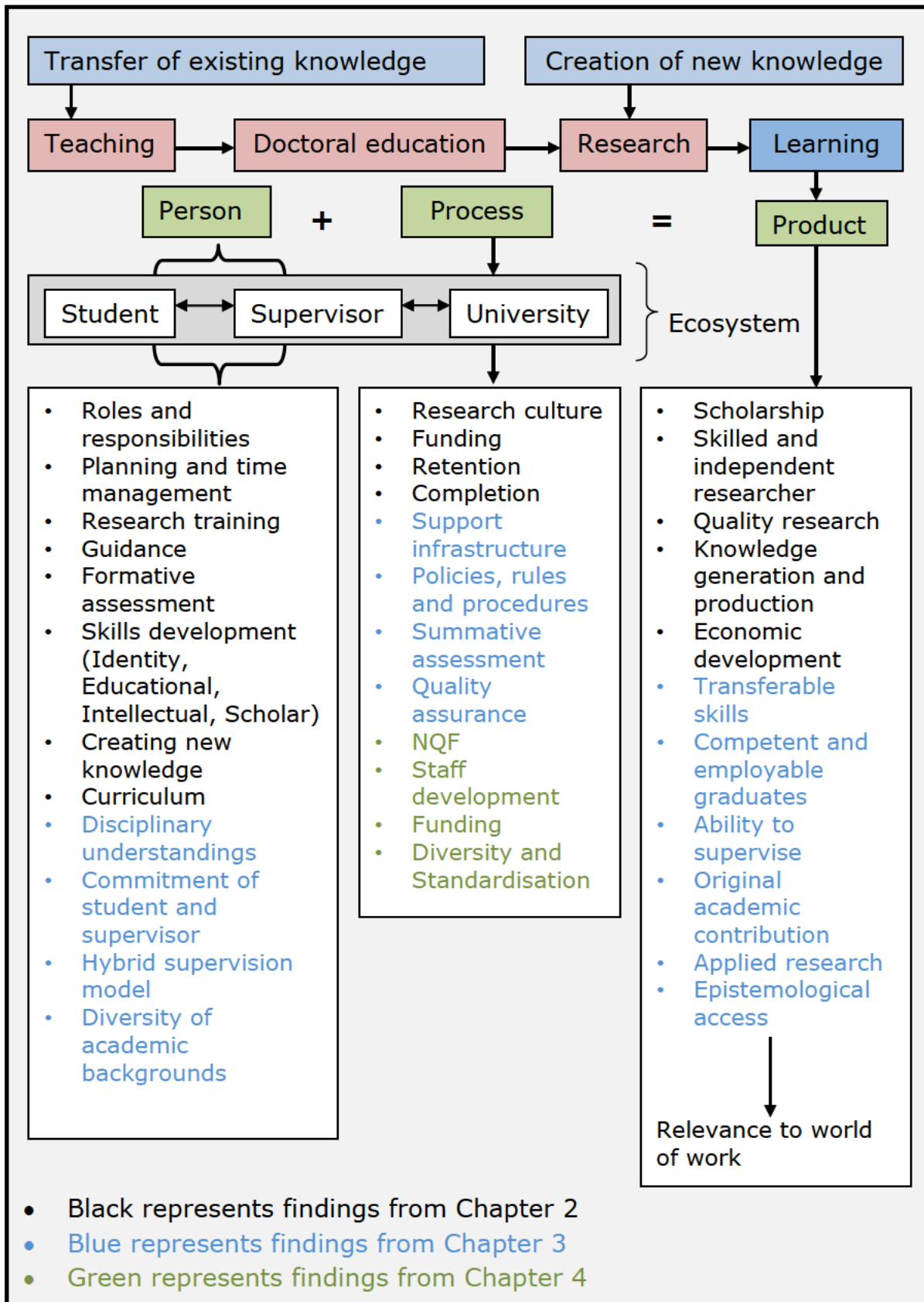


Figure 5.2: The postgraduate supervision process

The skills development programme for postgraduate supervisors will have the following layout (see Figure 5.3 below):

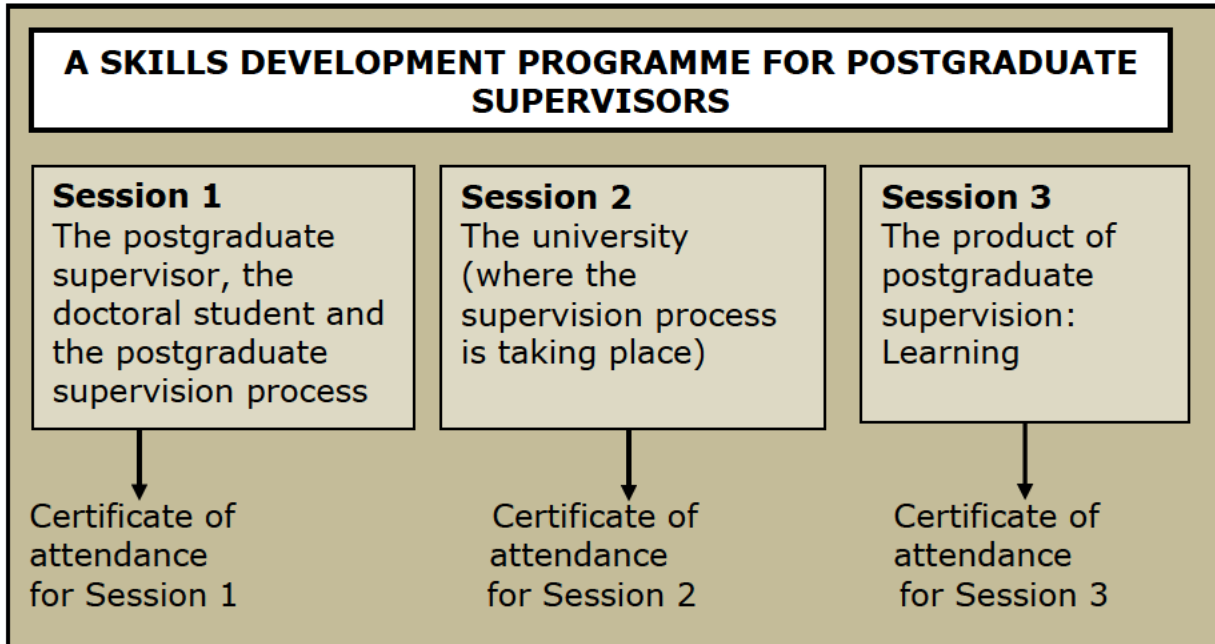


Figure 5.3: The layout of the skills development programme

This programme is generic, focusing on the major activities associated with postgraduate supervision. It can therefore be presented to postgraduate supervisors from all disciplines, so that they will also have the opportunity to learn from each other. The presenter needs to explain to the postgraduate supervisors what is required of them for each activity presented during each session. A session without clear guidelines is not beneficial to the learning experience.

5.3 A SKILLS DEVELOPMENT PROGRAMME FOR POSTGRADUATE SUPERVISORS

SESSION 1: THE POSTGRADUATE SUPERVISOR, THE DOCTORAL STUDENT AND THE POSTGRADUATE SUPERVISION PROCESS

ASSESSMENT CRITERIA	SPECIFIC OUTCOME	EXIT LEARNING OUTCOME
<p>The postgraduate supervisor can demonstrate an understanding and the application of different research training practices.</p>	<ol style="list-style-type: none"> 1. The postgraduate supervisor can explain postgraduate supervision as a teaching method. 2. The postgraduate supervisor can act as a guide in writing skills during the postgraduate supervision process. 3. The postgraduate supervisor can explain the broad concepts of doctoral education. 4. The postgraduate supervisor can identify the elements of a doctoral curriculum. 5. The postgraduate supervisor has developed an understanding of the 	<ol style="list-style-type: none"> 1. The postgraduate supervisor will have acquired an understanding of the different research training practices, and an understanding of the application of different research training practices.

	<p>different models of postgraduate supervision.</p> <p>6. The postgraduate supervisor has developed an understanding of the different methods of formative and summative assessment while supervising the doctoral student.</p>	
<p>The postgraduate supervisor can demonstrate an understanding of the roles and responsibilities of the postgraduate supervisor.</p>	<ol style="list-style-type: none"> 1. The postgraduate supervisor has an understanding of the complex relationship involved in postgraduate supervision. 2. The postgraduate supervisor should act as facilitator in creating new knowledge. 3. The postgraduate supervisor has developed the ability to enhance the development of intellectual skills, educational skills and scholarly skills during 	<ol style="list-style-type: none"> 2. The postgraduate supervisor will have acquired an understanding of the roles and responsibilities of the postgraduate supervisor.

	<p>the postgraduate supervision process.</p> <ol style="list-style-type: none">4. The postgraduate supervisor is able to consider and evaluate different solutions regarding the personal circumstances of the doctoral student.5. The postgraduate supervisor has acquired knowledge of the different types of relationships involved in the postgraduate supervision process.6. The postgraduate supervisor is able to promote identity development and personal growth during the postgraduate supervision process.7. The postgraduate supervisor can act as a mentor in the postgraduate supervision process.8. The postgraduate supervisor will be able	
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	<p>to work effectively with doctoral students from a diversity of academic backgrounds.</p>	
<p>The postgraduate supervisor has acquired the ability to facilitate the planning of the postgraduate supervision process.</p>	<ol style="list-style-type: none"> 1. The postgraduate supervisor is able to understand the difficulties experienced by postgraduate supervisors and doctoral students in completing their doctoral studies. 2. The postgraduate supervisor is able to apply time management skills in the postgraduate supervision process. 3. The postgraduate supervisor is able to create strategies to enhance managing and organising skills required during the postgraduate supervision process. 	<ol style="list-style-type: none"> 3. The postgraduate supervisor will have acquired the ability to facilitate the planning of the postgraduate supervision process.

EXIT LEARNING OUTCOME 1

The postgraduate supervisor will have acquired an understanding of the different research training practices, and also an understanding of the application of the different research training practices.

SPECIFIC OUTCOME 1

The postgraduate supervisor can explain postgraduate supervision as a teaching method.

Format of session: Group session

Overview: See 2.3 (ii), 2.4, 2.11, 4.6

Research is a core activity at universities. Research skills support doctoral students to investigate issues critically, to produce and assess relevant data, form theories and hypotheses, and to make conclusions on their findings. The reason for developing doctoral students' research skills is to help them build strong academic and practical connections between research and their own learning.

Postgraduate supervisors observe and act in response to the needs of the doctoral student, to enable the doctoral student to produce a thesis. The doctoral student needs to learn from the postgraduate supervisor to change from being a reproducer of knowledge to being a producer of knowledge. The mere accumulation of information, without explanation, interpretation or comment does not constitute research.

Activity 1: To make sure that the postgraduate supervision process is successful from the beginning, the postgraduate supervisor and the

doctoral student must be aware of and comprehend the steps in the research process. Table 5.2 below illustrates the steps in the research process (Lategan, 2014:70). Reflect on the steps in the research process and discuss with your group members.

Table 5.2: Steps in the research process (Lategan, 2014:70)

STEPS	THE RESEARCH PROCESS
PROBLEM STATEMENT	What is the reason for the research? Why is the topic you are writing on a problem? What makes it a problem?
HYPOTHESIS	A hypothesis is an assumption that you want to prove through your research.
METHOD	What research methods will you be using in solving your problem and proving your hypothesis? Any of the following research methods may be used: survey research, causal comparative research, ethnographic research, correlational research, experimental research, evaluation research, basic research, clinical research, epidemiological research, social and behavioural research, applied research, creative research.
APPROACH	<p>There are seven virtues in academic argument.</p> <p>Virtue 1: You argue the point.</p> <p>Virtue 2: For each argument, there is at least one reason.</p> <p>Virtue 3: A reason is supported by a literature reference/case study/experiment.</p> <p>Virtue 4: You never make statements without being able to prove the statement.</p> <p>Virtue 5: Each argument can be validated.</p> <p>Virtue 6: Your argument must not only be able to</p>

	<p>support your view but also to counteract views that might differ from yours.</p> <p>Virtue 7: Your literature reference/case study/ experiment must be the latest authority on the topic.</p>
CRITIQUE AND EVALUATION	<p>While doing your research, you are continuously evaluating arguments, always taking your problem statement and hypothesis into account.</p> <p>Does an argument support your problem? If not, revisit your problem statement and reconsider your hypothesis.</p> <p>There should be a constant alignment between the topic and the contents.</p>
CONCLUSION	<p>In the conclusion, you end your arguments and explain your solution to your problem, indicating whether your hypothesis is valid or not.</p>

Activity 2: The role of the postgraduate supervisor is definitely complex. In Table 5.3 below there are some possible roles which a postgraduate supervisor should fulfil (Govender & Ramroop, 2013b). Familiarise yourself with these roles and rank them in order of importance. Reflect on your answers and discuss with your group members.

Table 5.3: Roles of postgraduate supervisors (Govender & Ramroop, 2013b).

ROLES OF POSTGRADUATE SUPERVISORS	AGREE/DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Give guidance on literature search		

Provide helpful (oral and written) comments on drafts		
Courteous and willing to help the doctoral student		
Give guidance on topic selection and refinement (development of research proposal)		
Realistic availability whenever the doctoral student needs his/her postgraduate supervisor		
Provide regular feedback on progress of the doctoral student		
Provide timeous/prompt comments on drafts of the doctoral student		
Respond to requests or enquiries of the doctoral student		
Help to solve personal problems of the doctoral student		
Provide additional information relevant to the research topic of the doctoral student		
Make an effort to understand the difficulties facing the doctoral student		
Help the doctoral student to organise him/herself in undertaking the research		
Make the doctoral student aware of funding sources available for		

research		
Encourage and support the doctoral student in the presentation of papers at conferences		
Make the doctoral student aware of conferences related to his/her research		
Encourage the doctoral student to publish his/her research		
Integrate the doctoral student into the research culture of the university		
Explain to the doctoral student what is expected of him/her as a doctoral student		
Provide guidance on matters related to registration and compliance to university rules		
Make the doctoral student sign a supervision contract		
Explain to the doctoral student what support/service you as the postgraduate supervisor will provide		

Activity 3: With reference to the above list of roles, write down the different roles that you fulfil in your relationship with your doctoral student and explain at which point you take on each role. Complete Table 5.4 below and discuss with your group members.

Table 5.4: Different roles in your relationship with your doctoral student (see 2.5)

DIFFERENT ROLES IN YOUR RELATIONSHIP WITH YOUR DOCTORAL STUDENT	WHEN DO YOU TAKE ON THE ROLE? REFLECT ON YOUR ANSWER	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION

Activity 4: What action as a postgraduate supervisor will you take to ensure the successful execution of the activities in Table 5.5 below? Reflect on your answers and discuss with your group members.

Table 5.5: Execution of postgraduate supervision activities (see 2.3 and 2.5)

POSTGRADUATE SUPERVISION ACTIVITIES	WHAT ACTION WILL YOU TAKE? PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Maintain academic standards	
Promote learning to do research	
Enable doctoral student development	
Communicate academic proficiency to the student	

Activity 5: How do you go about teaching doctoral students to learn how to do research? Reflect on your answers and discuss with your group members.

Activity 6: Do you have adequate disciplinary understanding of the research topic to supervise the doctoral student during the research process? Reflect on your answers and discuss with your group members.

Activity 7: What are the essential characteristics of a good postgraduate supervisor? Reflect on your answers and discuss with your group members.

Activity 8: What do you really want to achieve in supervising doctoral students? Reflect on your answers and discuss with your group members.

Activity 9: The postgraduate supervisor should recognise postgraduate supervision as a teaching strategy. Do you think that postgraduate supervision differs from other types of teaching? Reflect on your answers and discuss with your group members.

Activity 10: Is your teaching approach to postgraduate supervision different from your teaching approach for undergraduate studies? Reflect on your answers and discuss with your group members.

Activity 11: Postgraduate supervisors should take careful note of the statements below. Read each statement and provide a comment in the block provided in Table 5.6 below. Reflect on your answers and discuss with your group members.

Table 5.6: Postgraduate supervision practices (see 2.3 and 2.5)

POSTGRADUATE SUPERVISION PRACTICES	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Postgraduate supervisors must maintain academic standards while supervising doctoral students		
Postgraduate supervisors must adhere to the expectations of the university concerning the standard of work produced and the time within which it is produced		
Teaching doctoral students during the		

research process encourages doctoral students to learn to do research		
Postgraduate supervisors observe and act in response to the needs of the doctoral student, to enable the student to produce a thesis		
Postgraduate supervisors follow their established research objectives which they experienced while they themselves were supervised		
Postgraduate supervisors develop themselves constantly while supervising their doctoral students		
Postgraduate supervisors inspire doctoral students to grow into academic and professional maturity		
Teaching doctoral students is the transmission of academic expertise		
Postgraduate supervisors transfer their expertise to the doctoral student who needs knowledge and skills to do research		

Activity 12: Evaluate your own skills regarding your subject knowledge and your postgraduate supervision practices by assessing yourself and making suggestions for improvement (see Table 5.7 below). After completion of this activity, reflect on your answers and discuss with your group members.

Table 5.7: Skills of subject knowledge and postgraduate supervision practices (see 1.7.1 and 2.2)

POSTGRADUATE SUPERVISION PRACTICES	YES/NO	IF NO, PLEASE PROVIDE SUGGESTIONS TO IMPROVE POSTGRADUATE SUPERVISION PRACTICES	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
I can identify and validate problems			
I can set measurable research goals			
I know how to prioritise tasks			
I can generate creative solutions to problems			
I am up to date on my subject matter			
I am committed to professional development			
I have good interpersonal skills			
I have good problem solving skills			
I have a positive image of myself			
I present a positive image of my department			
I can exchange information through various techniques			
I can contribute to seminars			

and conferences			
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Activity 13: Lee, Dennis and Campbell (2007) identify characteristics of good postgraduate supervision (see Table 5.8 below). Column 1 provides a list of characteristics of good supervision. Column 2 asks you to provide examples from your own experience of applying these characteristics, and column 3 requests examples of what you might do differently in the future. Reflect on your answers and discuss with your group members.

Table 5.8: Characteristics of good postgraduate supervision

CHARACTERISTICS OF GOOD POSTGRADUATE SUPERVISION	EXPERIENCE FROM YOUR OWN STUDIES AND/OR YOUR SUPERVISION PRACTICE	WHAT WOULD YOU DO DIFFERENTLY IN THE FUTURE?	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
<u>Scholarship:</u> Engaging in the scholarship of discovery, integration, application, and teaching			
<u>Awareness:</u> Appreciating individual differences of doctoral students			
<u>Availability:</u> Regular meetings, available through email,			

strategy to be available when off-campus			
<u>Encouragement:</u> Give direction and structure while encouraging student independence			
<u>Celebration:</u> Recognition of achievements of doctoral student			
<u>Academic community:</u> Attending seminars with your doctoral student			
<u>Skills development:</u> Assisting with skills development of the doctoral student related to the early career academic experience			
<u>Networking:</u> Including students in professional networks for their research and career planning			
<u>Mentoring:</u> Helping with career planning			

and collegiality after graduation			
<u>Feedback:</u> Constructive and timely feedback on written work; what you consider as timely			

Activity 14: The research process and the administrative process cannot be separate from each other. As a postgraduate supervisor, you must monitor the process from the beginning to the end. There are five stages in the research and administrative process for doctoral studies (see Table 5.9 below). Familiarise yourself with each stage in the process. In your opinion, what more is required? Reflect on your answers and discuss with your group members.

Table 5.9: Stages in the research and administrative process for doctoral studies

STAGE	PROCESS	WHAT MORE IS REQUIRED?	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Stage 1	MEET WITH HEAD OF DEPARTMENT OR FACULTY RESEARCH MANAGER TO IDENTIFY SUPERVISOR <ul style="list-style-type: none"> · Doctoral student visits head of department / faculty research manager to discuss research for 		

	<p>doctoral study</p> <ul style="list-style-type: none"> · Doctoral student is referred to supervisor/study leader · Doctoral student drafts conceptual proposal 		
Stage 2	<p>REGISTRATION</p> <ul style="list-style-type: none"> · Doctoral student registers upon approval of proposed research by faculty · All institutional administrative processes are dealt with by Student Administration · Doctoral student complies with institutional regulations in the yearbook and Student Assessment Manual 		
Stage 3	<p>FROM FACULTY TO RESEARCH AND DEVELOPMENT: APPROVAL OF PROTOCOL</p> <ul style="list-style-type: none"> · Supervisor and co-supervisor are formally appointed within the faculty · Doctoral student formalises protocol · Supervisor provides guidance to doctoral student and informs doctoral student about administrative process · Title Registration Committee within faculty 		

	assesses scientific merit of protocol, approves and registers title on faculty database		
Stage 4	<p>GRANT APPLICATION</p> <ul style="list-style-type: none"> · Doctoral student applies for grant, supervisor assists. · Approval of grant will be based on institutional and faculty-specific criteria · Doctoral student formally accepts grant conditions · Grant registration on Research Administration System · Quarterly progress reports via faculty research managers 		
Stage 5	<p>PROCESS TO COMPLETION/ASSESSMENT</p> <ul style="list-style-type: none"> · Supervisor provides guidance · Doctoral student utilises support and attends workshops offered by Research and Development · Doctoral student submits article according to assessment requirements · External examiners appointed to evaluate final thesis · Awarding of qualification 		

Activity 15: Can you identify any two reasons why you should be familiar with these processes? Reflect on your answers and discuss with your group members.

SPECIFIC OUTCOME 2

The postgraduate supervisor can act as a guide in improving writing skills during the postgraduate supervision process.

Format of session: Group session

Overview: See 2.3 (ii), 3.4.3.

One of the main challenges of academic writing is that it requires the researcher to focus strongly on both content and writing simultaneously. Written language helps you in your *discovery* of knowledge through:

- reading to clarify concepts;
- gathering literature relevant to the research;
- discovering what was previously unknown;
- identifying what research methods can be used to do research;
- presenting research as a well-informed student.

Activity 1: Do you as a postgraduate supervisor experience any barriers to writing? If yes,

- (a) What are the barriers?
- (b) How do you overcome these barriers?
- (c) Reflect on your answers and discuss with your group members.

Activity 2: If you have not yet supervised a doctoral student, what barriers do you think they might experience? Reflect on your answers and discuss with your group members.

Activity 3: Does your doctoral student experience any barriers to writing? Reflect on your answers and discuss with your group members.

Activity 4: In Table 5.10 below make comments on problems you have observed in doctoral student writing. Give an example of how the problem can be resolved. Reflect on your answers and discuss with your group members.

Table 5.10: Problems in doctoral student writing

PROBLEMS OBSERVED IN DOCTORAL STUDENT WRITING	WAYS TO ADDRESS THE PROBLEM	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION

Activity 5: How do you evaluate the writing skills of your doctoral students? Reflect on your answers and discuss with your group members.

Activity 6: What problems do you experience when doctoral students are writing? Reflect on your answers and discuss with your group members.

Activity 7: One of the major problems with doctoral students is their lack of academic writing skills. Below are guidelines formulated by Manathunga *et al.* (2010:36) which you can follow to help improve your student's ability to produce academic writing.

- a) Ask the student to formulate a topic on which he/she would like to do research.
- b) Tell the student that you will help him/her once with the formulation of the topic.
- c) Make recommendations of key readings and then tell the student that you want him/her to find at least five new readings on the same or a related topic.
- d) Ask him/her first to summarise key readings and then provide him/her with a list of critical questions that will allow him/her to develop his/her critical analysis skills.
- e) Provide detailed written and verbal feedback on one paragraph of the student's writing and then ask him/her to re-write a whole passage taking these changes into account.
- f) Try to start asking the student questions rather than always providing the answers.

- g) Re-write one paragraph that puts the student’s argument first and then quotes the work of other people to support what they have said rather than the other way around (Manathunga *et al.* (2010:36).

Activity 8: How do you as the postgraduate supervisor support your doctoral student in developing writing skills? Complete Table 5.11 below, reflect on your answers and discuss with your group members.

Table 5.11: Support of postgraduate supervisor in academic writing

ASPECTS OF WRITING	TYPE OF SUPPORT BY SUPERVISOR	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION

Activity 9: In Table 5.12 below the factors that enable or hinder thesis writing are listed. Do you agree with these statements? Complete Table 5.12 below, reflect on your answers and discuss with your group members.

Table 5.12: Factors that enable or hinder thesis writing

FACTORS ENABLING THESIS WRITING	AGREE/ DISAGREE. PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION	FACTORS HINDERING THESIS WRITING	AGREE/ DISAGREE. PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Support from doctoral student's own department		Lack of wider institutional support	
Peer support and encouragement, peer review of thesis		No peer support, Negative peer pressure	
Supervisor exhibiting a supervision model which is functional		Supervisor exhibiting a supervision model which lacks functionality	
Project management-focused and enhances the supervisor-student relationship		Lacks project management, no relationship development	
Emotional and financial support from family and friends		Difficulty in balancing doctoral studies around family and work commitments	
Motivation from postgraduate supervisor		Lack of motivation from postgraduate supervisor	
Organisation		Lack of organisation	

SPECIFIC OUTCOME 3

The postgraduate supervisor can explain the broad concepts of doctoral education.

Format of session: Group session

Overview: See 1.4, 2.2, 2.4, 3.4.3, 3.4.4, 3.3.5, 4.8

Activity 1: Certain processes in postgraduate supervision and research training could be identified as

- (a) common across all disciplines;
- (b) different postgraduate supervision approaches (see Table 5.6 below) for each discipline;
- (c) highly personal individual experiences for each doctoral student;
- (d) various disciplines at different universities.

Reflect on the approach that you follow in your discipline and discuss with your group members.

Activity 2: According to Nerad (2011:2), education and research training have to be organised with a problem-solving, multi-disciplinary approach. Finding answers to the many societal problems has become too complex and too costly to be solved by one researcher, one singular disciplinary approach or one university. Do you agree or disagree with the statement? Provide a reason and discuss with your group members.

Activity 3: Postgraduate supervisors must have an understanding of other disciplines particularly where research intersects with other disciplines. Agree or disagree with the statement, provide a reason and discuss with your group members.

Activity 4: Doctoral students will study according to their personal interests, the research interests of the postgraduate supervisor, the current concerns of the discipline and the sources of funding available. The experience of doctoral education and research will not be the same for all students and disciplines. For example, doctoral students in the pure sciences are more likely to work as part of a team that gives them access to resources and support, and experience in large joint projects. However, doctoral students in the humanities work more in isolation and learn to handle their research more on their own. Knowledge in chemistry is cumulative and requires convergent thinking and collaboration, while education “calls for a divergent way of thinking to progress itself” (Chiang 2003:19). Differences between disciplines and universities, too, make standardisation of doctoral education challenging (ASSAf, 2010). In Table 5.13, the differences across different disciplines in terms of knowledge produced are summarised (Backhouse, 2009:273). Reflect on these statements regarding the knowledge produced across different disciplines and discuss with your group members.

Table 5.13: Knowledge produced across different disciplines
(Backhouse, 2009:273)

MATHEMATICS	ENGLISH STUDIES	CIVIL ENGINEERING	PUBLIC MANAGEMENT
<ul style="list-style-type: none"> • Introduce or investigate mathematical objects • Derive equations to describe phenomena • Model natural phenomena and develop modelling tools • Philosophical reflections 	<ul style="list-style-type: none"> • Reflect on literary concepts • Critique the work of an author • Compare the work of two or more authors • Discuss culture as reflected in literature (broadly interpreted) 	<ul style="list-style-type: none"> • Investigate engineering and environmental problems • Model real-world phenomena and develop modelling tools • Develop guidelines and protocols • Write software for decision making or optimisation 	<ul style="list-style-type: none"> • Critique policy and policy implementation • Assess the impact of policy • Explain the results of policy • Investigate the sustainability of policy
Theoretical knowledge with emphasis on solving theoretical problems	Theoretical knowledge with emphasis on critique	Knowledge focused on practice with emphasis on improving practice	Knowledge focused on practice with emphasis on critique

SPECIFIC OUTCOME 4

The postgraduate supervisor can recognise the elements of a doctoral curriculum.

Format of session: Group session

Overview: See 2.2, 2.4, 3.3.4, 3.3.5, 3.5.

Activity 1: The elements of a doctoral curriculum consist of the purposes and values of learning, the nature of learning, and content supporting the achievement of outcomes of doctoral education. A curriculum for postgraduate programmes cannot be planned and executed in the way that it is planned and executed for undergraduate programmes. How would you go about planning a curriculum for your doctoral student? Reflect on your answers and discuss with your group members.

Activity 2: If the doctoral curriculum is to be evaluated, it will be useful to ask what the purpose of the doctoral degree is (Gilbert, 2004). Read the questions in Table 5.14 below. Reflect on your answers and discuss with your group members.

Table 5.14: Content of the doctoral curriculum

AN EVALUATION OF THE DOCTORAL CURRICULUM	ANSWER	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
1 What are the goals, content and learning experiences in doctoral education?		
2 In any field of research, is there consensus about these goals, and the kinds of programme that are in place to achieve them?		
3 How do the goals and programme content and knowledge of research training in particular fields of research relate to developments in knowledge forms and generic skills?		
4 How do the goals of research training in particular fields meet the needs of students and other interested parties relevant to research in those fields?		

SPECIFIC OUTCOME 5

The postgraduate supervisor has developed an understanding of the different models of postgraduate supervision.

Format of session: Group session

Overview: See 3.3.2

Postgraduate supervisors are inclined to assume that they know which elements of the supervisory process and management thereof are more appropriate for success. While doctoral students need support and attention from their supervisor throughout the process, the specific needs of a student change as they progress. One of the main challenges supervisors face is when to guide or change the research process and when to allow the student the autonomy to work on his/her own. Throughout the supervisory relationship a postgraduate supervisor will engage in a number of different approaches at different levels, depending upon factors including the postgraduate supervisor's expectations of the doctoral student, the stage of the candidacy, the student's evolving needs, and the doctoral student's progress.

Activity 1: Postgraduate supervision consists of complex interactions between the postgraduate supervisor and the doctoral student. It is a process involving complex academic and interpersonal skills, including guiding doctoral students towards sound proposal preparation, formative assessment, methodological choices, documenting and publishing their research, maintaining both supportive and professional relationships, as well as reflecting on the research process. Postgraduate supervisors can make use of different models of postgraduate supervision. Table 5.15 below provides a summary of the four most prevalent supervisory models

in use in South Africa in 2009 (ASSAf, 2010:66-67). Analyse and critically evaluate the different models and complete Activity 2 thereafter.

Table 5.15: Four main models for supervising doctoral students
(ASSAf, 2010:66-67)

TYPE OF MODEL	DESCRIPTION	CRITICAL EVALUATION OF THE MODEL	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
The traditional apprenticeship model (individual mentoring)	<ul style="list-style-type: none"> • An informal, <i>ad hoc</i>, individualised, one-on-one mentoring relationship • Students learn required skills and competencies from supervisor • Occasionally supplemented by a co-supervisor 		
The course work approach	<ul style="list-style-type: none"> • Formalised curriculum • Individual supervision • Provide input on epistemology, research methodology, critical thinking and discipline-specific theory 		
The cohort-based model	<ul style="list-style-type: none"> • Shared/group experience • Cohort of students, studying together through workshops within a specified time cycle; generally includes course work • Critical mass of students and supervisors 		

	<ul style="list-style-type: none"> Provides structure, achievement benchmarks and opportunities to learn from one another 		
The doctorate by publication	<ul style="list-style-type: none"> Supervised research project Assessed on basis of peer-reviewed academic papers Published or accepted for publication 		

Activity 2: List the advantages and disadvantages of each of the above-mentioned models in Table 5.16 below. Reflect on your answers and discuss with your group members.

Table 5.16: The advantages and disadvantages of postgraduate supervision models (ASSAf, 2010:66-67)

MODELS	<u>ADVANTAGE</u> PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION	<u>DISADVANTAGE</u> PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Traditional apprenticeship		
Course-based		
Cohort-based		
PhD by publication		

Activity 3: The Supervisory Management Model of Gatfield (2005) illustrates the type of support and structure levels that exist in the postgraduate supervision relationship (see Figure 5.4 below).

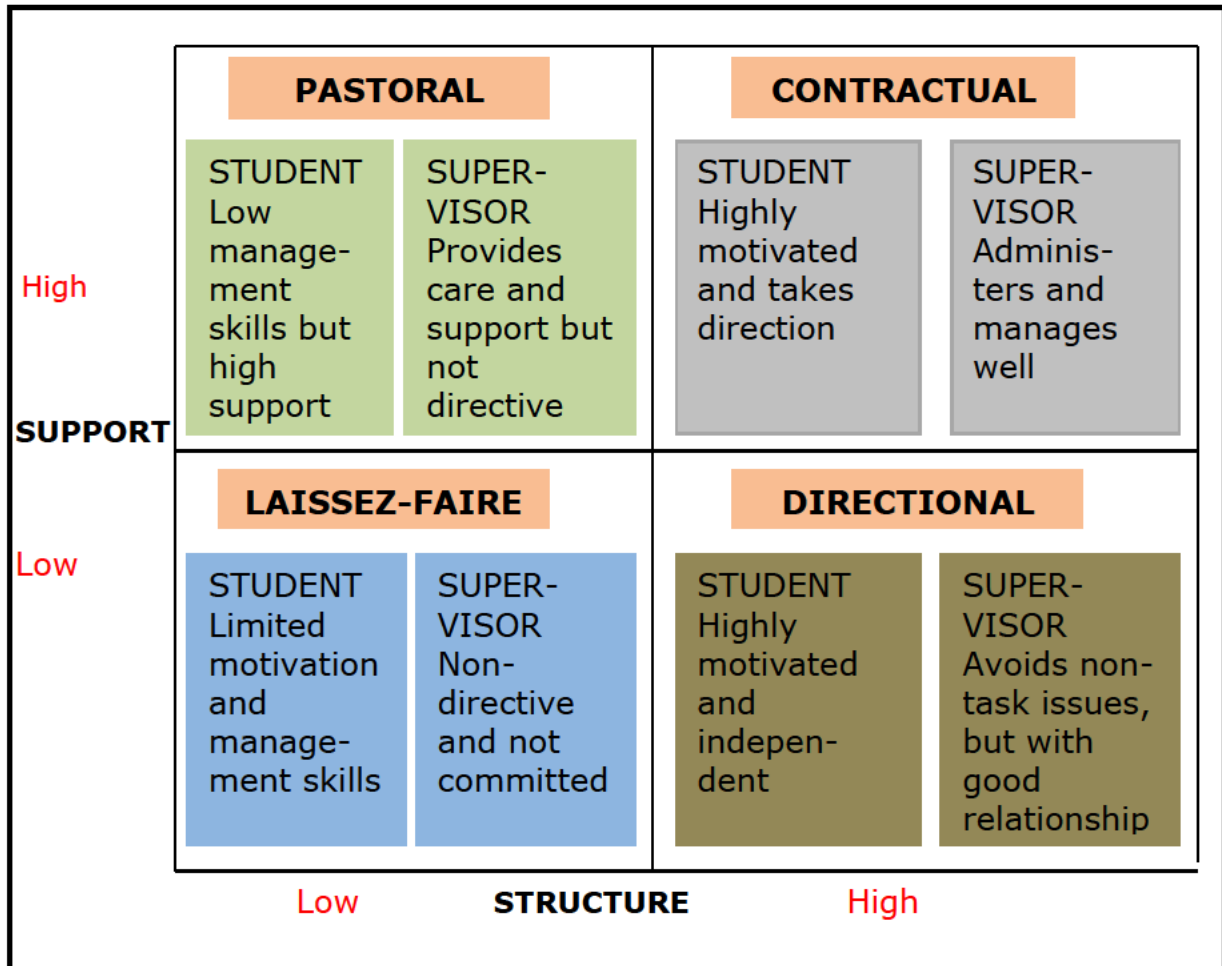


Figure 5.4: Supervisory management model (Gatfield & Alpert, 2002:267-268)

Focus on one of your doctoral students. Which quadrant best typifies your present relationship with your doctoral student in terms of the degree of support and structure? Reflect on your answers and discuss with your group members.

If you do not have a doctoral student, think about the relationship you had with your supervisor when you were a doctoral student. Reflect on your answers and discuss with your group members.

Activity 4: The supervisor/student alignment model of Gurr (2001:86) takes the academic growth of the doctoral student into account. As the postgraduate supervisor and the doctoral student progress during the research process, the postgraduate supervision process also needs to be adjusted from a hands-on approach to a hands-off approach.

- a) What is your understanding of a hands-on approach in postgraduate supervision? Reflect on your answers and discuss with your group members.

- b) What is your understanding of a hands-on approach in postgraduate supervision? Reflect on your answers and discuss with your group members.

Activity 5: Has your relationship changed over time with your doctoral student? If so, how? Reflect on your answers and discuss with your group members.

Activity 6: How would you like the relationship with your doctoral students to develop in the future? Reflect on your answers and discuss with your group members.

Activity 7: There are a number of models available for postgraduate supervision (see Activities 1, 3 and 4). The supervision process is too complex to implement or use only one specific type of postgraduate supervision model or style. Postgraduate supervision goes further than the completion of the thesis. The intellectual development of the doctoral student should be taken in consideration to provide a high-quality research-learning environment to doctoral students. A hybrid postgraduate supervision model was identified consisting of a combination and integration of:

- the traditional apprenticeship model that is a one-on-one and a learning-by-doing model (Activity 1);
- the four-quadrant supervisory management model consisting of the different support and structure levels during the process (Activity 3);
- the supervisor/student alignment model which focuses on the academic growth of the doctoral student (Activity 4).

The process starts with the postgraduate supervisor and the doctoral student (traditional apprenticeship model). As the research process progresses, there needs to be an adjustment (Gurr, 2001) to the one-on-one teaching method. The relationship between the postgraduate

supervisor and the doctoral student will change over a period of time. During the period of study, different support and structure levels will manifest themselves (Gatfield, 2005).

Considering the actions informing the hybrid postgraduate supervision model, complete the following activities. Reflect on your answers and discuss with your group members.

Describe your understanding of what constitutes the one-on-one learning-by-doing model (the traditional apprenticeship model).

Describe your understanding of what constitutes the need to adjust the one-on-one teaching method (supervisor/student alignment model)

Describe your understanding of what constitutes the different support and structure levels displayed during the postgraduate supervision process (four-quadrant supervisory management model).

Activity 8: When you were supervised, did your postgraduate supervisor use any of the above mentioned models (see Activities 1, 3 and 4)? In Table 5.17 below, reflect on your answers and discuss with your group members.

Table 5.17: The hybrid postgraduate supervision model

HYBRID POSTGRADUATE SUPERVISION MODEL	DID YOUR SUPERVISOR USE THIS MODEL? YES/NO	WILL YOU INCLUDE THIS MODEL IN YOUR SUPERVISION PRACTICE?	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Traditional apprenticeship model			
Four-quadrant supervisory management model			
Supervisor/student alignment model			

SPECIFIC OUTCOME 6

The postgraduate supervisor has developed an understanding of the different methods of formative and summative assessment while supervising the doctoral student.

Format of session: Group session

Overview: See 3.3.5

Activity 1: Postgraduate supervisors must familiarise themselves with the following issues on formative assessment:

- Feedback that is specific. Feedback should be specific and should concentrate on particular incidents and observable behaviour: it is not about the individual. It should relate to specific things that have actually happened – performance, behaviour, and outcomes. Students need to know exactly where they can improve their work.
- Factual feedback. Be objective, fair and respectful towards the students' writing or presentation of the research.
- Feedback that is well-timed. The supervisor should give feedback as soon as possible after he/she has received work from the student. The longer the student has to wait for feedback, the higher the likelihood that he/she will become discouraged; and bad habits such as tardiness in giving feedback soon become permanent.
- Constructive feedback. Even if the work of the student is poor, the supervisor must provide specific examples and give an indication of the way forward.
- Feedback should be positive and given in such a manner as to teach the student. Provide positive information and points for improvement. Take into account the student's feelings and

reactions; vary your style according to the needs of the student and the situation. Emphasise the positives as well as the negatives; give praise where it is due and be specific.

- Feedback must be open and receptive. The supervisor must be aware of possible immediate reactions of the student and should not him/herself react over-hastily.

In Table 5.18 below are the different types of formative assessment. As a postgraduate supervisor, which type of formative assessment do you give to your doctoral student? State why you prefer this type of formative assessment. Reflect on your answers and discuss with your group members.

Table 5.18: Types of formative assessment

TYPE OF FORMATIVE ASSESSMENT	CHOICE OF FORMATIVE ASSESSMENT	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Specific feedback		
Factual feedback		
Well-timed feedback		
Constructive feedback		

Activity 2: According to Hyatt (2005:343-348) feedback tends to fall into a range of different categories, dependent on function. The following is a list of comment types with some illustrative examples. This is not a prescriptive or all-inclusive list of potential generic or specific features but simply a starting point for consideration of the functional aspects of feedback. Table 5.19 below provides a summary of the different categories of feedback. Postgraduate supervisors must familiarise

themselves with these categories of feedback. Reflect on your answers and discuss with your group members.

Table 5.19: Different categories of feedback (Hyatt, 2005:343-348)

FEEDBACK	DESCRIPTION	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Phatic comments	Comments whose purpose is the establishment and maintenance of a good academic and social relationship between the postgraduate supervisor and the doctoral student		
Developmental comments	<p><u>Alternatives:</u> The postgraduate supervisor offers alternatives, suggestions and recommendations in place of what the doctoral students have written or points out omissions in the student's work.</p> <p><u>Future:</u> Comments on how the doctoral student needs to address a point directly in the research. Be remote to enable you to state your opinion without committing to an idea that you may at another time wish you had never expressed.</p> <p><u>Reflective questions:</u> The postgraduate supervisor poses a question for the</p>		

	<p>doctoral student to think about.</p> <p><u>Informational comment:</u> The postgraduate supervisor offers a direct comment on a related and complementary topic, with the intention of offering the doctoral student additional academic insight into the topic under discussion.</p>		
Structural comments	<p>Comments on structural organisation of the research, either as a whole or in sections.</p> <p><u>Discourse level:</u> These comments consider the organisation of the research as a whole in terms of the introduction, literature review and conclusion.</p> <p><u>Sentence level:</u> Comments on organisation of individual sentences, in terms of length and in relation to other sentences.</p>		
Stylistic comments	<p>Comments on the use and presentation of academic language within the research.</p>		
Content-related comments	<p>Comments on the content of the research in terms of its appropriateness and accuracy.</p> <p><u>Positive evaluation:</u> Comments on the strengths of the research are noted and tend to include features such as synthesis of literature, theory and practice; appropriate synthesis of</p>		

	<p>personal experience; clear argumentation and reflection.</p> <p><u>Negative evaluation:</u> Comments are on weaknesses in the research. May include problems relating to providing evidence, lack of clarity or the need for clarification, or a lack of critical thinking.</p> <p><u>Non-evaluative summary:</u> Comments offer a summary of aspects of the research</p>		
Methodological comments	<p>Feedback on the research design and analysis.</p> <p><u>Approach:</u> Comments may be made on the philosophical and epistemological positions of the research, how these relate to the research paradigm through which the enquiry is approached.</p> <p><u>Procedures:</u> Comments are made on practical aspects such as the research design, the collection and analysis of the data, the sample, and so forth.</p> <p><u>Process:</u> Comments are made on the process, timeframe and practicality of the conduct of the research.</p>		
Administrative comments	<p>Comments related to the administrative procedures, for example to submit two copies of the research</p>		

Activity 3: Postgraduate supervisors should provide feedback that will be useful to the doctoral student. Below are some examples of issues upon which feedback can be offered (see Table 5.20 below). Do you as a postgraduate supervisor offer feedback on these issues to your students? Reflect on your answers and discuss with your group members.

Table 5.20: Issues on which feedback can be offered to the student

TYPE OF FEEDBACK OFFERED	YES/ NO	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Spell checking		
Proof-reading		
Checking facts, references and plagiarism for accuracy		
Commenting on argument and logic		
Help with critical thinking: is it adequate and on doctoral level?		
Structure and flow of research		

Activity 4: How frequently do you as postgraduate supervisor expect to see written work from your doctoral student? Reflect on your answers and discuss with your group members.

Activity 5: How much time do you as a postgraduate supervisor need in order to give constructive feedback to your doctoral student? Reflect on your answers and discuss with your group members.

Activity 6: How many drafts of any particular chapter are you as postgraduate supervisor prepared to comment on? Reflect on your answers and discuss with your group members.

Activity 7: If there is more than one supervisor, will both supervisors read and comment on everything? If so, will they do it at the same time or one after the other? Reflect on your answers and discuss with your group members.

Activity 8: The postgraduate supervisor must help the doctoral student learn how to evaluate and re-evaluate his/her research. Once a doctorate has been awarded, he/she must be able to evaluate his/her own research as well as the work of others. The Level Descriptors for Autonomy of Learning state, amongst other things, that a student must have the capacity to evaluate critically his/her own and others' work with justification (South Africa, 2001:51). In Table 5.21 below are statements in terms of which the postgraduate supervisor can evaluate his/her own research and that of the student (Welman *et al.*, 2012: 262-264). Reflect on these statements and discuss with your group members.

Table 5.21: Evaluation of research

STATEMENT	YES/NO	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
<p>Title</p> <ul style="list-style-type: none"> · True reflection of the contents · Title is not too long, yet descriptive 		
<p>Problem statement</p> <ul style="list-style-type: none"> · Formulated clearly and understandably · Formulated adequately in terms of defined concepts · Relevant to the topic and field of study · Does not relate to anything trivial, and is of scientific, theoretical and/or practical significance 		
<p>Literature review</p> <ul style="list-style-type: none"> · Relevant to the aim and problem statement of the study · Suitably comprehensive with essential information 		
<p>Research design</p> <ul style="list-style-type: none"> · Appropriate for the problem in question · Describes the sampling procedures 		
<p>Measuring instruments</p> <ul style="list-style-type: none"> · Contents are described briefly · Data-collection procedures are described · Reliability and validity is discussed 		
<p>The analytical/statistical techniques</p> <ul style="list-style-type: none"> · Appropriate for the given problem 		

<ul style="list-style-type: none"> · Have been applied properly 		
<p>The results</p> <ul style="list-style-type: none"> · Clearly and properly presented · Interpreted correctly 		
<p>Discussion</p> <ul style="list-style-type: none"> · Provides necessary, valid interpretations and conclusions · Covers appropriate and reasonable theoretical and/or practical implications · Is unbiased and considers whether explanations of the results obtained are appropriate · Takes unforeseen restrictions on the internal and external validity into consideration 		
<p>The final write-up of the report</p> <ul style="list-style-type: none"> · Follows a logical structure and train of thought · Is brief without being vague or forgoing clarity and readability 		

ASSESSMENT CRITERIA

The postgraduate supervisor can demonstrate an understanding and application of different research training practices.

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

END OF SESSION

EXIT LEARNING OUTCOME 2

The postgraduate supervisor will have acquired an understanding of the roles and responsibilities of the postgraduate supervisor.

SPECIFIC OUTCOME 1

The postgraduate supervisor has an understanding of the complex relationship involved in postgraduate supervision.

Format of session: Group session

Overview: See 2.3 (iii)

Activity 1: The roles and responsibilities of the postgraduate supervisor are very complex. He/she can act as:

- an innovator (makes improvements, solves problems, envisions changes)
- a broker (uses influence to connect candidate, acquire resources)
- a producer (production of thesis, keeping student focused)
- a director (clarifies priorities, communicates goals, provides direction)
- a coordinator (coordinates project, oversees timelines and milestones, and helps to create order)
- a monitor (monitors progress, knows what is required)
- a facilitator (builds teams, manages conflict, supports student)
- a mentor (develops students, provides empathy and caring)
- an integrator (assigns roles, reflects on supervision process) (Hay, 2008:6).

In Table 5.22 below, the roles and responsibilities of the postgraduate supervisor are listed. Read the statements listed below. You may agree or disagree with the statements. Reflect on your answers and discuss with your group members.

Table 5.22: The roles and responsibilities of the postgraduate supervisor (see 2.5 and 3.2)

STATEMENT	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
The supervisor is responsible to select a topic for the student		
The supervisor must make arrangements for meetings with the student		
The supervisor-student relationship should be professional and personal matters should not interfere		
The supervisor must support the student until the thesis has been submitted irrespective of his/her confidence in the research		
The supervisor should terminate the studies of the student if the student doesn't have the capabilities to do the research		
The supervisor should ensure that the thesis is finished in the minimum time period		
The supervisor must insist that the		

student provide regular drafts for the supervisor to review		
The supervisor must give regular feedback on work submitted by the student		
The supervisor should assist in the actual writing of the thesis if the student has difficulties		
The student can work on his/her own time framework irrespective of the time period		
The supervisor allows the student choices regarding content, format and standard		
The supervisor is responsible for the standard of the thesis		
The supervisor must understand individual differences and have strategies in place to respond to these		
The supervisor must assist in career planning after graduation of the student		

Activity 2: In the model below (see Figure 5.5), the focus is on process and purpose of the doctoral student relationship. Focus on the two dimensions below and locate yourself in relation to these two dimensions:

- a) From leading and taking responsibility for the research through to guiding the research process.

b) From focusing more upon research tasks to be completed through to focusing on the development of the student (Murphy *et al.*, 2007).

Reflect on where you have located yourself in relation to these two dimensions and discuss with your group members.

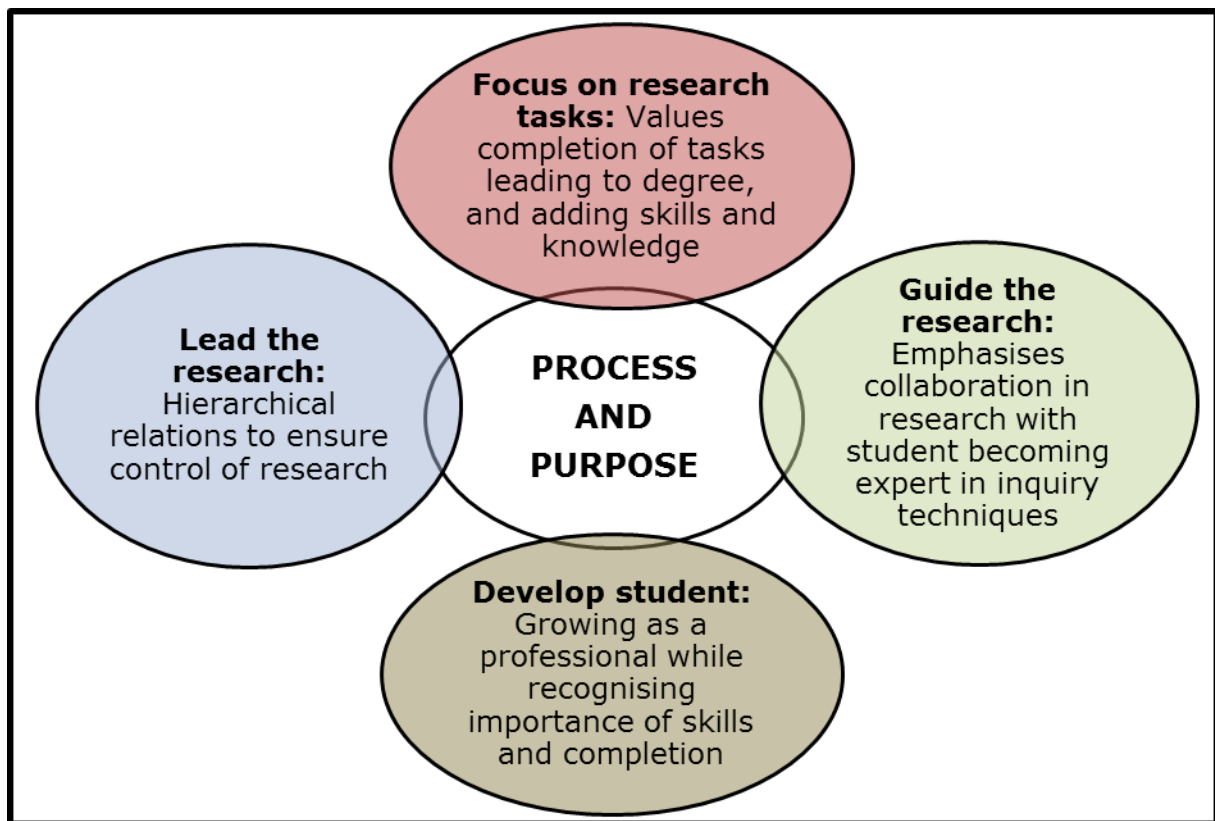


Figure 5.5: Process and purpose of the student relationship (Murphy *et al.*, 2007)

Activity 3: Which processes (lead or guide the research) and purpose (focus on research tasks or student development) best typify your present

relationship with your student? Reflect on your answers and discuss with your group members.

Activity 4: Have the process and purpose in the student relationship changed over time? If yes, why? Reflect on your answers and discuss with your group members.

Activity 5: How would you like the process and purpose in the student relationship to develop in the future? Reflect on your answers and discuss with your group members.

Activity 6: An agreement should exist between the postgraduate supervisor and the doctoral student to work towards a common goal based on responsibility, mutual respect and commitment. Do you agree or disagree with this statement? Reflect on your answer and discuss with your group members.

Activity 7: How will you facilitate an agreement between yourself and the doctoral student? Reflect on your answer and discuss with your group members.

Activity 8: As a postgraduate supervisor, what activities do you think a doctoral student should undertake to advance and succeed in their doctoral studies? Reflect on your answers and discuss with your group members.

SPECIFIC OUTCOME 2

The postgraduate supervisor should act as facilitator in creating new knowledge.

Format of session: Group session

Overview: See 2.4

Activity 1: There are differences in knowledge and on how to do research between the doctoral student and the postgraduate supervisor, because of the supervisor’s experience in doing research. Part of the process of creating new knowledge is the literature review, which changes as the research progresses. In Table 5.23, the aspects regarding the literature review are summarised. Reflect on these statements regarding the knowledge produced across different disciplines and discuss with your group members.

Table 5.23: The aspects regarding the literature review

ASPECTS REGARDING THE LITERATURE REVIEW	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
The doctoral student acquires knowledge in the specific field of study.		
The doctoral student learns to gather material that may be useful for the research.		
The doctoral student will discover how		

knowledge in the specific field of study has been developed and gathered over a period.		
The doctoral student will recognise what is still unknown in the specific field of study.		
The literature review will help the doctoral student to show the significance of the research.		
The doctoral student will discover how other researchers have made their findings and how his/her research will enhance the existing knowledge; he/she will learn to capture the argument on which the research depends.		
The doctoral student should not make summaries of the different sections of literature relevant to the research without helpful analyses and critical interpretations of why and how they are relevant.		

Activity 2: Postgraduate supervisors must be educators, with specific subject knowledge and competencies, training doctoral students to do research and to produce new knowledge. Do you agree or disagree with this statement? Reflect on your answer and discuss with your group members.

SPECIFIC OUTCOME 3

The postgraduate supervisor has developed the ability to enhance the development of intellectual skills, educational skills and scholarly skills during the postgraduate supervision process.

Format of session: Group session

Overview: See 1.4, 2.2, 2.8, 3.3.2, 3.3.5

The postgraduate supervisor should identify strategies that will enhance the skills of the doctoral student. The doctoral student must acquire a set of skills to enable him/her to interact positively and to work effectively with the postgraduate supervisor. These skills include the areas of communication, listening, interaction with others, behaviour, positive attitude, stress management, commitment, motivation, involvement and ability to question. Postgraduate supervisors base their supervisory practice on their own experience of how they were supervised and therefore it is worth improving on their interpersonal skills (Chapter 2, 2.8). The ability to communicate well with others and the ability to work well in a team are valuable skills. Skills can improve a student's performance, resilience and overall emotional literacy. When working in groups, there are opportunities to share ideas, hear other viewpoints, and benefit from the experience and knowledge of others.

Activity 1: As a postgraduate supervisor, how do you help students to acquire the skills listed in Table 5.24 below? Provide examples from your own experience as a postgraduate supervisor. Reflect on your answers and discuss with your group members.

Table 5.24: Enhancement of skills (see 3.2.1)

ENHANCEMENT OF INTERPERSONAL SKILLS OF DOCTORAL STUDENTS	HOW DO YOU HELP YOUR DOCTORAL STUDENTS TO ENHANCE THEIR INTERPERSONAL SKILLS?	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Communication skills		
Listening skills		
Interaction with others		
Positive attitude towards studies		
Stress management		
Commitment towards studies		
Motivation to study		
Ability to think critically		
Time management		

Activity 2: In Table 5.25 below is a selection of basic skills that a doctoral student should have in order to be successful (Gilbert *et al.*, 2004:376). Does your doctoral student have these skills? Which skills of your doctoral student need further development? Which are of the most importance to you as a postgraduate supervisor? Reflect on your answers and discuss with your group members.

Table 5.25: Basic skills to be a successful doctoral student (Gilbert *et al.*, 2004:376)

BASIC SKILLS	DO YOUR DOCTORAL STUDENTS HAVE THIS SKILL? YES/NO	WHICH OF YOUR DOCTORAL STUDENTS' SKILLS NEED FURTHER DEVELOPMENT?	WHICH SKILL IS IMPORTANT TO YOU AS POSTGRADUATE SUPERVISOR?
Writing skills			
Project management			
Computer skills			
Critical thinking			
Problem solving			
Creativity			
Independent researcher			
Working ethically			

Activity 3: How do you as postgraduate supervisor contribute to the intellectual development of the doctoral student? Reflect on your answers and discuss with your group members.

Activity 4: While a postgraduate supervisor is teaching doctoral students how to do research, he/she is developing his/her scholarly, technical and educational skills. This teaching consists of different skills. How will you as a postgraduate supervisor transfer these skills? Complete Table 5.26 below and discuss with your group members.

Table 5.26: Transferring of different skills to student

TYPE OF SKILL	HOW WOULD YOU TRANSFER THE SKILL?
Improving the students' writing skills	
Enhancing the students' ability to use technical resources	
Enhancing the students' skills in information management and data analysis	
Guide students in time management and organisational skills	

Activity 5: Scholarship means engaging in original research. It is the first step towards an academic career and the development of a professional scholarly identity. A scholar must look for connections, build bridges between theory and practice, and communicate knowledge effectively to doctoral students. What steps will you take to prepare your student to become a scholar? Reflect on your answers and discuss with your group members.

Activity 6: Will the experience of earning a doctorate prepare doctoral students for the professional and scholarly roles they will pursue? Reflect on your answers and discuss with your group members.

Activity 7: The scholarly view is concerned with developing the qualities of a scholar while doing research. Different characteristics and qualities are developed in the student during the research process (Backhouse, 2010:120). Table 5.27 provides the key characteristics of the scholarly view of the doctorate as defined in this study. Provide comments on each of the aspects regarding the scholarly view. Do you agree/disagree with these statements about scholarship? Reflect on your answers and discuss with your group members.

Table 5.27: Scholarly view of the doctorate (Backhouse, 2010:120)

	SCHOLARLY VIEW	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Product or output of doctoral education is:	<ul style="list-style-type: none"> • new knowledge • independent scholar 		
Overall goal is to:	<ul style="list-style-type: none"> • generate more knowledge 		
Assumption is that:	<ul style="list-style-type: none"> • only a certain type of person is "research material" • a person with a doctorate already has research skills • knowledge (of a certain kind) is valuable 		
Concern about:	<ul style="list-style-type: none"> • identifying new knowledge 		

	<ul style="list-style-type: none"> identifying people who are "research material" ensuring originality and independence 		
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Activity 8: The postgraduate supervisor must take note of the concept of scholarship. The scholarship of Boyer consists of four separate yet overlapping functions: discovery, application, integration and teaching (Boyer, 1990). Familiarise yourself with each of these functions in Table 5.28 below. How would you apply the scholarship of Boyer in your postgraduate supervision practice? Reflect on your answers and discuss with your group members.

Table 5.28: The scholarship of Boyer (Boyer, 1990)

TYPES OF SCHOLARSHIP	DESCRIPTION	DO YOU APPLY THIS IN YOUR POSTGRADUATE SUPERVISION PRACTICE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
The scholarship of discovery	<p>The scholarship of discovery is what is understood as "research".</p> <p>It is committed to developing new knowledge. Focuses on question: "What is to be known, what is yet to be found?"</p> <p>Reflects on what is traditionally expected</p>		

	<p>from research, which is the discovery of new knowledge.</p>		
<p>The scholarship of integration</p>	<p>The scholarship of integration focuses on developing perspectives on knowledge. Serious, disciplined work that seeks to interpret, draw together, and bring new insight to bear on original research. Represented by work at the boundaries of a discipline where it overlaps and connects with other disciplines. Seeks answers to questions: "What do the findings mean?" and "Is it possible to interpret what's been discovered in ways that provide a larger, more comprehensive understanding?"</p>		
<p>The scholarship of application</p>	<p>The scholarship of application focuses on the "How can knowledge be applied to significant problems? How can it be helpful to individuals and institutions? Often characterised as "service" which is not currently given much</p>		

	<p>reward. Service activities must be connected to faculties, be serious, demanding, accountable, and flow out of the expertise in the speciality.</p>		
<p>The scholarship of teaching</p>	<p>The scholarship of teaching "begins with what the teacher knows". A dynamic endeavour involving all the analogies, metaphors, and images that build bridges between the supervisor's understanding and the student's learning. Pedagogical procedures must be carefully planned, continuously examined.</p>		

Activity 9: While your doctoral student is doing his/her research, ask yourself questions regarding the development of a scholar (see Table 5.29 below). These questions will help you to ensure that the research contributes to the development of the doctoral student as a scholar (Glassick, Huber & Maeroff, 1997:25-36). Reflect on your answers and discuss with your group members.

Table 5.29: Development of a scholar (Glassick, Huber & Maeroff, 1997:25-36)

CLEAR GOALS	YES/NO	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Does the doctoral student state the basic purposes of his or her work clearly?		
Does the doctoral student define objectives that are realistic and achievable?		
Does the doctoral student identify important questions in the field?		
ADEQUATE PREPARATION	YES/NO	
Does the doctoral student bring the necessary skills to his/her work?		
Does the doctoral student modify procedures in response to changing circumstances?		
APPROPRIATE METHODS	YES/NO	
Does the doctoral student use appropriate research methods?		
Does the doctoral student apply the methods selected effectively?		
Does the doctoral student modify procedures in response to changing circumstances?		
SIGNIFICANT RESULTS	YES/NO	
Does the doctoral student's work add consequentially to the field?		
Does the doctoral student's work open additional areas for further exploration?		
EFFECTIVE PRESENTATION	YES/NO	
Does the doctoral student use a suitable style and effective organisation to present his/her work?		
Does the doctoral student use appropriate forums for communicating		

work to its intended audiences?		
Does the doctoral student present his/her message with clarity and integrity?		
REFLECTIVE CRITIQUE	YES/NO	
Does the doctoral student critically evaluate his/her own work?		
Does the doctoral student use evaluation to improve the quality of future work?		

SPECIFIC OUTCOME 4

The postgraduate supervisor is able to consider and evaluate different solutions regarding the personal circumstances of the doctoral student.

Format of session: Group session

Overview: See 2.6, 3.4.1

Activity 1: How do you handle personal problems of your doctoral student? Reflect on your answers and discuss with your group members.

Activity 2: Postgraduate supervisors observe and act in response to the needs of the doctoral student, to enable the student to produce a thesis. Are you aware of the needs of your doctoral students? If so, what are those needs? Reflect on your answers and discuss with your group members.

Activity 3: Part-time study, cultural differences and studying at a distance may influence the supervisory relationship as well as the progress of the student. Therefore, students need support in terms of the mentioned issues above. Answer the questions in Table 5.30 below. Reflect on your answers and discuss with your group members.

Table 5.30: Statements on the supervisory relationship

STATEMENTS ON THE SUPERVISORY RELATIONSHIP	YES/ NO	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
I make my expectations regarding deadlines clear to my student		
I consider race, ethnicity, gender, language and disability of my student in our relationship		
I have taken into consideration that my student could go through a process of change while working on his/her research		
I arrange with my student on how we will communicate with each other		
I make arrangements with my student for meetings and progress to be recorded		

Activity 4: The postgraduate supervisor needs to explore his/her own cultural background and that of the doctoral student. We live in a multi-cultural society where students and academic staff come from different backgrounds. These backgrounds must be taken into account and parties concerned need to adapt to accommodate each other. Do you know how to supervise doctoral students of different backgrounds? Reflect on your answers and discuss with your group members.

SPECIFIC OUTCOME 5

The postgraduate supervisor has acquired knowledge of the different types of relationships involved in the postgraduate supervision process.

Format of session: Group session

Overview: See 1.5, 2.3 (ii)

Activity 1: Postgraduate supervision demonstrates the display of an environment of unequal types of relationships. Although the supervisory relationship may not initially be a relationship of equals, it should gradually become more equal as the research continues. How do you experience your relationship with your doctoral student? Reflect on your answers and discuss with your group members.

Activity 2: How do you handle interpersonal conflict, for example when you and your doctoral student have an argument and communication is not good? Reflect on your answers and discuss with your group members.

Activity 3: Have you experienced any conflict in your supervision practice and how did you resolve the conflict? Complete the following activity (see Table 5.31 below) by stating what the nature of the conflict was and

explaining how it was resolved. Reflect on your answers and discuss with your group members.

Table 5.31: Nature of conflict in postgraduate supervision

NATURE OF CONFLICT	RESOLUTION

SPECIFIC OUTCOME 6

The postgraduate supervisor is able to promote identity development and personal growth during the postgraduate supervision process.

Format of session: Group session

Overview: Identity development (See 2.2, 3.3.4) and personal growth (See 2.4, 2.4.2 (iii))

Activity 1: A learning process takes place between the postgraduate supervisor and the doctoral student, within which the postgraduate supervisor contributes towards the personal growth and development of the doctoral student (Celik, 2013:12). In Table 5.32 below are statements regarding the identity development of the doctoral student. What action will you take towards the growth and development of the doctoral student? Reflect on your answers and discuss with your group members.

Table 5.32: Identity development of the doctoral student

CONTRIBUTION TOWARDS GROWTH AND DEVELOPMENT	ACTION	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Contribution towards personal development of the doctoral student		
Contribution towards academic development of the doctoral student		
Contribution towards intellectual development of the doctoral student		
Contribution towards professional development of the doctoral student		

Activity 3: How do you as postgraduate supervisor produce doctoral students with high standards? Reflect on your answers and discuss with your group members.

Activity 4: Postgraduate supervisors should work towards assisting doctoral students to grow towards academic maturity. How do you manage to teach your doctoral students in such a way as to assist them to grow towards academic maturity? Reflect on your answers and discuss with your group members.

SPECIFIC OUTCOME 7

The postgraduate supervisor can act as a mentor in the postgraduate supervision process.

Format of session: Group session

Overview: See 3.1, 3.4.1

Activity 1: In Table 5.33 below is a list of qualities of a mentor that a postgraduate supervisor should have. Which of these qualities do you have? List the qualities in terms of how you see yourself as a mentor. Reflect on your answers and discuss with your group members.

Table 5.33: Qualities of a mentor

QUALITIES OF A MENTOR	YES/ NO	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
I give advice but expect the student to make his/her own decisions		
I always make time to help my students		
Students can approach me at any time		
I have passion for my work as a postgraduate supervisor		
I am honest in my opinions		
I am an active listener		
I have the ability to help my students to get funds		
I value the opinions of my students		
I always prepare for meetings with my students		
I have regular meetings with my students		
I keep my students motivated		

I am a role model to my students		
I can help a student to believe in his/her potential		
I am open to new ideas of my students		
I am patient with my students		
I feel at ease when a student challenges my views		
I am calm with my students		
I do not expect a student to be like me		
I give feedback timeously		
I understand that doctoral students can make mistakes		
I am able to distance myself when needed		

Activity 2: The postgraduate supervisor becomes a mentor for the doctoral student and this relationship may continue beyond the task of completing their degree. It will change over time as the student moves from being a novice to becoming a competent researcher. Do you act as a mentor to your students? If yes, are the skills of a mentor relevant for supervising doctoral students? If no, why? Reflect on your answers and discuss with your group members.

SPECIFIC OUTCOME 8

The postgraduate supervisor will be able to work effectively with doctoral students from a diversity of academic backgrounds.

Format of session: Group session

Overview: 2.3 (i), 2.3 (ii), 4.8, 3.3

Activity 1: The diversity of academic backgrounds and professional experience of doctoral students might require the development of alternative courses of study for those with different career interests and needs. A lack of exposure to research during undergraduate and master’s studies and diversity of practices with regard to their learning experiences during their doctoral studies, may make it difficult for institutions to use one generic research training programme for all doctoral students that enrol. In Table 5.34 the issues in diversity of student’s academic background is mentioned. Do you agree with these issues? Provide a solution to your answer. Reflect on your answers and discuss with your group members.

Table 5.34: Issues in diversity of student’s academic background

ISSUES IN DIVERSITY OF STUDENT’S ACADEMIC BACKGROUND	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Students can review, describe and comment on the work of other researchers		
Can identify aspects of the		

current state of knowledge that they are lacking		
Can address gaps in the work of other researchers		
Methods used to address the knowledge and skills gaps may vary according to disciplinary understandings of the student		

Activity 2: A diversity of cultures makes the supervision experience enlightening. Students have different understandings of research and subject knowledge. The postgraduate supervisor needs to explore his/her own cultural background and that of the doctoral student. We live in a multi-cultural society where students and academic staff might come from different backgrounds, which must be taken into account and therefore we need to be adaptable. Do you know how to supervise a diversity of doctoral students? Reflect on your opinion about diversity and discuss with your group members.

Activity 3: A postgraduate supervisor has a different type of relationship with each one of his/her students. Below are examples of possible types of relationships a postgraduate supervisor can have with his/her student (see Table 5.35 below). Familiarise yourself with the possible types of relationship and then complete Activity 4 below.

Table 5.35: Possible types of relationship between postgraduate supervisor and doctoral student

TYPE OF RELATIONSHIP	INTELLECTUAL ASPECTS OF SUPERVISION
Facilitator (structured)	Support, advise, check to see if student is doing well
Director (semi-structured)	Set clear boundaries, close contact
Catalyst (unstructured)	Mutual rapport, free and open discussion

Activity 4: Which of the types of relationship below do you as a postgraduate supervisor have with your doctoral student? Does the type of relationship differ for each of the students you are supervising? Reflect on your answers and discuss with your group members.

- The individualist pattern makes the PhD person dependent almost exclusively on the supervisor.
- The networked pattern provides social support and support in some of the peripheral aspects of doing research, such as getting software to work.
- The loose cohort provides social support, but people meet too infrequently and their work is too divergent to engage around research.
- The small team pattern facilitates engagement around research or joint research while also providing social and peripheral support, making the PhD person least dependent on the supervisor in this pattern.

Activity 5: Some doctoral students are more successful than others are. This could be due to different approaches they pursue during their studies. In Table 5.36 the different approaches of doctoral students to their studies are mentioned (Ezebilo, 2012:53). Do you agree with these approaches? Provide a solution to your answer. Reflect on your answers and discuss with your group members.

Table 5.36: Different approaches of doctoral students (Ezebilo, 2012:53)

STATEMENT	YES/ NO	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
The student takes time in planning data collection methods		
The student is patient in carrying out research tasks		
The student tries to balance time spent on professional life and private life to avoid conflict of interests		
The student strives to learn statistics because it is important in designing data collection methods and analysis		
The student takes some time off after completion of master’s degree before undertaking doctoral studies to know whether he/she really wants to be a researcher		
The student tries to communicate with his/her supervisors more often because it helps to strengthen supervisor-student		

relationship and trust		
The student develops interest in the subject of the research project		
The student discusses ideas with the postgraduate supervisor to obtain more ideas and inspiration		
The student develops a habit of asking questions		

Activity 6: In a diverse country like South Africa, it is self-evident that increased enrolment will come with more diversity in the doctoral student population. Diversity among students covers a wide range of attributes such as age, linguistic, ethnic and cultural differences. Postgraduate supervision has become much more important in academic departments of universities with the increased diversity of doctoral students and postgraduate supervisors, as it is essential to have suitable supervisors to match the needs of different students. Potential doctoral students come from a considerable pool of students with varying geographic, ethnic and cultural backgrounds. In Table 5.37 the different attributes of students are mentioned. As a postgraduate supervisor, how do you respond to these different attributes? Do you agree with these issues? Reflect on your answers and discuss with your group members.

Table 5.37: The different attributes of doctoral students

ATTRIBUTES OF STUDENTS	AGREE/DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Age of the student		
Language of the student		
Cultural background of the student		

ASSESSMENT CRITERIA

The postgraduate supervisor can demonstrate an understanding of the roles and responsibilities of the postgraduate supervisor.

END OF SESSION

EXIT LEARNING OUTCOME 3

The postgraduate supervisor will have acquired the ability to facilitate the planning of the postgraduate supervision process.

SPECIFIC OUTCOME 1

The postgraduate supervisor is able to understand the difficulties that postgraduate supervisors and doctoral students experience in completing their doctoral studies.

Format of session: Group session

Overview: See 2.2, 3.2.1, 3.2.2, 3.4.2 (vi)

Activity 1: As a postgraduate supervisor, do you assist the doctoral student in time management of the research? Reflect on your answers and discuss with your group members.

Activity 2: All doctoral students go through periods where they do not progress and are unproductive. As a postgraduate supervisor, what action do you take to assist the student? Reflect on your answers and discuss with your group members.

Activity 3: Aspland, Edwards, O’Leary and Ryan (1999:132) designed the Student Profile Proforma (see Table 5.38 below) to help doctoral students see how they are progressing through the research process, what their expectations are of themselves and of their supervisors, and how well their supervisor meets their needs. The Proforma consists of a sequence of statements relating to student expertise and supervisor support, guidance and interpersonal communication, with a corresponding scale of 1 (poor) to 10 (outstanding) or 1 (never) to 10 (always) for each statement. At regular intervals, the postgraduate supervisor and the doctoral student can assess how they are progressing using the accompanying scales. For each meeting, each question should have three numbers circled namely, the student response, the supervisor response and consensus of decision made by both the supervisor and doctoral student.

Table 5.38: The Student Profile Proforma (Aspland, Edwards, O’Leary and Ryan, 1999:132)

	1 = poor, 10 = outstanding
The doctoral student’s current research planning skills are	Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10
The doctoral student’s current literature review skills are	Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10

The doctoral student's current literacy skills are	Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10
The doctoral student's current writing skills are	Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10
The doctoral student's current data interpretation skills are	Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10
The doctoral student's current oral presentation skills are	Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10
The doctoral student is expert in this area of research	Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10
	1 = never, 10 = always
The supervisor provides the doctoral student with the necessary information regarding administrative matters in the department	Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10

<p>The supervisor is available when the doctoral student needs to discuss the project with him/her</p>	<p>Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10</p>
<p>The supervisor makes himself/herself available for significant uninterrupted periods of time to discuss the doctoral student's project</p>	<p>Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10</p>
<p>The supervisor provides the doctoral student with guidance to find the relevant literature</p>	<p>Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10</p>
<p>The supervisor encourages the doctoral student to plan and work independently</p>	<p>Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10</p>
<p>The supervisor ensures that the doctoral student meets all deadlines</p>	<p>Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10</p>
<p>The supervisor provides critical feedback on the doctoral student's written work</p>	<p>Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10</p>

<p>The supervisor is friendly, supportive and approachable</p>	<p>Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10</p>
<p>The supervisor is interested in, and committed to, the doctoral student's research</p>	<p>Student response 1 2 3 4 5 6 7 8 9 10 Supervisor response 1 2 3 4 5 6 7 8 9 10 Consensus of decision made by supervisor and doctoral student 1 2 3 4 5 6 7 8 9 10</p>

SPECIFIC OUTCOME 2

The postgraduate supervisor is able to apply time management skills in the postgraduate supervision process.

Format of session: Group session

Overview: See 1.5, 1.7.1, 2.3(d), 2.3(f), 3.3.1, 3.4.2(vi)

Activity 1: Time management is a vital skill, which is essential to have especially while studying at university. Doctoral students do not all have the same time management skills. What works for one student might not work for another. Ask a colleague next to you to reflect on a specific time management issue. Identify the skills necessary to manage that specific time management issue. Complete Table 5.39 below. Reflect on your answers and discuss with your group members.

Table 5.39: Time management skills

SPECIFIC TIME MANAGEMENT ISSUE	SKILL NECESSARY TO MANAGE THE TIME MANAGEMENT ISSUE

Activity 2: Postgraduate supervisors must make sure that they do have the time available to supervise doctoral students. With time constraints and the increase in numbers of students, it could be difficult for

postgraduate supervisors to provide sufficient postgraduate supervision. During doctoral studies, there is no fixed timetable and by scheduling meetings, the postgraduate supervisor can create structure for him/herself. How do you manage this process? Reflect on your answers and discuss with your group members.

Activity 3: When doctoral students enrol for a doctorate, they do not necessarily realise the importance of a structured plan for success. Postgraduate supervisors should encourage doctoral students to create structure for themselves to ensure the successful completion of the research. How do you assist in creating structure for your student? Reflect on your answers and discuss with your group members.

Activity 4: Just as any project needs suitable management methods, a doctorate needs also needs to be managed by both the postgraduate supervisor and the doctoral student. The doctorate is a project with a start and a finish date. A doctoral student submits a proposal, with a budget and time schedule, with a start and a proposed finish date. The proposal shows some characteristics of how the research will be managed. Planning and managing the postgraduate supervision process is very important to ensure timely completion. Below are statements regarding the management of the postgraduate supervision process (see Table 5.40 below). Do you agree or disagree with the statements? Provide a reason for your statement. Reflect on your answers and discuss with your group members.

Table 5.40: Management of the postgraduate supervision process

STATEMENT	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
The research process, just like other project, must be managed using suitable management methods.		
Success or failure of the postgraduate supervision process depends on the quality of the doctoral student and that of the postgraduate supervisor.		
Postgraduate supervision is a contractual agreement between the doctoral student and the postgraduate supervisor.		
Planning will give structure to the postgraduate supervision process.		
The number of meetings combined with the length of time of the meetings will correlate with the quality of supervision.		

Activity 5: Several time management strategies can be applied during the postgraduate supervision process (see Table 5.41 below). You and your student can experiment with these strategies to see what works and what does not. Reflect on your answers and discuss with your group members.

Table 5.41: Time management strategies

TIME MANAGEMENT STRATEGIES	COMMENT
<p>Prioritise: Ask your doctoral student to make sure high priority tasks are done first and are not put off on a regular basis. When working on a chapter, more time is necessary and thus a longer time block must be scheduled.</p>	
<p>Be specific: Make the task as specific as possible. Example: Instead of saying: "I will do some writing this week" say "I will finish writing Chapter 2 this week".</p>	
<p>Small tasks at a time: Doctoral students can feel overwhelmed; therefore, they must break tasks into smaller sub-tasks. Start by completing one sub-task at a time.</p>	
<p>Use any available time: When there is time available between appointments, use this time to do reading on the topic or the editing of a chapter.</p>	
<p>Arrange the setting: Doctoral students should have a place to work with limited distractions and all necessities for working on the thesis.</p>	
<p>Create a routine: Doctoral students must try to study regularly and to create a routine. They can allocate time for relaxation, for example to watch a programme on television after working on a chapter.</p>	

Activity 6: What problems do you experience in getting your own work done (formative assessment, making time to see your doctoral student)? Reflect on your answers and discuss with your group members.

Activity 7: What are the most common problems you experience in getting your doctoral student(s) to complete on time? Reflect on your answers and discuss with your group members.

Activity 8: A model of factors (Lovitts, 2008:298) influencing degree completion and creative performance is illustrated in Figure 5.6 below. In the macro and micro environments there are factors that have an influence on the performance of the student, for example the culture of graduate education, the department and that of the postgraduate supervisor. Motivation, intelligence, thinking styles, knowledge and personality also have an influence on the completion of the doctorate. You can add more factors influencing degree completion. Reflect on your answers and discuss with your group members.

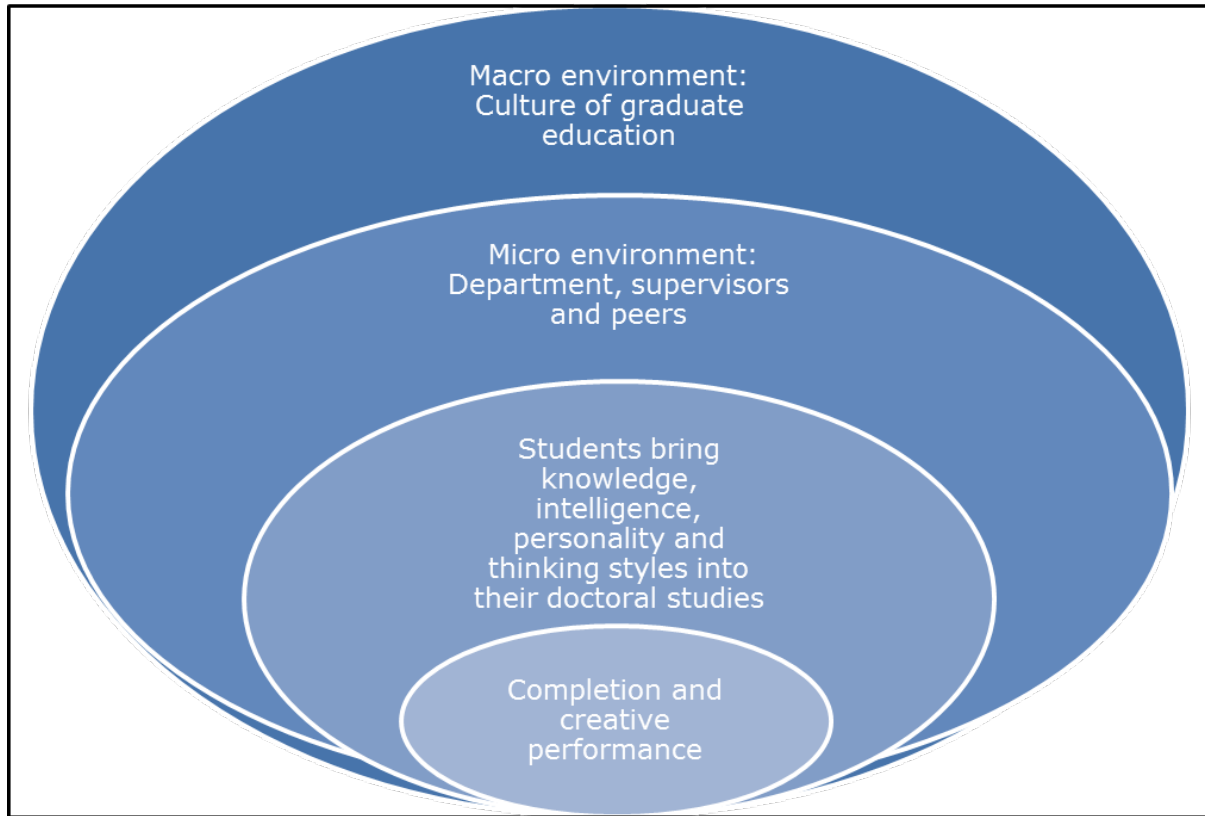


Figure 5.6: Factors influencing degree completion and creative performance (Lovitts, 2008: 298)

Activity 9: Help your doctoral student with time management by assisting him/her to set goals that must be achieved in a certain period. Ask your doctoral student to set one goal for achievement for the next week. After the first week, ask your student how he/she felt about setting this goal, whether the goal was achieved and if not, why it was not achieved. This activity can be done with the doctoral student in the beginning of his/her studies (see Table 5.42 below).

Table 5.42: Goal setting

GOAL OF THE STUDENT	IF YES, WHY WAS IT ACHIEVED?	IF NO, WHY WAS IT NOT ACHIEVED?	STRATEGY TO ADDRESS UNDER ACHIEVEMENT

SPECIFIC OUTCOME 3

The postgraduate supervisor is able to create strategies to enhance managing and organising skills required during the postgraduate supervision process.

Format of session: Group session

Overview: See 2.7, 2.9

Activity 1: A major limitation of the postgraduate supervision process is the postgraduate supervisors’ and doctoral students’ lack of skills to manage and organise the research process successfully. Some students have already mastered research skills, are independent and can work autonomously; but there are also those who need clear direction, much encouragement and detailed feedback. Therefore, the starting point for each student is different and thus the supervision process will differ accordingly. In Table 5.43 below, provide strategies that you would follow to enhance your own and your doctoral students’ skills to manage and organise the research process. Reflect on your answers and discuss with your group members.

Table 5.43: Strategies to manage and organise the research process

MANAGING AND ORGANISING SKILLS OF THE POSTGRADUATE SUPERVISOR	MANAGING AND ORGANISING SKILLS OF THE DOCTORAL STUDENT	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION

ASSESSMENT CRITERIA

The postgraduate supervisor has acquired the ability to facilitate the planning of the postgraduate supervision process.

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

END OF SESSION 1

SESSION 2: THE UNIVERSITY (WHERE THE SUPERVISION PROCESS IS TAKING PLACE)

ASSESSMENT CRITERIA	SPECIFIC OBJECTIVE	EXIT LEARNING OUTCOME
The postgraduate supervisor is acquainted with doctoral student retention and completion.	<ol style="list-style-type: none"> 1. The postgraduate supervisor is able to explain the risk factors for student retention and completion. 2. The postgraduate supervisor is able to cope with the different obstacles in the progression of the research of the doctoral student. 	1. The postgraduate supervisor will be acquainted with doctoral student retention and completion.
The postgraduate supervisor can demonstrate knowledge regarding the support resources available for the postgraduate supervision process.	<ol style="list-style-type: none"> 1. The postgraduate supervisor will have acquired knowledge regarding the resources available for the postgraduate supervision process. 2. The postgraduate supervisor will have acquired an understanding of a research culture. 	2. The postgraduate supervisor will have acquired knowledge regarding the support resources available for the postgraduate supervision process.

<p>The postgraduate supervisor can demonstrate an understanding regarding policies, rules and procedures.</p>	<ol style="list-style-type: none">1. The postgraduate supervisor will be able to use appropriate methods to ensure the quality of the postgraduate supervision process.2. The postgraduate supervisor will have acquired knowledge regarding the requirements of the NQF level 10 descriptors for a doctorate.3. The postgraduate supervisor will be able to provide a general overview of the different types of funding resources for doctoral studies.	<ol style="list-style-type: none">3. The postgraduate supervisor will demonstrate an understanding regarding policies, rules and procedures.
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EXIT LEARNING OUTCOME 1

The postgraduate supervisor will be acquainted with doctoral student retention and completion.

SPECIFIC OUTCOME 1

The postgraduate supervisor is able to explain the risk factors for student retention and completion.

Format of session: Group session

Overview: See 2.8

Activity 1: The most academically capable, most academically successful, most stringently evaluated and most carefully selected doctoral students in the entire higher education system, are the least likely to complete their research. According to ASSAf (2010:77) there are currently no measures in place (in South Africa) that can accurately determine attrition rates or explain its occurrence. Findings from the ASSAf report (2010:79-80) state that:

- From the literature it is clear that doctoral attrition is a universal problem.
- Academic integration within a doctoral programme is one of the key determinants for doctoral success.
- Improved institutional support resources need to be created to assist doctoral students.
- Rates of doctoral attrition are different between disciplines and therefore retention initiatives need to acknowledge this.

- Further research is required to determine how the gap between the opposing perspectives of faculty staff and doctoral students may be minimised.
- Doctoral students are individuals from different social backgrounds and life experiences wanting to attain a doctorate.

The postgraduate supervisor should understand student retention. Table 5.44 below summarises the risk factors for attrition of doctoral students, as identified in the ASSAf report (2010:77). Do you agree/disagree with the risk factors for attrition of doctoral students? Reflect on your answers and discuss with your group members.

Table 5.44: Risk factors for retention of doctoral students (ASSAf report, 2010:77)

RISK FACTORS	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
The age of the student at the time of enrolment		
Professional and family commitments		
Inadequate socialisation experiences		
Poor student-supervisor relationships		
Insufficient funding		

SPECIFIC OUTCOME 2

The postgraduate supervisor is able to cope with the different obstacles in the progression of the research of the doctoral student.

Format of session: Group session

Overview: See 2.1, 2.8, 3.4.4

Activity 1: Completion of postgraduate research is a critical measure for universities in terms of success rate. As a postgraduate supervisor, how do you monitor the progress of your doctoral student and contribute towards skills development? Complete Table 5.45 below. Reflect on your answers and discuss with your group members.

Table 5.45: Progress of your doctoral student

STATEMENT	COMMENT	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
How do you monitor the progress of your student?		
How do you know if the monitoring process is effective?		
How do you contribute towards the development of skills of the student to ensure success?		

Activity 2: Timely completion has been an important focus during the postgraduate supervision process. There is concern regarding this issue because funding requirements have become more stringent and have been linked to completion rates. Manathunga (2005a) identifies a number of early warning signs to which postgraduate supervisors should be sensitive. As a postgraduate supervisor, what is your opinion about these early warning signs (see Table 5.46 below)? How will you address these issues? Reflect on your answers and discuss with your group members.

Table 5.46: Possible warning signs for non-completion

WARNING SIGNS	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Constantly changing the topic or planned work		
Avoiding all forms of communication with the supervisor		
Isolating themselves from the university and other students		
Avoiding submission of work for review		
Personal issues of the doctoral student		
Perfectionism (continually reworking one section of the research rather than moving on)		
Supervision relationship issues		
Lacking basic competence to carry out tasks necessary to the research		

Activity 3: Table 5.47 below summarises the descriptors that are *positively* related to successful degree completion. Do you agree/disagree with these descriptors? Reflect on your answers and discuss with your group members.

Table 5.47: Descriptors related to successful degree completion

DESCRIPTORS	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Quality of the relationship		
Ability to talk about problems encountered during the research		
Frequent contact with postgraduate supervisor		
Opportunities to meet informally		
Easy to approach the postgraduate supervisor		
High quality postgraduate supervision		
Postgraduate supervisor has concern for student development		
Reputation of the faculty and university		

Activity 4: Do you think that the drive to completion might lead to the decline in the quality of the research of the student? In Table 5.48 below, list the effects of the push to completion and its impact on the student experience. Reflect on your answers and discuss with your group members.

Table 5.48: Push to completion

EFFECTS TO PUSH TO COMPLETION	IMPACT ON STUDENT EXPERIENCE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION

ASSESSMENT CRITERIA

The postgraduate supervisor is acquainted with doctoral student retention and completion.

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

END OF SESSION

EXIT LEARNING OUTCOME 2

The postgraduate supervisor will have acquired knowledge regarding the resources available for the postgraduate supervision process.

SPECIFIC OUTCOME 1

The postgraduate supervisor has acquired knowledge regarding human support resources and institutional support towards the postgraduate supervision process.

Format of session: Group session

Overview: See 2.7, 2.8

Activity 1: The supervision environment consists of different support resources, which have an influence on the supervision process. These can help or hinder postgraduate supervisors in the performing of their duties as supervisors. Table 5.49 below lists the features regarding the support resources for the postgraduate supervision process. In a group, discuss how aspects concerning the support resources can be an advantage or a disadvantage to the postgraduate supervision process. Reflect on your answers and discuss with your group members.

Table 5.49: Support resources for the postgraduate supervision process

HUMAN SUPPORT RESOURCES	ADVANTAGE OR DISADVANTAGE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Motivation from colleagues		
Working with a co-supervisor		
Networking with colleagues		
Help to publish while they are working on their thesis		
INSTITUTIONAL SUPPORT RESOURCES	ADVANTAGE OR DISADVANTAGE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
Support from university to present their research at conferences		
Provision of workshops and seminars		

Activity 2: As a postgraduate supervisor, what activities can you do to advance and succeed in your postgraduate supervision process? Reflect on your answers and discuss with your group members.

Activity 3: How do you as postgraduate supervisor contribute to your own academic development? Reflect on your answers and discuss with your group members.

SPECIFIC OUTCOME 2

The postgraduate supervisor will have acquired an understanding of a research culture.

Format of session: Group session

Overview: See 1.6, 2.3 (e), 3.1, 3.4.4, 3.5, 4.4

Activity 1: A research culture implies that researchers commit to the development of an enabling research culture. According to Holzbaur *et al.* (2012:7), it is important that a supportive research culture be developed. It is not always possible due to rules and regulations that exist. Research activities should be planned well and postgraduate supervisors and doctoral students should understand what is expected of them.

What is your understanding of a research culture? Reflect on your answers and discuss with your group members.

How can you contribute to a research culture in your department? Reflect on your answers and discuss with your group members.

ASSESSMENT CRITERIA

The postgraduate supervisor can demonstrate knowledge regarding the support resources available for the postgraduate supervision process.

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

END OF SESSION

EXIT LEARNING OUTCOME 3

The postgraduate supervisor will demonstrate an understanding regarding policies, rules and procedures.

SPECIFIC OUTCOME 1

The postgraduate supervisor will be able to use appropriate methods to ensure the quality of the postgraduate supervision process.

Format of session: Group session

Overview: See 3.3.5, 3.4, 4.10

Postgraduate supervisors need to acquaint themselves with criteria 15, 16 and 17 of the CHE (2004b:16-19; 2004d:7,17) regarding quality assurance, development and monitoring of postgraduate research. Table 5.50 below provides a short summary of these criteria.

Table 5.50: Summary of criteria 15, 16 and 17

SUMMARY OF CRITERIA 15, 16 AND 17
Policies and regulations for research quality at the institution are in place
Strategies for research and capacity development are in place
Efficient central research information system is available
Strategies for support and development of postgraduate supervision are in place
Regular review of effectiveness of arrangements of research functions and postgraduate education

Quality mechanisms to quality-assure postgraduate education are in place

Review of effectiveness of quality assurance, development and monitoring

Activity 1: During postgraduate supervision, quality assurance needs to be part of the process. As a result, attention should be given to descriptions of good practice and guidelines for postgraduate supervisors to ensure quality. Regarding these questions, it is important to realise that postgraduate supervisors can perform well in certain aspects of postgraduate supervision while they can perform badly in other aspects (Mouton, 2007:1078). In a group, postgraduate supervisors must discuss and answer the following questions:

What do you regard as quality in the postgraduate supervision process?

Who determines the quality of the postgraduate supervision process?

Which quality standards do you apply during the postgraduate supervision process?

Should quality requirements fluctuate for each stage during the research process?

SPECIFIC OUTCOME 2

The postgraduate supervisor has acquired knowledge regarding the requirements of the NQF level 10 descriptors for a doctorate.

Format of session: Group session

Overview: See 3.4.3, 4.5

Activity 1: To improve quality and standards in HE, the NQF developed ten level descriptors which provide guidelines for differentiating the varying levels of complexity of qualifications on the framework. These levels ensure coherence in the allocation of qualifications and part qualifications to particular levels to facilitate the assessment and international comparability of the qualifications and part qualifications. Postgraduate supervisors must be aware of these level descriptors to ensure that the learning for each level does take place. Each level descriptor provides a description of the levels, the level of knowledge required to achieve the unit standard or qualification successfully, the applied competence and the autonomy of learning that a doctoral student should be able to demonstrate. A postgraduate supervisor should know the content of the level descriptors for a doctorate to ensure that the outcome of the thesis adheres to the requirements of level 10 (SAQA, 2012:12-13). In Table 5.51 below the descriptors for level 10 are listed. How do you implement each of these descriptors in your supervision practice? Reflect on your answers and discuss with your group members.

Table 5.51: NQF level 10 descriptors

LEVEL DESCRIPTOR	HOW DO YOU IMPLEMENT THE DESCRIPTOR IN YOUR SUPERVISION PRACTICE?	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
a. <i>Scope of knowledge</i> (doctoral student is able to demonstrate expertise and critical knowledge in an area or a field, discipline or practice; ability to conceptualise new research initiatives and create new knowledge)		
b. <i>Knowledge literacy</i> (doctoral student is able to demonstrate ability to contribute to scholarly debates around theories and processes of knowledge production in an area of study or practice)		
c. <i>Method and procedure</i> (doctoral student is able to demonstrate ability to develop new methods, techniques, processes, systems or technologies in original, creative and innovative ways appropriate to specialised and complex contexts.		
d. <i>Problem solving</i> (doctoral student is able to demonstrate ability to apply specialist knowledge and theory in critically reflexive, creative and novel ways to address complex practical and theoretical problems)		

<p>e. <i>Ethics and professional practice</i> (doctoral student is able to demonstrate ability to identify, address and manage emerging ethical issues, to advance processes of ethical decision-making, including monitoring and evaluation of consequences of these decisions where appropriate)</p>		
<p>f. <i>Accessing, processing and managing information</i> (doctoral student is able to demonstrate ability to make independent judgments about managing incomplete or inconsistent information or data in an iterative process of analysis and synthesis, for development of significant original insights into new, complex and abstract ideas, information or issues)</p>		
<p>g. <i>Producing and communicating information</i> (doctoral student is able to demonstrate ability to produce substantial, independent, in-depth, publishable work meeting international standards, considered new or innovative by peers, to make a contribution to a discipline, field, or practice; to develop a communication strategy to disseminate and defend</p>		

<p>research, strategic and policy initiatives and their implementation to specialist and non-specialist audiences using full resources of academic and professional or occupational discourse)</p>		
<p>h. <i>Context and systems</i> (doctoral student is able to demonstrate understanding of theoretical underpinnings in management of complex systems to achieve systemic change; ability to independently design, sustain and manage change within a system)</p>		
<p>i. <i>Management of learning</i> (doctoral student has ability to demonstrate intellectual independence, research leadership and management of research and development in a discipline field or practice)</p>		
<p>j. <i>Accountability</i> (doctoral student is able to demonstrate ability to operate independently, take full responsibility for his/her work, and lead, oversee and be held accountable for overall governance of processes and systems)</p>		

SPECIFIC OUTCOME 3

The postgraduate supervisor will be able to provide a general overview of the different types of funding resources for doctoral studies.

Format of session: Group session

Overview: See 4.7

Activity 1: Doctoral students must have access to funding resources to conduct their doctoral studies. Equally important is the postgraduate supervisor who knows that funds are needed for research and how to obtain them. The postgraduate supervisor and the doctoral student must familiarise themselves with the different options available for funding of doctoral studies. Below are examples of websites available for funding opportunities.

<http://www.nrf.ac.za/funding/>

<http://www.nrf.ac.za/bursaries/calls>

<http://www.nrf.ac.za/funding/non-nrf-opportunities>

ASSESSMENT CRITERIA

The postgraduate supervisor can demonstrate an understanding regarding policies, rules and procedures.

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

END OF SESSION 2

SESSION 3: THE PRODUCT OF POSTGRADUATE SUPERVISION: LEARNING

ASSESSMENT CRITERIA	SPECIFIC OBJECTIVE	EXIT LEARNING OUTCOME
The postgraduate supervisor has acquired knowledge of the significance of the doctorate for economic development.	<ol style="list-style-type: none"> 1. The postgraduate supervisor will have knowledge about the economic contribution of doctoral research. 2. The postgraduate supervisor will have an awareness of the benefits of the production of doctorates for the society. 	1. The postgraduate supervisor will have knowledge of the significance of the doctorate for economic development.
The postgraduate supervisor has attempted to be a skilled and independent researcher.	<ol style="list-style-type: none"> 1. The postgraduate supervisor will be able to recognise the transition from being a dependent researcher to being an independent researcher. 2. The postgraduate supervisor has acquired knowledge regarding the characteristics of a skilled and 	2. The postgraduate supervisor will attempt to be a skilled and independent researcher.

	independent researcher.	
The postgraduate supervisor can recognise an original academic contribution in the discipline or field of his/her doctoral student.	1. The postgraduate supervisor is able to address the issue of originality in research effectively.	2. The postgraduate supervisor will recognise an original academic contribution in the discipline or field of his/her doctoral student.
The postgraduate supervisor can explain the nature of epistemological access.	The postgraduate supervisor is able to apply epistemological access in his/her supervision practice.	3. The postgraduate supervisor will be able to explain the nature of epistemological access.

EXIT LEARNING OUTCOME 1

The postgraduate supervisor will have knowledge of the significance of the doctorate for economic development

SPECIFIC OUTCOME 1

The postgraduate supervisor will have knowledge about the economic contribution of doctoral research.

Format of session: Group session

Overview: See 1.11, 3.1, 4.4, 4.7

Activity 1: Postgraduate supervisors should advocate public support for, and understanding about, the doctorate at UoTs. There must be a greater awareness and acceptance of its significance in social and economic development, beyond personal gains for the successful student. Developing this shared meaning about the value of the doctorate is vital for garnering public support for it. According to Herman (2011a) universities have to produce knowledge workers, that is, graduates, in order to achieve a competitive edge in the knowledge economy. In particular, emphasis has been given to the development of PhD programmes, even though their economic benefit is difficult to quantify. In Table 5.52 below are several factors regarding the economic contribution of doctoral research (Herman, 2011a). Read these statements. Are there any other factors that you can add to this list? Reflect on your answers and discuss with your group members.

Table 5.52: The economic contribution of doctoral research

STATEMENT	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
A doctorate can develop the necessary skills levels of a doctoral student to contribute to the knowledge economy		
A doctorate can enhance the research and innovation capacity of a country		
A doctorate can enhance the economic growth of a country		
Research and innovation is crucial for a country to contribute to the global economy		
Research and knowledge generation are core elements in the transformation to a knowledge-based economy		
An increase in doctorates will help South Africa to be a competitor in the global knowledge economy		

Activity 2: Does your research and the research of your doctoral student contribute in any way to the knowledge economy? Reflect on your answers and discuss with your group members.

SPECIFIC OUTCOME 2

The postgraduate supervisor will have an awareness about the benefits of the production of doctorates for the society.

Format of session: Group session

Overview: See 1.11, 2.9, 3.5, 4.2

There is a strong relationship between the production of doctoral graduates and economic growth. This is in line with the view taken by higher education systems worldwide and is indeed the motivating factor behind most envisaged reforms in doctoral studies in Europe and the US that contend that frontier research is recognised as a key factor for advanced knowledge-based economies. Doctoral education prepares researchers with the skills to be innovative, creative, critical and independent; these skills are not only related to the research process itself, but to broader personal and professional training and development, thus providing highly talented human resources that are necessary for such growth.

ASSESSMENT CRITERIA

The postgraduate supervisor has acquired knowledge of the significance of the doctorate for economic development.

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

END OF SESSION

EXIT LEARNING OUTCOME 2

The postgraduate supervisor will attempt to be a skilled and independent researcher.

SPECIFIC OUTCOME 1

The postgraduate supervisor will be able to recognise the transition from being a dependent researcher to being an independent researcher.

Format of session: Group session

Overview: See 1.4, 2.2, 2.5, 3.4.1

Activity 1: Successful completion of the dissertation demonstrates the transition from dependent researcher to independent researcher. The transition from undergraduate student to independent researcher is hard for many students and no one can predict who will successfully make the transition and complete the doctorate based only on students' undergraduate records or even on their performance in their first year of graduate school (Lovitts, 2001, 2003). To be an independent researcher a transition has to be made from being a dependent researcher to being an independent researcher. It is important to recognise what hinders a researcher's ability to make the transition to an independent researcher. Several issues could have an influence on this transition process. In Table 5.53 below are the issues that have an influence on the researcher's ability to be an independent researcher (Lovitts, 2008). Reflect on your answers and discuss with your group members.

Table 5.53: Issues that have an influence on the researcher's ability to become an independent researcher (Lovitts, 2008)

STATEMENT	AGREE/ DISAGREE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION
<p><i>Analytical intelligence</i> The ability to recognise and solve problems, judge the quality of ideas, and allocate resources to address the problem or develop the idea.</p>		
<p><i>Practical intelligence</i> The ability to solve problems and use ideas and their analyses in effective ways, present them effectively to an audience, and react properly to criticism.</p>		
<p><i>Creative intelligence</i> The ability to formulate good problems and ideas, have insight and imagination. This is the independent stage of doctoral education.</p>		
<p><i>Formal knowledge</i> The acquisition of formal knowledge and domain-relevant skills: facts, principles, concepts, theories, paradigms, attitudes, and opinions toward various issues in the domain; techniques and methods of solving problems.</p>		
<p><i>Informal knowledge</i> Tacit knowledge that is "caught" (inferred) rather than "taught." It draws on practical intelligence and is about <i>knowing how</i>.</p>		
<p><i>Thinking styles</i> Thinking styles are how one</p>		

<p>capitalises on and directs one's intelligence. Thinking styles signify how a person prefers to use the abilities he/she has.</p>		
<p><i>Personality</i> Personality traits which are important in becoming an independent researcher are: patience, willingness to work hard, initiative, persistence and intellectual curiosity, ability to deal with frustration, fear of failure, tolerance of ambiguity, and ability to delay pleasure.</p>		
<p><i>Motivation</i> Motivation is a key factor that mediates between what a person <i>can</i> do and what a person <i>will</i> do. It can be the difference between doctoral degree completion and non-completion.</p>		
<p><i>Environment</i> The environment in which a student lives shapes the norms, values, and beliefs that guide action, interaction, teaching and training in universities. The university, department and the supervisor in which the doctoral student works and the interactions with others are part of the environment.</p>		

Activity 2: Are there any other strategies that you can add to this list? Reflect on your answers and discuss with your group members.

SPECIFIC OUTCOME 2

The postgraduate supervisor has acquired knowledge regarding the characteristics of a skilled and independent researcher.

Format of session: Group session

Overview: See 1.4, 2.2, 2.5, 3.4.1

Activity 1: Postgraduate supervisors should have certain characteristics to become skilled and independent researchers. In your group list the characteristics that you think a skilled and independent researcher should have. Reflect on your answers and discuss with your group members.

Table 5.54: Characteristics of a skilled and independent researcher

CHARACTERISTICS THAT YOU THINK A SKILLED AND INDEPENDENT RESEARCHER SHOULD HAVE	PROVIDE A REASON FOR YOUR DECISION AND REFLECT ON YOUR DECISION

ASSESSMENT CRITERIA

The postgraduate supervisor has attempted to be a skilled and independent researcher.

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

END OF SESSION

EXIT LEARNING OUTCOME 2

The postgraduate supervisor will be able to recognise an original academic contribution in the discipline or field of his/her doctoral

SPECIFIC OUTCOME 1

The postgraduate supervisor is able to address the issue of originality in research effectively.

Format of session: Group session

Overview: See 2.2, 2.4, 3.4.2(ii), 3.4.3

Activity 1: To address the issue of originality effectively, postgraduate supervisors need to establish what is unique about the research and then determine how this can be clearly explained. However, students also have to demonstrate, in a scholarly manner, how their research contributes to new knowledge. In Table 5.55 below the key definitions of originality in the PhD are summarised (Phillips & Pugh, 2010). Reflect on the key definitions and discuss with your group members.

Table 5.55: Key definitions of originality in the PhD

ORIGINALITY IN THE PHD	REFLECTION ON STATEMENT
Setting down a major piece of new information in writing for the first time	
Continuing a previously original piece of work	

Carrying out original work designed by the supervisor	
Providing a single original technique, observation or result in an otherwise unoriginal but competent piece of research	
Having many original ideas, methods and interpretations all performed by others under direction of the postgraduate	
Showing originality in testing somebody else's idea/theory	
Carrying out empirical work that hasn't been done before	
Making a synthesis of things that haven't been put together before	
Using already known material but with a new interpretation	
Trying out something in this country that has previously been done only elsewhere	
Taking a particular technique and applying it in a new area	
Bringing new evidence to bear on an old issue	
Being multi-disciplinary and using different methodologies	
Looking at areas not previously explored in a particular discipline	
Adding to knowledge in a way that has not been done before	

Activity 2: A doctoral student should demonstrate a high level of proficiency in research and deliver original work that makes a significant contribution. What are the strategies you would follow to enhance

doctoral students' ability to deliver an original academic contribution?
Reflect on your answers and discuss with your group members.

ASSESSMENT CRITERIA

The postgraduate supervisor can recognise an original academic contribution in the discipline or field of his/her doctoral student.

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

END OF SESSION

EXIT LEARNING OUTCOME 3

The postgraduate supervisor will be able to explain the nature of epistemological access.

SPECIFIC OUTCOME 1

The postgraduate supervisor is able to apply epistemological access in his/her supervision practice.

Format of session: Group session

Overview: See 3.3, 3.3.2, 3.4.4

Activity 1: Epistemological access cannot be transmitted to a doctoral student and is neither a product that one can buy or sell, give to someone or steal, nor is it some kind of natural growth, such as the growth of plants or bodies (Morrow, 2009:78). Epistemological access is learning how to become a successful participant in an academic practice. It is important to remember that not every doctoral student has had access to quality education and, therefore, research training should be compulsory in pursuing a doctorate. The challenge is to create a culture that genuinely respects and appreciates differences and diversity – whether class, gender, national, linguistic, religious, sexual orientation, epistemological or methodological in nature (HESA, 2014:6-7). Table 5.56 below provides the features of epistemological access (Morrow, 2009:78). How would you apply epistemological access in your supervision practice? Reflect on your answers and discuss with your group members.

Table 5.56: Features of epistemological access

EPISTEMOLOGICAL ACCESS	APPLICATION OF EPISTEMOLOGICAL ACCESS IN THE SUPERVISION PRACTICE
Doctoral students must receive adequate feedback	
Creating a culture that respects and appreciates differences and diversity	
Postgraduate supervisors' knowledge of a topic can improve epistemological access	
Information presented in abstract form can constrain epistemological access	
Doctoral students must be challenged to reflect on the quality of their work	
Epistemological access cannot be transmitted to the doctoral student	

ASSESSMENT CRITERIA

The postgraduate supervisor can explain the nature of epistemological access.

SELF-REFLECTION ON SESSION

What was this session mainly about?

What was the expected learning outcome?

How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

END OF SESSION 3

5.5 RECOMMENDATIONS

The skills development programme will train novice postgraduate supervisors to supervise doctoral students, especially at UoTs. It is very important to note that this programme will be available to newly appointed academic staff without experience of supervision. It will be compulsory for newly appointed academic staff (novice postgraduate supervisors) and optional for more experienced academic staff.

When the skills development programme is presented, the following principles will be followed:

- Maximum discussion must take place between the presenter and academic staff to ensure that deeper learning takes place.
- The skills development programme must be presented in all academic disciplines.
- For quality assurance purposes all involvement of the skills development programme as part of the research and development function at UoTs should be monitored and evaluated on various levels.
- To ensure high rates of participation by academic staff, clear benefits of taking part in the skills development programme must be revealed to the participating academic staff.

5.5 CONCLUSION

Postgraduate supervision represents a special form of teaching as well as an academic relationship. Furthermore, doctoral students are enabled to develop scholarly and analytical capabilities, while contributing to new knowledge. There is no “best way” to supervise doctoral students.

Therefore, developing skills in postgraduate supervision needs to be tackled in various ways and should form part of an on-going continuing professional development for academics. Even experienced postgraduate supervisors need to update their supervision practices and skills on a regular basis. Universities need to establish formal procedures for the professionalisation of postgraduate supervision and support for academic staff.

This skills development programme will assist postgraduate supervisors to reflect on their own postgraduate supervisory style and to conceptualise supervision differently. In addition, it will assist postgraduate supervisors to supervise their students more effectively and it will be a definite benefit to the students who are being supervised. Staff development is an essential and necessary prerequisite for research capacity development and universities need to develop adequate research expertise in specific areas. Since funding is based on research and graduate outputs, a great responsibility is placed on universities to deliver research and graduate outputs. Irrespective of the development programme that has been adopted, postgraduate supervision should support each individual's progression through his or her own learning journey. Developing academic staff who educate our research students is a noble cause, because in essence they form the engine of our future.

The overall goal of the study was to make a contribution to the effective and efficient training of academic staff undertaking postgraduate supervision at UoTs, which in response will lead to effective postgraduate supervision practices. Regarding the rapid changes in all spheres of our society, business, industry and politics, ongoing training for postgraduate supervisors is important to ensure that the receiver of a doctorate can continue to make much needed contributions to society.

In Chapter 6, the main conclusions concerning the study will be discussed and recommendations and guidelines on the future postgraduate supervision developments will be given.

CHAPTER 6

CONCLUSION, LIMITATIONS AND RECOMMENDATIONS OF THE STUDY

6.1 INTRODUCTION

Academic staff constantly experience pressures related to accountability and appraisal, excellence, effectiveness and efficiency in their working environment. When adding the role of postgraduate supervisor to their professional and personal life, the burden becomes even more intense. In order to assist postgraduate supervisors in managing this burden, it is important to give them training that enables them to explore, analyse and learn about the complexity of the postgraduate supervision experience. A skills development programme opens up the possibility for change in postgraduate supervisors' professional practice through a greater understanding of the postgraduate supervision experience and the supervisory relationship in that context. With the implementation of a skills development programme, the focus is on increasing the expertise and competencies of novice postgraduate supervisors.

In this chapter, the main findings of the research will be highlighted, conclusions will be made, and the limitations of the study will be discussed. This chapter will conclude by presenting the final recommendations for implementation and future research, based on the study.

6.2 OVERVIEW OF THE STUDY

The overall aim of the study was to develop a skills development programme for postgraduate supervisors at UoTs with CUT as the case study where applicable. In many cases the case study reflected on existing practice. The focus of the study was on the postgraduate supervision of doctoral students, since UoTs increasingly have to supervise more doctoral students. Through the effective implementation and presentation of this programme, novice postgraduate supervisors will be able to enhance their supervision skills. The research was carried out based on three research questions.

6.2.1 RESEARCH QUESTION 1

The research question was identified as:

- Which skills and knowledge are required of postgraduate supervisors to supervise doctoral students?

The following objective was pursued:

- To conduct a literature study to identify the skills and knowledge that are required of postgraduate supervisors to supervise doctoral students.

The research question aimed to provide a background to the study. In Chapter 2, **Understanding Postgraduate Supervision**, a background to doctoral education (see 2.2) was presented (see 2.2). The complexity of the postgraduate supervision process (see 2.3) was discussed with reference to increased enrolments, diversity of doctoral students, advanced level of teaching, lack of structure, uncertain and difficult practice and lack of skills among doctoral students. Furthermore,

postgraduate supervision as teaching and research resulting in learning (see 2.4), roles and responsibilities of postgraduate supervisors (see 2.5), as well as the postgraduate supervisor and doctoral student relationship (see 2.6) were highlighted. Postgraduate supervision as a developing process (see 2.7) and doctoral retention and completion (see 2.8) were presented. Additionally, planning and managing the postgraduate supervision process (2.9) were discussed.

Chapter 2 concluded with the discussion and presentation of a framework for postgraduate supervision (see 2.10). The changing environment of universities has an impact on the postgraduate supervision practices of postgraduate supervisors. Universities are seeing an increase in enrolment for doctoral studies; therefore, academic staff members are obliged to supervise a growing number of doctoral students. With this expansion, supervision is becoming an increasingly significant part of academic staff workload. Postgraduate supervision is more than merely doing research and having knowledge of the discipline. The teaching and research that take place must result in learning. This process is as important as the production of the final product, the thesis. Consequently, a framework was designed with the focus on the *person* (the postgraduate supervisor and the doctoral student) and the *process* (postgraduate supervision), which result in a product (the thesis). Hence, through this framework the postgraduate supervisor will be attentive to the complexity of the postgraduate supervision process, of which teaching, research, learning, the person and the product are essential parts.

6.2.2 RESEARCH QUESTION 2

The research question was stated as:

- What are the essential components that should be included in a skills development programme for postgraduate supervisors?

The following objective was pursued:

- To identify the essential components to be included in a skills development programme for postgraduate supervisors by means of a literature survey.

This objective was followed by means of a literature study designed to identify core content that was to be delivered in the skills development programme for postgraduate supervisors. Best practices in the literature on postgraduate supervision were taken into account for the literature study. In Chapter 3, **institutional partners in postgraduate supervision**, the core content items were identified and grouped in four main sections, namely the postgraduate supervisor (see 3.2), the postgraduate supervision process (see 3.3) as an important feature, the doctoral student (see 3.4) and the university as partner in the postgraduate supervision process (see 3.5). The introduction (see 3.1) was followed by a description of the postgraduate supervisor (see 3.2) including the skills of the postgraduate supervisor (see 3.2.1) and the workload of postgraduate supervisors (see 3.2.2). The postgraduate supervision process (see 3.3) was further discussed with reference to postgraduate supervision as a professional, specialised field of teaching (see 3.3.1), postgraduate supervision models (see 3.3.2), postgraduate supervision quality (see 3.3.3), development and training of postgraduate supervisors (see 3.3.4) and assessment and feedback during the postgraduate supervision process (see 3.3.5). The doctoral student (see 3.4) was further discussed with reference to the complex relationship (see 3.4.1), expectations of doctoral students (see 3.4.2), their research skills (see 3.4.3) and development of doctoral students (see 3.4.4). The university as partner in the postgraduate supervision process (see 3.5) concluded this chapter. The skills necessary for postgraduate supervisors

to supervise doctoral students were added to the framework (see 3.6) from the literature in Chapter 3. The diversity of students and the changing environment of the university necessitate postgraduate supervisors to acquire additional postgraduate supervision skills. Although subject knowledge is important, knowledge on the postgraduate supervision process is even more important.

From the different postgraduate supervision models, a hybrid postgraduate supervision model (see 3.3.2) was identified which consisted of the traditional apprenticeship model (ASSAf, 2010), the supervisor/student alignment model (Gurr, 2001) and the four-quadrant supervisory management style consisting of the different support and structure levels during the process (Gatfield & Alpert, 2002).

In Chapter 4, **the policy issues** that have an effect on universities and in particular postgraduate supervision were explored, namely the doctorate (see 4.2) and the doctorate at UoTs (see 4.3). Developments in the relationship between the government and universities (see 4.4) and the national qualifications framework as a quality mechanism for doctoral studies (see 4.5) were discussed. This was followed by accountability for staff development (see 4.6), funding (see 4.7), diversity and standardisation in doctoral studies (see 4.8). These issues contributed to the finalisation of research question 2 and were added to the framework for postgraduate supervision (see 4.9).

6.2.3 RESEARCH QUESTION 3

The research question was stated as:

- How can a skills development programme for postgraduate supervisors be created and presented to academic staff at UoTs?

The following objective was pursued:

- To develop a skills development programme for postgraduate supervisors at a UoT based on the analysed and interpreted findings.

This objective was pursued by means of the development of a skills programme for postgraduate supervisors at UoTs (see Chapter 5). A hybrid postgraduate supervision model was developed which is based on the traditional apprenticeship model (ASSAf, 2010), the supervisor/student alignment model (Gurr, 2001) and the four-quadrant supervisory management style consisting of the different support and structure levels during the process (Gatfield & Alpert, 2002).

In terms of the content of the programme, the presentation of the skills development programme comprises three sessions (see Figure 5.3). The core content identification was done through the literature study in Chapters 2, 3 and 4. These sessions form the framework for the programme. The content of each session (see Table 5.1) was identified. **Session 1** consists of the **people** aspects, namely the postgraduate supervisor, the doctoral student and the postgraduate supervision process (see Chapter 2 and 3). The functions of postgraduate supervision were placed in the context of the postgraduate supervision process and subsequently the results with regard to best practices as evident in the literature were taken into account in adding the components to the skills development programme. **Session 2** entails all the components involving the university where the postgraduate supervision **process** is taking place. **Session 3** contains all the components of the **product** which are produced during the postgraduate supervision process. A certificate of attendance will be issued to postgraduate supervisors after the completion of Sessions 1, 2 and 3.

The approach of the sessions is practical, making it straightforward and easy to follow. Activities in the sessions provide postgraduate supervisors and doctoral students with the opportunity to reflect, discuss and share their views. The sessions are compiled in a structured manner with the same format and consist of:

- exit learning outcome (what the postgraduate supervisor will be doing in the session)
- specific outcome (the specific outcome of the session)
- format of session (whether it will be a group session or individual session)
- overview (referring back to the literature in the chapters)
- activities (activities that postgraduate supervisors will be doing in a group or on their own)
- assessment criteria (what the postgraduate supervisor has done in the session).

After each session there is an opportunity for academic staff to reflect by answering the following reflective questions:

- What was this session mainly about?
- What was the expected learning outcome?
- How did the outcomes of this session improve your understanding of postgraduate supervision? Please provide examples.

The literature study was done by means of a thorough review of information from the available body of literature on postgraduate supervision. Studies and literature nationally and internationally were reviewed to evaluate the theoretical perspectives and previous findings on this topic. The researcher critically reviewed existing literature sources including books, articles from scientific journals and articles from websites to discover the various dimensions of the issue under investigation. A number of keyword searches were done on various databases such as

Social Science Citations, TechWiz Library Catalogue, EBSCOhost, SA e-Publications and Google Scholar. Through the literature review, specific core issues on postgraduate supervision were identified that needed further elaboration and substantiation for this study.

6.3 CHALLENGES OF THE STUDY

Postgraduate supervision is a teaching strategy in its own right and there is often a divide between research and the education of research. Disciplinary knowledge of postgraduate supervisors is not enough and the growing number of doctoral students and stakeholders (government, universities, researchers and students) necessitates research studies to be more relevant, hence the development of the framework for the skills development programme for postgraduate supervisors.

There is a certain amount of concern about the purposes, functions and attributes of postgraduate supervisors, the postgraduate supervision processes and the research produced from this form of learning. Doctoral study not only consumes financial resources and a great deal of time, but also receives substantial investment in terms of effort from the doctoral students themselves. The following challenges related to postgraduate supervision bear mentioning:

- Postgraduate supervision at UoTs and universities in general is an educational undertaking in which government is involved in steering the activities taking place. Increasingly, it is expected of universities to produce more doctoral students of high quality, thereby contributing to the growth of the economy in South Africa.
- Very important is the challenge of postgraduate supervisors to teach doctoral students in such a manner that they will be able to

supervise other students after they complete their own research. Therefore, postgraduate supervisors need to pay attention to the NQF level 10 descriptors (CHE, 2013b) for doctoral studies to ensure compliance with the expected quality before a degree may be awarded.

- While the government wants higher graduate returns on the subsidy that it is investing in doctoral students, the high dropout and low completion rates is an indication of inefficiency in the production of doctorates.
- With the demand for more doctorates, the issue of quality becomes paramount. These issues should be addressed by reviewing the effectiveness of quality assurance within universities.

6.4 LIMITATIONS OF THE STUDY

The researcher recognises the following limitations:

- Through the literature search it was evident that the literature available on similar skills development programmes at other universities nationally and internationally for postgraduate supervisors was very limited. This limitation was overcome by utilising any related literature on postgraduate supervision.
- After a thorough search for other skills development programmes, it became evident that this skills development programme cannot be compared to similar programmes to verify its content.
- While the researcher reported on the literature that influenced the development of the programme, the researcher by no means tried to report on all available literature regarding the content to be included in the skills development programme.

- The success of the skills development programme can only be verified over time, once it is implemented.

6.4 RECOMMENDATIONS

In order for this study to be of value to UoTs, the researcher recommends the following:

- The skills development programme for postgraduate supervisors must be available to all faculties at the CUT.
- Approval from the Senate should be obtained for the implementation of the skills development programme for postgraduate supervisors at UoTs.
- Monitoring and assessment of the skills development programme for postgraduate supervisors should be done to ensure that the training needs of academic staff are addressed.
- The focus is on planning and organising the postgraduate supervision function properly.
- This programme can be implemented in its original form at other UoTs, but the intention is that each UoT should customise the programme according to its own unique situation and expectations.
- UoTs must ensure that the necessary conditions are in place to ensure quality of postgraduate supervision.
- Further research should be undertaken on the impact of the skills development programme for postgraduate supervisors after it has been presented for the first time.

6.5 CONCLUSIVE REMARK

UoTs are unique and after the merger with other universities, the challenges for them are pronounced, taking into account their experience and the emerging research culture that is still developing. UoTs face a unique challenge to produce knowledge but, more importantly, to ensure that the knowledge they produce is also useable. More and more research is now interdisciplinary of nature and uses a wider range of orientations and methods; some postgraduate supervisors, however, have little experience of working outside one methodological tradition.

Currently, novice postgraduate supervisors do not have access to a user-friendly skills development programme in the basic aspects of postgraduate supervision or possible approaches to it. Although postgraduate supervisors have an understanding of the discipline level at which they are teaching, the skills programme will help them to contextualise the existing emphasis on skills needed to provide supervision to doctoral students where teaching and research result in learning. Therefore, a skills development programme will help postgraduate supervisors in particular to:

- engage a critically view of postgraduate supervision;
- focus on the relationship between teaching and learning; and
- look in particular at the complexities of the pedagogical practice associated with postgraduate supervision.

The programme would be of value to novice postgraduate supervisors in the following way:

- the programme recognises and values the unspoken knowledge and experience of novice postgraduate supervisors; and

- the programme views novice postgraduate supervisors as engaged in their work, willing to reflect upon their working experience in the postgraduate supervision environment and learn from each other in a collegial environment during the presentation of the programme.

This study was a challenging and enriching experience, leading to a better *understanding and awareness* of the complexity of the postgraduate supervision process. The challenges of postgraduate supervision were addressed, and were brought to a conclusion with the development of a skills development programme for postgraduate supervisors at the UoTs. The skills development programme supports a comprehensive understanding of what is required in the training of doctoral students. A single model of postgraduate supervision is unlikely, and as the literature developed over the chapters, it was confirmed that postgraduate supervision consists not only in discipline knowledge, but also in aspects such as research culture and assessment; it also requires more engagement within the postgraduate supervision process.

This will not only enhance the quality of postgraduate supervision, but will also add value to doctoral students' learning experience. Postgraduate supervisors will be better equipped in the management of the postgraduate supervision process and will therefore provide a better service to doctoral students. Therefore, it can be declared that the overall goal, aim and objectives of the study, to develop a skills development programme for postgraduate supervisors, were reached.

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