UNIVERSITY OF THE WESTERN CAPE

Faculty of Community and Health Sciences

Title: Interventions aimed at enhancing supervision capacity: A systematic review (2000-2013)

Student Name: Lyle Trimble

Student Number: 3075056

Type of Thesis: Full Thesis

Degree: M.A. Psychology

Department/School: Department of Psychology

Faculty: Community and Health Sciences

Supervisor: Dr. Mario Smith

Date: 05 June 2015

Keywords: Supervisor training, supervision models, guidelines, supervision capacity, research supervision, enhancing supervision capacity, postgraduate completion rates, government funding, supervisor development, and research supervision.

Table of Contents

List of Appendices

List of Figures

List of Tables

Plagiarism Declaration

I, Lyle Trimble, hereby declare that “Interventions aimed at enhancing supervision capacity: A systematic review (2000-2013)” is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged as complete references.

Abstract

Literature suggests that novice supervisors are not adequately trained or equipped with the skills required in research supervision or to become productive researchers, and recommend that intervention strategies aimed specifically at enhancing supervision capacity, be prioritized. Primary texts report positive effects on student output and timely completion in a range of intervention strategies aimed at enhancing supervision capacity including supervisor training. However, it is difficult to compare these individual reports without a systematic attempt at filtration in which studies are evaluated for methodological rigour. The aim of this study was to consolidate the body of literature reporting on strategies aimed at enhancing supervision capacity which satisfies a threshold of methodological quality. The present study was a systematic review evaluating published literature from 2003 to 2013 that report on strategies aimed at enhancing supervision capacity. Only full-text, English articles within the UWC library databases were considered for inclusion provided that they report on the specified target group and focus of the study. Identified articles were evaluated on three levels: titles, abstract, and full text. Four instruments were used to facilitate data extraction and quality assessment including a Title summary sheet, abstract summary sheet, critical appraisal tool, and data extraction sheet. Meta-synthesis of included texts was conducted. *Ethics:* Permission to conduct the study was obtained from the appropriate committees at the University of the Western Cape (Registration number: 14/5/18). The information sources used in this study were all previously published and are in the public domain; therefore no additional permission for access was required. The study formed part of a larger NRF funded parent study. Thus the distinction between collaboration and plagiarism was carefully monitored given the collaboration between the present study and the larger parent study.

Acknowledgments

I express my thanks to the supervisor, Dr. M. Smith for his enthusiasm in teaching me, as well as supervising me during the course of this systematic review process and M.A. Psychology programme. I offer my appreciation for the learning opportunities provided by the University of the Western Cape, as well as the National Research Foundation (NRF) for providing me with a bursary, and also funding the larger project as a whole. Finally, the completion of this systematic review could not have been accomplished without the energy, support, and commitment from my fellow reviewers.

The financial assistance of the National Research Foundation towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at, are those of the author and not necessarily to be attributed to the NRF.

Chapter One

Introduction

1.1. Background to the study:

Peterson (2007) reported that government funding of universities has progressively become linked to postgraduate completion and that the primary aim of research institutions and higher institutions alike increasingly are to ensure the successful building of research capacity in both postgraduate students and supervisors. McCallin and Nayar (2012) suggested that many institutions measure student, as well as supervisor success in terms of timely completion which they see as influenced by programme capacity issues, funding, faculty-student relationships, graduate policies, and most importantly supervisory input and capacity. Frantz and Smith (2010) maintain that many novice supervisors are not adequately trained or equipped with the necessary competencies required in research supervision or in becoming productive researchers. According to Pearson and Brew (2002) research training is attracting more inspection as research itself is viewed as having greater importance in the global knowledge economy. Therefore concerns to improve the effectiveness and efficiency of research supervision have been underscored which has led to the development of strategies aimed at enhancing supervision capacity (Granello et al. 2008, Pearson & Brew, 2002). Examples of such strategies included, but were not limited to, the introduction and extension of programmes for supervisor development and training (Duys & Hedstrom, 2000). Programmes often come in various guises, such as guidelines to supervision practice, supervision models, and supervisor training.

1.1.1. Guidelines. Guidelines are viewed as tools that have the potential to inform supervision practice. Guidelines to supervision can be used as a vehicle to establish conditions and expectations that may be implemented within the supervision process. Thus, guidelines are

there to guide the conditions and expectations of the supervisory process, but it cannot specify how those conditions and expectations should be put into practice (COSEPUP, 2009). According to Lee (2010); managing students' learning, maintaining regular contact, planning and implementing research studies, prioritising time and engaging in related research knowledge and skills training; all form part of the active implementation of supervisory guidelines. Thus, Wisker, Robinson and Shacham (2007) suggested that if supervisors were to assume greater involvement with regards to implementing certain guidelines, then it is likely to occur as a result of the demand for a higher throughput of postgraduate students.

1.1.2. Models of supervision. According to Bernard (2005) models of supervisor development, while having both heuristic and intuitive qualities, do not yet possess a comprehensive research foundation and only partially address the important question of how supervisors develop through training and experience. Gazzola, De Stefano, Theriault and Audet (2013) suggests that unique and idiosyncratic events are difficult to capture when using generic models since they do not easily capture where supervisors-in-training struggle, falter or fail.

1.1.3. Supervisor training. Literature is clear on the overall benefits of supervisor training and on the value that trainees ascribe to this experience, (Gazzola et al. 2013). According Lyon, Heppler, Leavitt and Fisher (2008) the total number of supervision activities (both dyadic and practical), along with the total number of supervision hours were found to predict overall supervisory development; and extra hours appeared to predict better development. Gazzola et al. (2013) assert that there is a mounting consensus that good supervision requires an in-depth understanding of the elements that are unique to the supervisory process. Therefore it has become an ethical imperative to provide detailed preparation for the practice of supervision (Bernard & Goodyear, 2013). Despite the recent

trend in literature in which cases are made for supervisor training, the empirical knowledge base from which to draw on when constructing supervisor training programmes has consistently been described as "close to non-existent" over a 16-year period (e.g. Bernard, 2010; Hoffman, 1994; Watkins, 2014).

1.2. **Problem Statement:**

There has been published literature from primary studies reporting on the efficacy of strategies aimed at enhancing supervision capacity. It is however difficult to compare these reports on primary studies without a systematic attempt at evaluating for methodological rigour and quality known as filtration (Higgins & Green, 2006). Thus there is a need for filtered information reporting on strategies aimed at enhancing supervision capacity which evaluates such studies for methodological rigour and coherence. An initial search revealed that there were no published articles reporting on attempts at filtration such as, systematic reviews on this topic.

1.3. **Rationale for the study:**

On the subject of developmental goals for management and content for staff development; the National Development Plan 2030 (NDP) highlighted higher education as a sector that needs urgent attention because of the inconsistent performances by institutions of higher learning. Therefore the NDP (2030) suggests that continuous quality improvement is needed in terms of enhancing staff capacity, because the system expands at a moderate velocity. Research and development is another sector that has been identified as part of the developmental plan for 2030. The focus on research and development will simultaneously tie in with the focus on the calibre of teaching, which could improve the quality of higher education, however without the necessary attention; inadequate staff capacity will constrain

knowledge production and innovation. Thus the present study focused on publications in Health, Education and Social Sciences and attempted to provide an empirical base of filtered information on the literature which satisfied a threshold of methodological rigour and coherence. The resulting empirical base could be used to inform individual practice, developmental goals for management, as well as content for staff development, which can be initiated and funded by management or external funding like the National Research Foundation (NRF).

The current review forms part of a larger parent project. The parent project attempts to pull together a concept map of the elements contained in developing research capacity. The concept map will be extracted from data produced in four stages, namely stage 1: systematic reviews; stage 2: a questionnaire which evaluates thesis supervision that facilitates or hinders the development of research capacity. Stage 3: is the implementation of the questionnaire in a full survey; and stage 4: is a qualitative study of the perceptions of stakeholders.

1.4. **Organisation of the thesis:**

The thesis is organised into five chapters namely; Chapter One: Introduction; Chapter Two: Literature Review; Chapter Three: Methodology; Chapter Four: Results and Discussion; and Chapter Five: Conclusion. Below is a brief explanation of what each chapter includes:

1.4.1. **Chapter One: Introduction**

This chapter serves as a brief introduction and background to the study. Chapter one is split into four sections; Background, Problem statement, Rationale for the study, and Organisation of the thesis.

1.4.2. **Chapter Two: Literature Review**

Chapter two consists of an abbreviated literature review that aims to contextualise the study. Due to the aim of the systematic review being filtration and making the available evidence or literature more accessible, the need for a larger review is superseded by the function of consolidating the literature. This chapter compiles relevant literature on the research topic as a means to add depth and perspective to the rationale for the current study. It showcases what is known about the research topic in terms of published literature and in so doing provides an academic rationale for the present study. The literature review contains six sub-sections, namely *Introduction*, *Guidelines to Supervision*, *Supervision Models*, *Supervisor Training*, *Enhancing Supervision Capacity*, *Gaps in Literature* and *The Parent Study*. Each sub-section is a brief exposition that contributes to the overall literature review. The final standalone sub-section is the *Parent Project* which outlines the greater project, as well as how the present systematic review along with three additional reviews fitted into the greater project as a whole.

1.4.3. **Chapter Three: Methodology**

This chapter reports on the methodology utilised within the study. It highlights the fundamental features of what a systematic review is, and shows how each feature has been utilised within the process of conducting the current study. The advantages and disadvantages of conducting a systematic review will be discussed and justifications will also be provided for the methodological choices that were undertaken for this particular systematic review. This chapter also provides insight to the process of executing this research.

1.4.4. **Chapter Four: Results and Discussion**

This chapter presents an integrated Results and Discussion. It contains three sections namely, *Process Results, Descriptive Meta-synthesis and Theory Explicative Meta-Synthesis*. The Process Results section contains a flowchart to illustrate the search and retrieval strategy, as well as the screening and evaluation process of articles. The Descriptive Meta-Synthesis reports on the Data Extraction and Rank Order of included articles. Finally, the Theory Explicative Meta-Synthesis offers a discussion of the findings of included articles to answer the research question along three core lines; Reciprocation, Refutation, and Line of Argument.

1.4.5. **Chapter Five: Conclusion**

This chapter provides an executive summary of the study followed by a conclusion, significance of the study, recommendations for future research, and limitations of the study. Each section forms part of the overall conclusion of the current study.

Chapter Two: A

Literature Review:

2.1. ***Introduction*:** Researchers in both developed and developing regions of the world have underscored that research institutions and institutions of higher education require supervisors that are highly skilled, technologically savvy, and skilled with applied knowledge and the competency to contribute to the knowledge economy (McCallin & Nayar, 2012). Petersen (2007) maintained that in recent years supervision of postgraduate research, in particular, has been given a fair amount of attention. An integral point highlighted by Petersen (2007) is that supervision is one of the most essential factors contributing to successful completion. The literature on supervision has focused on many different aspects including, but not limited to; interventions with new academics to enhance research productivity (supervision and publication) (Fagan-Wilen et al. 2006; Frantz & Smith, 2010; Grzybowski et al. 2003; Tudiver, Ferguson, Wilson & Kukulka, 2008); interventions with students aimed at completion of research requirements (Braxton, Hirschy, & McClendon, 2004; Yorke & Longden, 2004); and supervisor and students variables (demographic and personality/psychological) that impact completion of research requirements (Kam, 1997). However, for the purpose of this literature review, the main foci will be on guidelines to supervision (Borders et al. 2012); supervision models (Granello et al. (2008); supervisor training (Petersen, 2007) and enhancing supervision capacity (Pearson & Brew, 2002). Below is a brief exposition of each of these areas.

2.2. ***Guidelines to Supervision*:** Guidelines can be used to inform supervision practice. According to Borders et al. (2012) the Association for Counselor Education and Supervision (ACES) research supervision guidelines consists of two core sections. The first core section pertains to supervisors. This section outlines the features of supervisors, which include; knowledge and skills as a researcher (Black et al. 2004; Brown et al. 2009). Research

supervisors are not expected to be knowledgeable about each and every aspect of research or supervision. However, supervisors are expected to be aware of their constraints and restrictions both as researchers and supervisors, as well as to inform students of their limitations, and help students find other resources when need be (Borders et al. 2012). This implies that research supervisors are expected to share their areas of research knowledge, whatever they may be, with students. A useful intervention strategy for supervisors to implement is that of extending their understanding of the nature of research and supervisory practice, this will enable supervisors to deal more effectively with variations in the educational and career goals of different students (Pearson & Brew, 2002). Johnson (2002) planned strategies at the individual, departmental, and organisational levels to encourage supervising of students. At the second level, Johnson suggested that professional organisations establish specific guidelines as a possible way to begin educating supervisors about preparing them for their role and responsibilities. According to the ACES Strategic Planning Committee (2007) the leaders of the ACES were committed to providing and publishing premier research and scholarship. In order for this goal to be achieved, the development of research mentorship guidelines were initiated. The guidelines were developed for implementation by ACES, thus the central principles and specific guidelines were identified through reading literature on research training and mentorship (Borders et al. 2012). Guidelines can define terms and expectations, but guidelines cannot, however, guarantee or specify how the expectations can be put into practice (COSEPUP, 2009).

2.3. ***Supervision Models*:** Granello et al. (2008) reported that there are very few interventions aimed at enhancing the supervision capacity, and even fewer interventions that result in higher completion rates. These interventions are usually aimed at supervisor development; however, they can include interventions strategies that the supervisor may

implement during supervision to help the students. The development of models of effective supervision is considered to be an intervention (Baker, Exum & Tyler, 2002). Below are some examples of models that have been published.

2.3.1. Apprentice Master Model (AMM): According to Burnett (1999) the most common model for the supervision of doctoral students has followed the traditional Apprentice Master Model (AMM), which was described by Yeatman (1995) as a process whereby the established master (supervisor) inducts the new apprentice (trainee supervisor) into the "mysteries" of the craft. Leder (1995) considered that in the AMM the supervisors' research preferences may constrain and limit the scope, perspectives, methodology, and direction of a dissertation. Concerns surrounding the completion rates and some supervision practices have provided a catalyst for the development of alternative models to the traditional AMM of research supervision (Burnett, 1999).

2.3.2. Collective Academic Supervision (CAS): According to Simons (2005) Collective Academic Supervision (CAS) is a model that may potentially increase and qualify students' participation and academic learning by way of stimulating their motivation to study and to write academic assignments. Nordentoft, Thomsen and Hansen (2012) assert that CAS provides a framework for supervision and also offers students systematic, progressive, and academic input from peers and supervisors which encourage their writing process. Another important incentive behind this model for collective supervision is that it has the ability to inspire and support academic staff in their work to supervise more than one student at a time (Nordentoft et al. 2012). Nordentoft et al. (2012) further suggested that the goal was to integrate qualities in CAS where students meet as a group, present and give feedback to each other together with their supervisor present.

2.3.3. Peer consultation model: Granello et al. (2008) identified the peer consultation model that is primarily aimed at counsellors who are no longer under formal supervision and therefore no longer have access to ongoing evaluation and expert guidance. During peer consultation models, supervisors offer regular consultation for one another in order to help one another achieve self-determined goals (Benshoff & Paisley, 1996). Supervisors are the architects of their own development, and they are also responsible for assessing their own skill competencies. Peers provide critique and support in terms of their feedback, and the supervisor is free to accept or reject the feedback (Benshoff & Paisley, 1996). The objective of peer consultation is to improve self-awareness and gain a deeper understanding of the complexities of supervision (Sadoff, 1990). Peer consultation models in supervision tend to assume that supervisory peer groups will develop an answer for a particular supervisor. According to Holloway (1994) the peer group could help identify the basis of the problem in a particular supervisory scenario and formulate a strategy that could be implemented for that specific supervision context. According to Granello et al. (2008) the supervisory peer consultation group has one primary objective, and that is to broaden the perspectives and enhance the critical thinking of each of the members who participate, regardless of whether they ever formulate a particular strategy for an individual supervisor to implement.

2.3.4. Coaching model: A different model; thought of as a “coaching” or “mentoring” model can be implemented whereby an experienced supervisor works with a novice supervisor; thus the novice supervisor is both supporting the student and being supported by their academic colleague (Watts, 2010). Therefore it is important to consider the adequate development of the supervisor when investigating the research capacity of postgraduate students. Worthington (1987) stated that research and literature on supervisor development

offer extremely little information about ways to enhance supervisor development or what experiences contribute to supervisor development.

2.3.5. Cognitive Apprenticeship (CA): CA is a model which is implemented by many supervisors, whereby the supervisor takes up a 'coaching' role that consists of observing students carrying out a task and offering hints, feedback, reminders and new tasks aimed at increasing their performance nearer to expert performance (Collins et al. 1989; Pearson & Brew, 2002).

2.3.6. Blended learning model: De Beer and Mason (2009) explored the idea of blended learning as an intervention to enhance supervision capacity of novice and experienced supervisors alike. The blended approach to supervision includes a combination of different training material (technologies/media, activities, and types of events) to create an optimum training program for a specific set of students. The term 'blended' refers to traditional instructor-led training being complimented with other electronic formats. De Beer and Mason (2009) explored the viability of using a blended learning approach to postgraduate research degree supervision. These authors further suggested that such a model could reduce the workload of research supervisors and thus improve the quality and success of postgraduate students' research output.

2.3.7. The Supervisor Complexity Model (SCM): Culbreth and Cooper (2008) suggest that the Supervisor Complexity Model is considered to be extremely substantial, comprehensive, and practical. Attempts have been made to test the assumptions of the model, including the development and verification of the Psychotherapy Supervisor Developmental Scale (PSDS) (Culbreth & Cooper, 2008; Baker, Exum & Tyler, 2002). The SCM is a four-

stage model of supervisor development, which includes the following stages; role shock, role recovery and transition, role consolidation, and role mastery. The model also identifies the tasks, responsibilities, and crises that a supervisor may encounter as he or she advances from being a novice supervisor to an experienced supervisor. In every stage, it is hypothesised that the supervisor will be challenged by various issues of supervisory identity, and development will result as a response to successfully meeting and overcoming the challenges that may well occur at each stage of the model (Culbreth & Cooper, 2008).

2.3.8. Elements of supervision models: Given that supervisory knowledge has widened and grown over the past decades, the supervision experience has become thought of as a developmental process wherein supervisors are expected to advance through a process of growth that entails firstly, increasing the acquisition and refinement of conceptual or practical skills; and secondly increasing the formation and consolidation of a supervisor identity (Watkins Jr., 2014). According to Culbreth and Cooper (2008) supervisor development can be defined as stages of growth in which supervisors gain passage to truly becoming a supervisor. Supervisor developmental models are fundamentally alterations of counsellor development models, which focuses on the growth of the supervisor as he or she acquires skills through the necessary training as well as experience (Culbreth & Cooper, 2008).

Borders and Fong (1994) identified in the early 90's that assisting supervisors in their development involves a cognitive shift from thinking like an academic to thinking like a supervisor (e.g., focussing on educational needs), that appears to be a vital feature to supervisor development. One intervention to support this cognitive shift is the development of a "self-critical supervisor", described as having a constructive and evaluative attitude that is consistently directed toward and brought to bear on one's supervision efforts (Granello et al.

2008). Watkins (1995) reported that the self-critical supervisor is likely to be someone who takes time out regularly to think about his supervisory work, in doing so, such questions are asked: What did I do in that supervisory hour? Why did I do that? How did I help my supervisees? How did I hinder my supervisees? Are my supervisory interventions becoming more effective? It is argued that self-criticality is a key factor (if not the most eligible key factor) contributing to supervisors becoming better and more effective over time (Granello et al. 2008). Koch, Arha and Rumrill (2004) suggest action research strategies that can help research supervisors extend skills in scientific reasoning and self-reflection. They assert that action research can be defined as a type of reflective practice and professional learning built upon an ethical commitment to improving practice. It involves the (1) identification of areas to improve practice that challenge the supervisor's sense of mastery, (2) the generation of ideas to improve practice, and (3) the evaluation of these ideas in professional settings (Koch et al. 2004). Action research can be characterised as persistently inquisitive, purposeful, systematic, self-critical, and collaborative. It is based on a cyclical process that begins by asking oneself, "How can I improve supervision practice?" At the same time "it requires reflection (contemplating one's professional/ethical commitments, the dilemmas of practice in light of those commitments, and designing a study based on the question that emerges from those dilemmas of practice); action (carrying out the design); and observation (documenting the process in some systematic way)" (Koch et al. 2004; p.55).

Culbreth and Cooper (2008) suggest that self-efficacy can be considered as an integral component to supervisor development. Leach, Stoltenberg, McNeill, & Eichenfield, 1997) suggest that among supervisors, professional self-efficacy has been closely linked with supervisor development. However, it is reported that supervision development from a self-efficacy standpoint is only just beginning to gain attention in literature (Culbreth & Cooper,

2008). The Counselor Supervisor Self-Efficacy Scale (CSSES) was developed to measure supervisor self-efficacy in domains specifically related to the role of supervisor (Barnes, 2005). In the preliminary efforts to authenticate the instrument, Barnes (2005) determined that results on the CSSES were related to supervisor development results measured by the PSDS (Culbreth & Cooper, 2008).

Another strategy, that is fairly new and under researched, aimed at the level of the supervisor is that of learning through self-awareness (Pearson & Brew, 2002). These authors argue that the notion of managing oneself is a vital requirement for managing others and gaining feedback on performance, wherein personal reflection is encouraged. This intervention or strategy entails more than purely focusing on interactions with others and communication skills, the leader first has to, above all else, understand how he/she operates him/herself (Pearson & Brew, 2002). As asserted in Pearson (2001), supervisors need to reflect on their own practice and critique research education. A favourable preliminary task is for supervisors to reflect on their conceptions of research practice as a foundation on which to engage in the critical questioning of their own preferred approach (Pearson, 2001).

A closer inspection of the literature on supervision models reveal a number of features including the (1) content of supervision i.e. competencies and skills that a supervisor possesses, e.g. problem-solving (Watkins Jr., 2014); (2) structure of supervision i.e. how supervision itself is structured: such as monitoring the research process or supervision meeting schedules (de Beer & Mason, 2009); (3) form of supervision e.g. group versus individual supervision (Simons, 2005); (4) function of supervision e.g. supervisory style or teaching/supervising methods (Pearson & Brew, 2002); and (5) process of supervision i.e. how the learning process is constituted between the student and supervisor, e.g. planning of research (Collins et al. 1989). These five features of supervision appear to form the foundation of supervision models.

The close inspection of the literature further divulged that the literature is describing the models on its content, structure, process, form and function, but not on empirical evidence. The literature provides a theoretical rationale for future research, but no empirical evidence, therefore, it can be deduced that the literature on supervision models is descriptive in nature. Finally, there is a need for more explicit reporting of theoretical framework but also a need for testing.

2.4. ***Supervisor Training*:** Supervision training is crucial to the supervision process, in terms of equipping the supervisor with the necessary skills to enable him/her to achieve success in supervising students and obtaining a high completion rate (Petersen, 2007). Similarly, Pearson and Brew (2002) recommended that keeping up with new supervision training resources is a vital component of the supervision process. Thus staff development in terms of formal supervisor training packages is necessary to update supervisors on these changing needs of students, faculty and government funding. McCallin and Nayar (2012) reported that research in New Zealand has taken into account the broader research context and how it has changed in the last decade, and concluded that academics need to understand how institutional and government processes influence research supervision. For example, the push for publication during thesis writing has been found to be demanding, as well as the socio-political accountabilities to the wider community. Changes to funding arrangements have had and still have a significant effect on the nature of university work, research topic options, the models of supervision, student management and how academics manage their supervisory responsibilities (McCallin & Nayar, 2012). Therefore, it is of paramount importance that research supervisors get adequate training which addresses the changes to policy and processes, wider university sector requirements, supervision pedagogy and alternative models of supervision, all of which impact and contribute to the quality of research supervision

(McCallin & Nayar, 2012). These authors proposed that this type of supervision training occurs at the start of each academic year. Likewise, Granello et al. (2008) recommended that supervision training and skills development programmes are necessary to get the most out of the supervision process and ensure a high completion rate among postgraduate students.

Brew and Peseta (2004) have suggested the implementation of the "Recognition Module", which is an online module aimed at developing supervisors. It was constructed with the intention for supervisors to consolidate, reflect on and express shifts in their thinking about postgraduate supervision. The module invites supervisors to develop their own supervision case study as a means of representing their learning expedition in the programme. The authors also mentioned that the case study process coupled with the inclusion of a continuous feedback cycle, act as a form of professional supervisor development (Brew & Peseta, 2004). The Recognition Module encourages supervisors to connect and engage creatively with an ongoing programme of professional development long after completion. The innovative nature of this module is new and exciting given the fact that it is a structured, guided, and supported learning journey that takes place in an online learning environment. This of course means that it is flexible and can be completed at the supervisor's own pace. The rationale for the Recognition Module lies in the fact that supervisors who write and edit case studies among each other are afforded the opportunity to talk openly about their own supervision, in terms of their difficulties, pleasure, or uncertainties; outside a direct institutional context.

According to Culbreth and Cooper (2008), there is a lack of empirical research on the factors that explain, facilitate, or hinder the development of supervision capacity. There is equally little research on what supervisors can do to help cultivate the development of supervision capacity (Granello et al. 2008).

2.5. ***Enhancing Supervision Capacity*:** To emphasise the importance of supervisor training; studies have found that experience as a supervisor does not automatically lead to higher levels of supervisor development and postgraduate completion rates (Granello et al. 2008, Pearson & Brew, 2002). Vidlak (2002) concluded that previous experience as a supervisor was not directly proportional to supervisor development. Similarly Granello et al. (2008) reported that changes in the scores of supervisory development were related significantly to training in supervision, but not previous experience. Therefore, it appears that experience alone is not sufficient to enhance supervisor development and supervision capacity (Granello et al. 2008). As early as 1987 Worthington asserted that most supervisors might not improve with experience, the reason being that supervisors have little training in how to supervise effectively and therefore they might maintain the mistakes of their own supervision (Worthington 1987).

According to Pearson and Brew (2002) research supervisors, much like managers and leaders, are educating, motivating and leading others. Therefore supervision training is of keen interest, and it is important to note that there is more to it than just developing technical skills (Pearson & Brew, 2002). It is thus important for supervisors to expand their range of skills as educators and mentors. Supervisor development for research training in the modern context of higher learning needs to focus on allowing supervisors to become adaptable. The notion of sticking to one model and set of behaviours is no longer considered acceptable (Pearson & Brew, 2002).

Watkins Jr. (2014) suggested that supervision seminars play a fundamental role in stimulating and setting in motion the supervisor development process. The author raised the following points:

> "(a) the supervision seminar is the first primary stimulus of supervisor development and sets the stage for later growth via practice; (b) early themes that are identified in supervisor development theories also make appearance in the supervision seminar experience; (c) to best understand the full arc of supervisor development, the seminar as both developmental initiator and intervention preparedness foundation merits more careful scrutiny; (d) through more completely understanding the seminar as instigator of supervisor development, supervisor educators might be better positioned to develop seminars that most constructively affect the very beginnings of the supervisor development process" (Watkins Jr., 2014; p. 1).

There are two components; a didactic and experiential component which are essential to optimal supervision training (Borders et al. 1991; Stoltenberg & McNeill 2010; Watkins 1992). The didactic component has generally been considered as a preparatory foundation for engaging in supervised supervision practice (Russell & Petrie, 1994). According to Watkins Jr. (2014) the areas of competency that have been identified as vital to attend to in the first supervision seminar include the following: supervisor or supervisee roles and responsibilities, supervision models, supervision assessment, models of supervisor development, supervision interventions and strategies, and supervision research. Lectures, assigned readings, and group discussions have all been identified as viable options to use for the purpose of learning about those competencies. The definitive first-course objectives are firstly, to introduce and expand the knowledge of the student/supervisor trainee about the subject of being and becoming a supervisor (Watkins Jr., 2014). Secondly, stimulating reflection and creating space for thinking more deliberately about functioning as a supervisor. Thirdly, encouraging a beginning sense of

supervisory identity development; and lastly to foster an initial sense of integrative perspective with regard to the supervisory role (Borders, 1992).

Whitman, Ryan and Rubenstein (2001) maintain that a number of supervisor development models have been proposed. Those models assume that supervisors develop in their role and that growth takes place in stages from less to more developed, with each stage having a range of developmental issues and concerns associated with it. Whitman et al. (2001) further asserts that our understanding of the models of supervisor development is at a beginning level. However, a limited number of empirical studies have been conducted to test those models.

2.6. ***Gaps in Literature*:** A priority for future research is further clarification and empirical studies in areas such as how supervisors behave at different developmental levels and how supervisors progress from one stage to the next, as well as how supervisors might expand and develop their skill set and knowledge regarding supervision. The formulation of good research questions for further empirical investigation is contingent on a systematic process of filtration in which the methodological quality and rigour of studies are assessed. This process of filtration results in a consolidation of the body of literature that is integral in facilitating the postulation of further or future research (Higgins & Green, 2006).

Whitman et al. (2001) reported on programmes or strategies dedicated to enhancing supervision skills and the capacity for research supervision. These programmes vary extensively in terms of duration, format, content, who teaches the program, and for whom the program is designed. A few examples include preparatory two-semester seminars, formal supervisory courses, workshops, brief in-service training programs, and informal conferences and study groups (Whitman et al. 2001).

The strategies aimed at enhancing supervisor capacity are reported to be extremely effective, improving the overall experience of supervision and increasing postgraduate student throughput (Granello et al. 2008, Baker et al. 2002). However, these reports are of findings from primary studies which make comparisons difficult without a common denominator that evaluates the studies for methodological coherence and rigour. Hence there is a need for filtered information that systematically evaluates the quality of methodology before attempting to summarise the findings. Such a process consolidates the available literature by distinguishing between research of good and poor quality, as well as providing the means for meaningful comparison and synthesis of the findings.

In summary, the brief review of the literature on strategies to enhance or develop supervision skill and capacity identified the need for filtered information for the purposes of summation or consolidation of the literature and formulation of future research directives. Thus the present study attempted to address the need for filtered information by conducting a systematic review of the literature reporting on strategies aimed at developing and enhancing supervision capacity.

Chapter Two: B

2.7. *The Parent Study*

The present study formed part of a parent study that has been funded by the National Research Foundation (NRF) entitled "Research capacity building: A concept map of factors contributing to developing research productivity in postgraduate students and new academic staff". Below is a brief description of the parent study and the relative placement of the present study:

Postgraduate students are understood to develop a certain level of academic capacity during, as well as subsequent, to their studies. It is thought that they develop the capacity to work independently, as well as in a group, to conduct independent research projects, to self-direct and evaluate their own work (self-supervision). Ahead of qualification, it is expected that graduates be able to supervise other students and to reproduce as either novice academics or researchers. However, research revealed that recently appointed academics struggle with the transition to academia and frequently feel insufficiently equipped to take on the task of supervision regardless of elapsed time since graduation.

The study attempts to assemble a concept map of the elements contained in developing research capacity in postgraduate students and novice academics at identified institutions of higher education in the Western Cape. The aims of the study is to identify the elements of research capacity as contained in the process of thesis supervision, the perceptions of stakeholders concerned with the process of facilitating the development of research capacity in the target populations, surveys of the student perceptions and findings summarised from the existing body of literature (systematic reviews). The final concept map will be extracted from data produced from four stages of research. Conceptualisation of each stage occurred independently and will include its own methodological elements. The first stage (stage 1)

includes four systematic reviews which explore published findings on: (1) supervision training, supervision models and guidelines to supervision that help enhance supervision capacity. This is also the present systematic review. (2) Interventions with new academics to enhance research productivity (supervision and publication). This systematic review considers and explores interventions with new academics that can be utilised to enhance their research productivity in order to ensure, publication, government funding and good supervision practice. (3) Interventions with students aimed at completion of research requirements. This systematic review takes into account the supervisory process and how it aids or hinders the academic growth of students, it also explores interventions aimed at students that will assist with their completion of research requirements. (4) The supervisor and students variables (demographic and personality/psychological) that impact completion of research requirements. The final systematic review looks at the impact that supervisor-student variables has on the completion of research requirements. The Parent Study adopted a time frame of 2003 and 2013 on the premise that the most recent or current literature provided evidence of best practice. The second stage (stage 2) focuses on the construction of a questionnaire that evaluates various components of thesis supervision that could facilitate or hinder the development of the capacity to conduct research autonomously. During the third stage (stage 3) the questionnaire will be implemented in a full survey, while the fourth stage (stage 4) is a qualitative study of the perceptions of stakeholders.

Chapter Three

Methodology

3.1. Aim of the study:

The aim of the present study was to establish an empirical base of filtered information/literature reporting on strategies to enhance supervision capacity.

3.2 Objectives:

a) To determine the theoretical orientation or underpinning (theoretical framework) of the strategies.

b) To determine and examine the content of the strategies and nature of activities implemented.

c) To explore the evidence that is provided for the efficacy of strategies.

3.3 Research design:

A systematic review was adopted as the design for the present study. A systematic review is a means of identifying, evaluating, summarising and interpreting the available individual (primary) studies and research findings that are relevant to a particular research question or topic (Centre for Reviews and Dissemination [CRD], 2009). This process is referred to as filtration and is supposed to make the available evidence more accessible (Cochrane Collaboration, 2013).

A systematic review is considered to be the highest level of evidence on the hierarchy of evidence, and it utilises a very structured method that is always clearly articulated at the beginning of the review (Cochrane Collaboration, 2013). Uman (2011) reports that systematic reviews usually involves a detailed and comprehensive

plan and search strategy, with the goal of reducing bias by identifying, appraising, and synthesising relevant studies on a specific topic. According to the CRD (2009) systematic reviews are often written by a review team who manages and conducts the review, as well as provide a comprehensive assessment of the relevant research or studies relating to a specific topic or question. The feature of having multiple reviewers working together on one particular review serves to minimise human errors and bias. Therefore it is important for systematic reviews to be transparent and well documented; due to the fact that reviewers might not agree on every decision that is made during the process of conducting the systematic review (Uman, 2011).

A systematic review has certain defining features, such as defining and addressing the review question; identifying the methods that will be utilised in order to perform the review; explicitly identifying inclusion and exclusion criteria, documenting a distinct search strategy so that readers may access the rigour, as well as identifying a clear retrieval strategy (Uman, 2011). The following are advantages of conducting a systematic review: (1) it provides a summary of the existing evidence regarding a specific topic which allows the reader to access consolidated results of huge amounts of information; (2) it identifies any gaps in the existing body of literature in order to suggest areas for further research; (3) it also provides a framework for arranging new research activities; (4) it is replicable, due to the structured method it can be replicated by other researchers; and (5) a systematic review is flexible enough so that it can be updated on a regular basis; in the event of new literature surfacing concerning the research topic (CRD, 2009).

3.3.1 *Inclusion criteria:* The inclusion criteria for this study is presented below in four categories namely, 1) time frame; 2) types of participants or target group; 3) type of studies and 4) additional criteria. Below is a brief exposition of each.

3.3.1.1 *Time Frame:* The time frame for the present study was informed by two considerations: First, the parent study included articles published between 2003 and 2013 based on the assumption that most recent or current literature provided evidence of best practice. Thus this time frame was important to align the two studies. Second, an initial and independent exploration of the body of literature revealed a substantial amount of publications between 2000 and 2003 that were excluded from the time frame of the parent study. For the sake of comprehensiveness the time period for the present study was extended to include literature from 2000 – 2013.

3.3.1.2 *Types of participants:* The review considered studies that included research supervisors (novice and experienced) as the participants. The supervisors had to be clearly identified as the unit of analysis (in part/whole) to ensure that studies were included that focused specifically on the capacitation of research supervisors.

3.3.1.3 *Types of studies:* Studies eligible for inclusion could utilise any design element provided that they were reporting on interventions or strategies aimed at supervisors (novice or experienced) such as supervisor training and development. The outcomes could take on quantitative or qualitative forms, triangulation or mixed methodologies.

3.3.1.4 *Additional criteria:* Only articles that were available in full-text through the identified databases were considered for inclusion. The process of critical appraisal or

evaluation of methodology required more detail than usually included in abstracts. Thus the availability of full text articles was a prerequisite for the chosen design and methodology of the present study. Furthermore articles had to be written or translated into English.

3.3.2 *Exclusion criteria:* Studies that did not meet the inclusion criteria needed to answer the research or review questions were excluded. Studies were excluded if they were not full-text articles and if they were not published within the elected time frame. Studies that did not include the target group that was identified for inclusion were excluded. As mentioned before, the parent project included three other systematic reviews. The inclusion criteria for each individual study were different, but there was a possibility of duplication of studies across those reviews despite clarification of inclusion and exclusion criteria due to unanticipated factors. There may be a greater potential of overlap occurring between the present study and that of the study "Interventions addressing research capacity development in new academics". This was mainly due to the similarities between the two studies, such as capacity development. A protocol was established to address possible duplication. Duplicates would be discussed between the researchers involved and the supervisor and the outcome was determined on a case-by-case basis. Those discussions would be recorded as part of the operational process. There were certain studies highlighted by each of the reviewers that they thought would be useful in the other reviews. These studies were sent around to each of the applicable reviewers who would then decide to either include or exclude those studies. The studies were categorised under "records identified through other sources" in the operational process. The outcome of the operational processes is discussed in Chapter Four.

3.4 **Review Process:**

The systematic review was executed at the following four levels namely Identification, Screening, Eligibility and Summation. Each level included operational steps.

3.4.1 *Level 1: Identification* The identification of potential articles was achieved following a retrieval strategy that included three operational steps namely: (1) Keyword identification; (2) Database search and (3) Reference mining.

3.4.1.1 *Keyword Identification:* A limited search of PsychArticles and EduCat was conducted to analyse the keywords contained in the title, abstract, and index terms of relevant articles. The limited search was conducted on these two specific databases because PsychArticles covers publications in most social science disciplines and EduCat covers publications in education and social science disciplines. The search was conducted first and foremost to determine whether a body of literature exists that pertains to the research topic of the present review. The initial search of these two databases also served as a pilot test of various keywords.

A provisional list of keywords was identified that included the following: supervisor training, supervisor interventions, interventions used to enhance supervision, supervision capacity, supervisor development, postgraduate research, postgraduate output, research supervision, research advisor/sponsor and postgraduate research. These keywords were combined in a series of strings to determine the strings that were most likely to yield productive searches. The final keywords were: research supervision, research adviser, training and development, supervision capacity, interventions used to enhance supervision, supervisor training, supervisor development, supervisor interventions, and postgraduate research.

3.4.1.2 *Database Search*: All identified keywords and index terms were used to conduct a comprehensive search using databases offered in the library of the University of the Western Cape. The databases are organised according to disciplines with some databases occurring in multiple disciplines. For the purposes of the present study three areas were identified namely; Health, Education and Social science. Table 3.1 summarises the disciplines included in each section:

Table 3.1: List of Disciplines

Health/Education	**Social Science**
School of Public Health	Anthropology
Human Ecology	Sociology
Dietetics	Industrial Psychology
Nursing	Women and Gender Studies
Occupational Therapy	Psychology
Physiotherapy	
Social Work	
Sports, Recreation and Exercise Science	
Education	
Natural medicine	

Each discipline is reflected in the library with core and additional databases (see Appendix A for complete listing). The researcher then determined patterns across the identified disciplines and then distilled a composite list of core and additional databases that was adopted for the comprehensive database search. See Table 3.2 below for a delineation of core and additional databases for the present study:

Table 3.2: Final List of Databases

No.	Databases
	Core Databases
1.	Academic search complete
2.	JSTOR
3.	SAGE Journals Online
4.	SCOPUS
5.	Science Direct
6.	Cochrane Library
7.	SpringerLink
8.	Oxford Online Journals
9.	Wiley Online Library
10.	Google Scholar
11.	SocINDEX
	Additional Databases
12.	CINHAL
13.	Health Source Nursing Academic Addition
14.	PsycArticles
15.	ERIC
16.	MEDLINE
17.	SA ePublications (Sabinet)

Boolean phrases was used during the database search, it involves using words such as “and” or “or” to link keywords to search for, thus creating a string of keywords (Blanche, Durheim & Painter, 2006). By using a number of keywords together and linking those with Boolean phrases such as “and” or “or”, one can increase the power and efficiency of a search by a great deal. Three strings of keywords were used during the database search, they were as follows: (1) research supervision, or research adviser, or training and development, or postgraduate research; (2) research supervisor, or supervision capacity, or interventions used to enhance supervision; (3) supervisor training, or supervisor development, or supervisor interventions.

3.4.1.3 *Reference mining and other sources:* Additional references were identified using reference mining and other sources. The reference lists of all identified reports and articles were searched for additional studies. Potential records were also identified by the other researchers in the team who passed along references that they thought suitable from their own searches

In each of operational steps the total number of records identified was recorded in the title summary – extraction sheet (Appendix B). The duplicates were removed which gave the primary reviewer a true reflection of the number of records for the search. The titles that were deemed suitable after the identification level proceeded to the Screening level. Titles deemed not suitable, were excluded. This step also involved checking for duplicates across the systematic review studies as mentioned before.

3.4.2 *Level 2: Screening*

Screening was done by evaluating the abstracts of titles successfully identified in Level 1 according to the inclusion and exclusion criteria stipulated earlier. The primary reviewer along with the additional reviewer carried out the abstract screening stage, which involved looking at all the abstracts of the records that were included after title screening and then deciding as a pair which records will be included based on the review criteria. The information of all abstracts screened were recorded in the abstract summary – extraction sheet (Appendix C). Abstracts that were not suitable were excluded.

3.4.3 Level 3: Eligibility

Full text versions of abstracts that were successfully screened were retrieved for review. The full text articles were evaluated for methodological quality, rigour and coherence using a critical appraisal tool. The information of all full texts screened were recorded in the full text summary – extraction sheet (Appendix D).

Critical appraisal tool:

Many of the critical appraisal tools that were available were either informed by the designs of a specific study or they were informed by the published guidelines of qualitative and quantitative studies respectively (Katrak et al. 2004). The tools that were reviewed by the supervisor and primary reviewer were informed by the designs of specific studies or by the guidelines of qualitative and quantitative studies. Thus, they did not provide a broad enough assessment strategy that would be appropriate to use within the present study, as well as the parent study.

Below is a list of the assessment tools that were considered and reviewed, but were ultimately not chosen for implementation within the present study: (1) the Critical Appraisal Skills Programme (CASP) (Public Health Resource Unit, 2006) offered eleven questions to assess case control studies; (2) in a different tool the CASP offered twelve questions to assess cohort studies (PHRU, 2006); (3) the Critical Review Form – Qualitative Studies (Version 2.0) was designed for qualitative studies (Letts et al. 2007); (4) the Evaluation Tool for Quantitative Research Studies – was designed for quantitative studies and thus was not appropriate for the current study (Long et al. 2002); (5) the Evaluative Tool for Mixed Method Studies (Long et al. 2002); and (6) Randomised Controlled Trials which was another variation of the CASP (PHRU,

2006). The main reason why the tools did not work with the present study, was that they were too simplistic and lacked real depth to make a thorough evaluation of studies. Another factor that reinforced the decision to create a tool, was due to the fact that all of the studies did not share the same design features, therefore it would have been time consuming and monotonous to use a different tool for each study. Therefore the supervisor opted to design an assessment tool, which assessed studies based on the appropriateness of designs. The original tool was constructed by Smith, Franciscus and Swartbooi (under review). It was used by the reviewers because of its ease of administration, logical coherence, and content sufficiency. The tool has eight sections that assess the following domains: purpose, study design, ethics, data collection, data analysis, sample, results, and conclusion. Each section included between 3 and 6 items.

The Critical appraisal tool (Appendix E) was revised so that it could, at the methodological level, assess in parallel forms for the conventions of qualitative and quantitative methods or approaches. The critical appraisal tool produced a total score that was expressed as a percentage. Each article had the potential to score weak (0-40%), moderate (41-60%), strong (61-80%), or excellent (81-100%). The review team along with the supervisor worked through the critical appraisal tool to ensure that it is appropriate to use for the study. This was done during a workshop in which all four reviewers were present with the supervisor. The team of reviewers went through each section of the critical appraisal tool under the supervision of the supervisor, and suggestions to change certain scores were made and voted on by the team to ensure a consensus among the reviewers regarding each change or modification made to the tool. During the workshop the critical appraisal tool was calibrated to ensure that it would be suitable for all of the reviews as well as different study designs. Thus, an

initial pilot test was conducted that assessed three studies of which they consisted of one quantitative study, one qualitative study and one mixed methods study. The results of each of the studies were satisfactory. The tool that was designed acted as a uniform tool that was used in the parent project as well as in each of the four reviews.

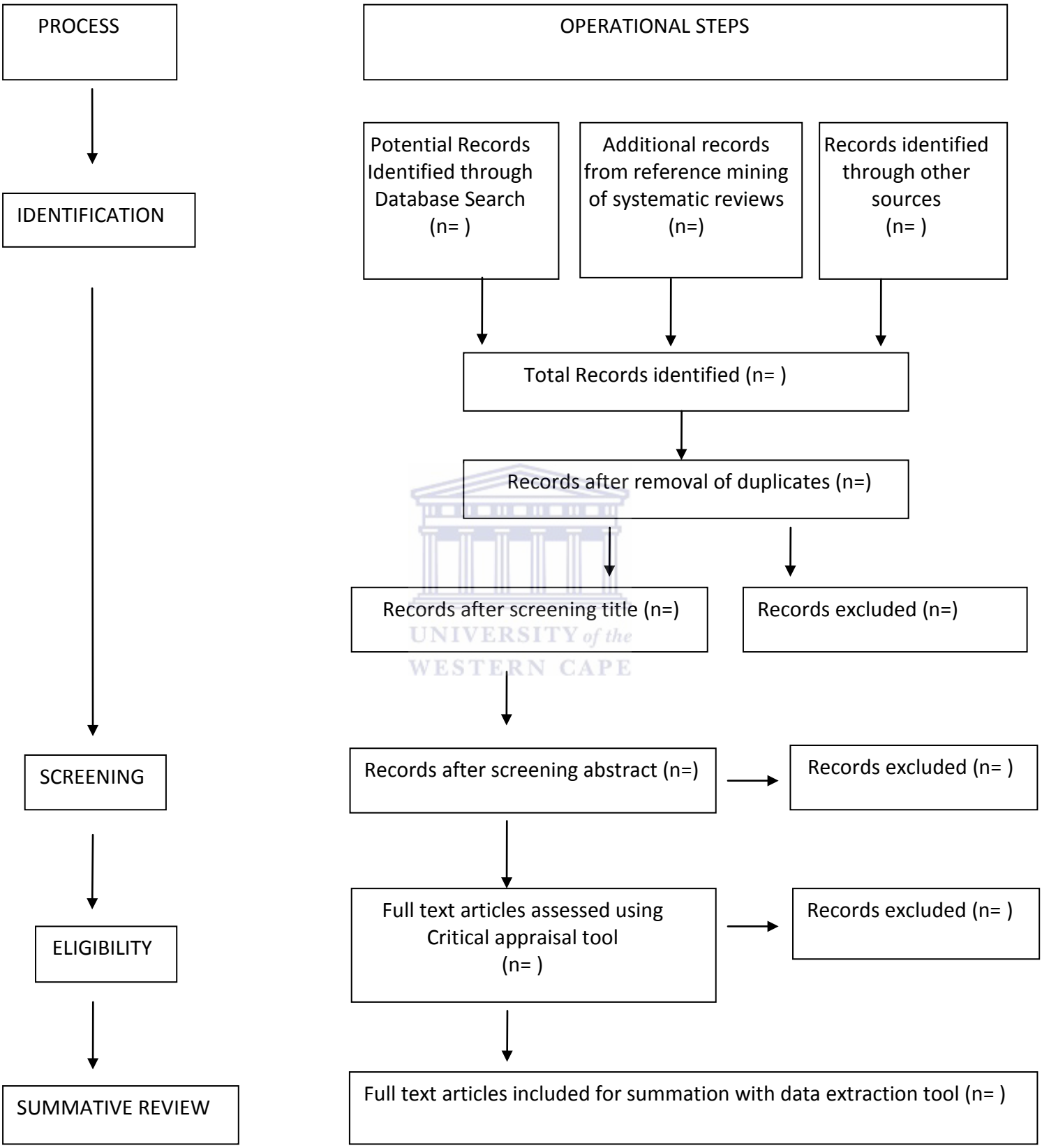
Threshold scores: The minimum threshold score required for inclusion was set at 50% i.e. poor scoring articles were excluded while moderate, strong and excellent articles were included.

3.4.4 Level 4: Summation

This phase included two operational steps namely 1) Data extraction and 2) Meta-synthesis. All articles that satisfied the threshold score underwent data extraction. The structure of the data extraction sheet was informed by the strata of the analysis and the research objectives. The completed tables were checked for accuracy. The supervisor then checked the tables for accuracy. The completed tables were used to prepare a final summation.

Figure 3.1 below entitled, “Diagram of Review Process”, is a flow chart that displays all the different steps in the review process. It identifies all of the processes along with their corresponding operational steps. The processes include: “Identification”, “Screening”, “Eligibility”, and “Summative Review”.

Figure 3.1: Diagram of Review Process



(Liberati et al. 2009)

The number of records after the removal of duplicates was recorded under the heading: “Records after removal of duplicates”. After gaining a true reflection of the number of records, the primary reviewer along with the additional reviewer carried out the next stage which was the title screening, and then recorded the total number of articles for inclusion based on the title alone, under the heading: “Records after screening title”. In the same stage the number of records that was excluded was recorded under the heading: “Records excluded”.

The operational steps identified “Records after screening abstract” and “Records excluded” on Figure 1. The records that satisfied the inclusion criteria proceeded to the third level where they were assessed for eligibility.

The articles that were assessed using the critical appraisal tool were recorded under the heading: “Full text articles assessed using Critical appraisal tool”. The records that were excluded were also recorded under the heading “Records excluded”. The articles that were included after the critical appraisal tool assessment were recorded under the heading “Full text articles included for summation with data extraction tool”.

3.4.4.1 *Data Extraction:* A data extraction sheet was designed to identify the relevant information such as author, date, type of intervention, population and outcomes. All articles that were included during the full text assessment and satisfied the threshold score underwent data extraction. The structure of the data extraction sheet was informed by the strata of the analysis and the research objectives. All articles included during the full text assessment underwent a process of data extraction. The Data Extraction Table consisted of three main sections namely; “General Description and Strategy”, “Methodological Appraisal” and “Results” (Appendix G). The appendix

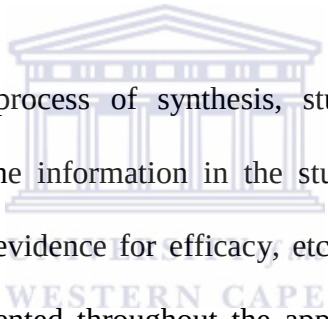
consisted of empty tables for the purposes of illustrating the structure. Each main heading was represented in tabular form where the relevant sub-headings formed columns. All completed tables were checked for accuracy and then used to write the final report.

3.4.4.2 Meta-synthesis:

The presented study used a meta-synthesis of the findings of included studies. Walsh and Downe (2005) suggested that a meta-synthesis attempts to integrate results from a variety of different but interrelated studies. The technique is intended to be interpretative rather than aggregating. Screiber et al. (1997) defines a meta-synthesis as the connecting and breaking down of findings, as well as identifying, examining, discovering essential features and, in some manner, combining phenomena into a transformed unit. A meta-synthesis can be utilised as a tool to extend knowledge due to the fact that it can lead to new interpretations of research, as well as the development of new theories. Jensen and Allen (1996) assert that a meta-synthesis involves rigorously examining and interpreting the findings (compared to the raw data) of a number of qualitative research studies. According to Finfgeld (2003) the goal of a meta-synthesis is to produce a new and integrative interpretation of findings that is more substantive than those resulting from individual investigations.

There are three main types of Meta-synthesis as suggested by Sandelowski, Docherty, and Emden (1997), they are namely: (1) Theory Building – this form of meta-synthesis amalgamates the findings on a theoretical level to build a provisional theory; (2) Theory Explication – this form of meta-synthesis is a way of reconceptualising the original phenomenon. It is comprised of three sections, namely

the *reciprocal stage*, the *refutational stage*, and the *line of argument*. (3) Descriptive – this form of meta-synthesis provides an expansive description of the research phenomenon, as well as providing a more comprehensive analysis of a phenomena. These forms of meta-synthesis are not discrete, but are complimentary. The present study incorporated descriptive and theory explicative meta-syntheses. The parent project only incorporated descriptive meta-synthesis; however, the present study included theory explication to further enhance an understanding of supervision capacity. Walsh and Downe (2005) suggested that there are various approaches to conducting a meta-synthesis and that the final choice reflects the choice of the researcher as well as the aim of the study.



To assist the process of synthesis, studies were ranked based on the comprehensiveness of the information in the study e.g. theoretical underpinnings, scope of the strategies, evidence for efficacy, etc. (also reflected in the objectives). The convention implemented throughout the appraisal process was to rank studies based on methodological rigour (strengths and weaknesses as measured by the critical appraisal tool) however, the inverse relationship between internal and external validity was considered (Downe et al. 2007). Therefore, in this instance the critical appraisal tool was assessed for baseline confidence in internal validity and the meta-synthesis focused on the details of the study for the purposes of generalisation, description and theory-explication.

The primary reason for utilising a meta-synthesis was due to the fact that it added uniformity across the studies in stage 1, and ties in with the Parent Project. Incorporating both a descriptive and theory explicative meta-synthesis helped add a

degree of comprehensiveness to the present study. It ensured that each and every possible avenue within the included studies were explored and considered within the parameters of descriptive and theory explication meta-synthesis to deliver a complete summation. The descriptive meta-synthesis incorporated two sections: (1) a data extraction section which consist of three tables “General Description and Strategy”, “Methodological Appraisal” and “Results”; as well as (2) a rank order scale which consist of one table detailing the different threshold scores obtained by each individual study. The theory explicative meta-synthesis is comprised of three stages namely; (1) The Reciprocal stage; (2) The Refutational stage; and (3) The Line of Argument. This study conducted a meta-synthesis according to the 3 stages outlined by Noblit and Hare (1988) namely (1) the reciprocal stage – this stage entails a search for phrases, metaphors, themes and ideas that occur repeatedly across the included data (Downe, 2008).

The primary reviewer examined the findings and highlighted certain themes which resonated with the existing body of literature. The search was conducted along the lines of thematic analysis according to Braun and Clarke (2006). (2) The refutational stage – involved a conscious search for phrases, metaphors and themes from the findings that refute or stand in opposition to the existing body of literature. (3) The line of argument – Constructing a statement that can summarise and most completely express the emerging patterns across the included studies (Downe, 2008). The primary reviewer summarised the key points of the first two stages, but also made a case for future research based on the emerging patterns identified across the findings and literature. The reviewer also addressed the objectives for the study, as highlighted in Chapter Three, in the line of argument.

3.5 Method of review:

All levels of the review were conducted by the primary reviewer and an additional reviewer. All of the disagreements were resolved through discussions. There were three minor disagreements; however, all of them were resolved without having to involve the supervisor. A record of all discussions and outcomes was kept. In the events where there were stalemates, the supervisor made the final decision. Reviewers worked in pairs during the Review Process to ensure consistency with the recommended conventions in conducting systematic reviews (Higgins & Green, 2006). It is recommended that reviews be conducted by more than one person. This will guarantee that tasks such as selection of studies for inclusion and data extraction can be executed by at least two people independently, increasing the likelihood that errors are detected (CRD, 2009; Uman, 2011; Cochrane Collaboration, 2013). One of the main principles of collaboration is enabling wide participation. The critical appraisal tool workshop that was conducted among the four reviewers served as an appropriate example to highlight the level of collaboration during the systematic review process. The primary reviewer and additional reviewer also collaborated on the critical appraisal of one another's studies.

3.6 Ethics Considerations

Permission to conduct the present study and ethics clearance was obtained from the appropriate committees at the University of the Western Cape (UWC) (Registration number: 14/5/18). The information sources used in this study were all previously published and were thus part of the public domain; therefore no additional permission for access were necessary. The primary reviewer was a registered student at UWC for the 2014 and 2015 academic years, which granted the reviewer access to the university

library. The systematic review formed part of stage 1 of the Parent project and contributed to the overarching aim of establishing a body of empirical evidence in the literature. The entire project was funded by the NRF. Ethics clearance for the project was obtained from the Senate Research Committee of UWC (Registration number: 13/10/57) to conduct the study (Appendix F). The study was awarded funding from the National Research Foundation (NRF) including human capacitation in the form of scholarships for Masters level studies. The project was collaborative, the smaller studies tied into the parent study and researchers worked together on assessing the methodological quality of all conducted research. Each systematic review was independent and possessed the quality to stand on its own as an individual study outside of the parent study. Given the collaboration between the researchers on various aspects of the larger project, care was taken to avoid plagiarism.

Chapter 4

Results & Discussion

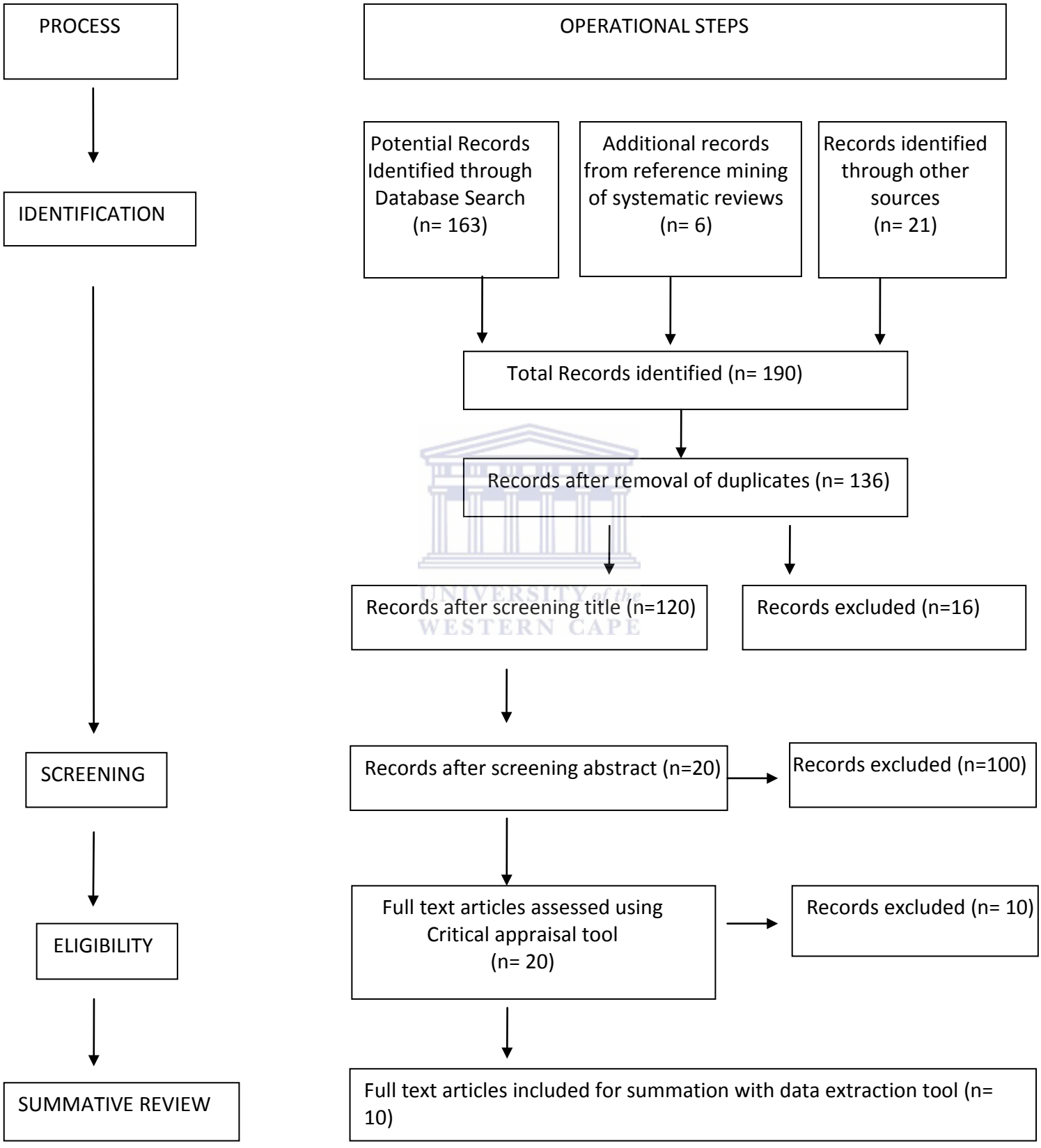
4.1. Introduction:

This chapter presents an integrated results and discussion. The chapter has been structured in such a way as to clearly present the results at three levels namely: 1) process results; 2) descriptive meta-synthesis and 3) theory explicative meta-synthesis.

4.2. Process results:

As mentioned before Figure 3.1 provided a flowchart that summarized the levels and operational steps of the systematic review methodology. Figure 4.2 below, is an expanded version of the same flow chart including the results at each operational step.

Figure 4.2: Process results of Level and Operational steps



(Liberati et al. 2009)

Step 1: The title search across all databases yielded a search result of 163 hits. 6 articles were added through additional records from reference mining of systematic reviews, and 21 more articles were gained through records identified through other sources, therefore bringing the total amount of articles to a figure of 190. Once all duplicates had been removed the number dropped to 136. There were no duplicates identified across the other reviews. From these, 120 titles were selected for possible inclusion based on the results of the title screening.

Step 2: During the abstract review process, 100 articles were excluded and 20 articles were included. The primary reason for exclusion was that articles did not report on primary research (n=83). Other reasons for the exclusion of articles were based on the fact that some articles did not address the research question (n=6), and 11 abstracts were unclear and contained little important information (n=11).

Step 3: As mentioned before in the methodology section; the threshold score was set at 50%, each article had to achieve this score or higher to be considered for inclusion. Twenty (20) articles were reviewed as full text. After the assessment using the critical appraisal tool, 10 articles were excluded and 10 were included.

4.3. **Descriptive Meta-synthesis:**

4.3.1. *Data Extraction*

The data extraction process is the first section of a two part descriptive meta-synthesis. The data extraction process consists of four tables, namely, General Description and Strategy, Methodological Appraisal and Results.

4.3.1.1. *General Description and Strategy:*

Table 4.1 summarises the general descriptions for each of the included studies.

Table 4.1: General Description and Strategy (n=10)

Authors	General Description			Strategy	
	Target group	Academic field	Geographical location	Target skill	Explicit/Implicit
Severinsson (2012)	Postgraduate students and academic nurse supervisors	Nursing management: Research supervision	Sweden	Supervision content and structure and function	Implicit
Lessing and Lessing (2004)	Academics	Higher education: Research supervision	South Africa	Supervision content and training	Implicit
Lidell, Hildingh and Arvidsson (2008)	Supervisors	Nursing science: Research supervision	Sweden	Supervision content, process and function	Implicit
Franke and Arvidsson (2011)	Supervisors	Higher education: Research supervision	Sweden	Supervision structure	Implicit
Abdullah and Evans (2012)	Students	Higher education: Research supervision	Australia	Supervision training	Implicit
Vilkinas (2008)	Senior faculty members	Higher education Research supervision	Australia	Supervision content, structure and function	Implicit
Armstrong (2004)	Supervisors and students dyads	Management education: Research supervision	United Kingdom	Structure and function	Implicit
Lessing and Schulze (2003)	Supervisors and students	Higher education: Research supervision	South Africa	Factors facilitating or hindering research supervision processes and outcomes	Implicit
McFarlane (2010)	Students and supervisors (participant observer)	Higher education: Research supervision	South Africa	Form and function of supervision Key success factors	Explicit
Calma (2011)	Officials from the Commission on Higher Education, directors of research centres, university executives and academic staff	Higher education: Research supervision	Philippines	Research training policy and practice	Implicit

a. Target group: The included studies targeted supervisors independently or in dyads paired with students or trainees, as well as independently targeting students; academics; senior faculty members; and finally officials from the Commission on Higher Education, directors of research centres, university executives and academic staff. Two out of the ten studies targeted supervisors independently; (Lidell, Hildingh & Arvidsson, 2008; Franke & Arvidsson, 2011). Lessing and Schulze (2003) and McFarlane (2010) targeted both supervisors and students separately within their respective studies. Lessing and Schulze (2003) utilised a two-phased model for the empirical part of research, in which the first phase (quantitative) the students were surveyed. That was followed by a second phase (qualitative) which involved the supervisors. The objective was to determine the compatibility of the expectations of students and supervisors. McFarlane (2010) conducted group supervision with two groups of students as a participant observer. However; Armstrong (2004) targeted supervisors and their students as dyads in one study. Four studies targeted academics (Lessing & Lessing, 2004); students (Abdullah & Evans, 2012); senior faculty members (Vilkinas, 2008); and officials from the Commission on Higher Education, directors of research centres, university executives and academic staff (Calma, 2011) respectively. Finally, Severinsson (2012) targeted postgraduate students and academic nurse supervisors.

b. Academic Field: All ten studies included research supervision as the field of study. However each study had an overarching academic field. The academic fields include higher education, nursing management, nursing science, and management education. Seven studies fall within the parameters of higher education such as, Lessing and Lessing (2004); Franke and Arvidsson (2011); Abdullah and Evans (2012); Vilkinas (2008); Lessing and Schulze (2003); McFarlane (2010); and Calma (2011). The three remaining studies fall within nursing

management (Severinsson, 2012); nursing science (Lidell et al. 2008); and management education (Armstrong, 2004) respectively.

c. Geographical location: The included studies varied in terms of geographical location, it consisted of four studies that were conducted in developing countries such as South Africa and the Philippines, as well as six studies that were conducted in developed countries, such as Sweden, Australia, and the United Kingdom. Of the four studies conducted in the developing countries, three studies were conducted in South Africa (Lessing & Lessing, 2004; McFarlane, 2010; Lessing & Schulze, 2003); and one study was conducted in the Philippines (Calma, 2011). Of the six remaining studies conducted in developed countries, three studies were conducted in Sweden (Franke & Arvidsson, 2011; Lidell et al. 2008; Severinsson, 2012); one study was conducted in the United Kingdom (Armstrong, 2004); and two studies were conducted in Australia (Vilkinas, 2008; Abdullah & Evans, 2012).

The diverse geographical nature of the included studies reinforced the statement made by McCallin and Nayar (2012) who asserted that researchers in both developed and developing regions of the world have suggested that research institutions and institutions of higher education require supervisors that are highly skilled and competent enough to contribute to the knowledge economy.

d. Target Skill (Explicit or Implicit): The ten included studies reported on target skills that can be regarded as features of supervision that form the basis of models for supervision practice. The features that were highlighted across the ten studies were synthesized into five thematic categories namely the structure, content, form, function, and process of supervision. The structure of supervision refers to how supervision itself is structured – such as

monitoring the research process, developing an academic role and providing research-related tasks. The content of supervision concerns the competencies and skills that a supervisor possesses, e.g. problem-solving, supervision preparation and communication. The form of supervision speaks to the format of supervision, such as group supervision, one-on-one supervision, or an integrated online form of supervision. The function of supervision refers to the function of the supervisor, e.g. cognitive style - is the supervisor analytic or philosophical? This of course extends to the psychosocial attributes of supervisors as well. Finally, the process of supervision can be understood as how the learning process is constituted between the student and supervisor, e.g. planning of research, research methodology, meeting with the supervisor, feedback, and response time.

The included studies all reported on target skills, however, nine studies reported on implicit target skills as follows; Severinsson (2012) - supervision content and structure; Lessing and Lessing (2004) - supervision content; Lidell et al. (2008) - supervision process and content; Franke and Arvidsson (2011) - supervision structure; Abdullah and Evans (2012) - structure and function of supervision; Vilkinas (2008) - supervision structure ; Armstrong (2004) - structure and function; Lessing and Schulze (2003) - factors facilitating or hindering research supervision processes and outcomes; Calma (2011) - research training policy and practice. One study reported explicitly on a target skill, McFarlane (2010) - form and function of supervision/key success factors.

4.3.1.2. Methodological Appraisal:

Table 4.2 represents all of the key methodological appraisal properties for the six included studies.

Table 4.2: Methodological Appraisal (n=10)

Authors	Methodological Appraisal					
	Theoretical orientation	Design	Sample type	Sample size	Data collection	Data analysis
Severinsson (2012)	Not reported	A mixed method design	Purposive (inferred) The sample consisted of postgraduate students and academic nurse supervisors. The participants were invited to participate when attending regular research seminars.	N = 15 N = 8 postgraduate students N = 7 supervisor	The 25-item questionnaire was designed to elicit quantitative data. Interviews were used to elicit qualitative data.	Statistical Package for the Social Sciences (SPSS). The analytic process involved both confirmative factor analysis (CFA) and explorative factor analysis (EFA).
Lessing and Lessing (2004)	Not reported	A literature study was utilised for this study. It was coupled with an empirical investigation by means of focus group interviews of the phenomenon highlighted in the literature.	Purposive sampling.	Not reported	Focus group interviews by means of workshops facilitated by researchers.	Thematic analysis (inferred) Researchers used strategies such as induction, synthesis, bracketing and logical thinking to identify different themes and categories. The researchers processed the raw data to identify repetitive themes mentioned in the workshops. The emerging information was interpreted and explained to construct meaning to answer the research question.

Lidell, Hildingh and Arvidsson (2008)	Not reported	A single case study, which has a descriptive design with a qualitative approach.	Purposive (inferred) Telephone contact was made with a research supervisor experienced in pedagogic.	N = 1	Interview	Content analysis
Franke and Arvidsson (2011)	Phenomenography	The phenomenographic research approach.	Purposive (inferred) Supervisors were phoned and informed about the purpose of the study, the scope of the interview, and that participation was voluntary.	N = 30	Semi-structured interviews. Each interviewee was asked the same questions in each question area.	Qualitative analysis of the interview data. Utilised in order to search for similarities and differences in the supervisors' descriptions of supervising.
Abdullah and Evans (2012)	Not reported	Online research survey	Purposive (inferred)	N = 134	The Postgraduate Research Experience Survey (PRES) was administered online to gauge the research experiences of postgraduates.	Three instruments were used to measure the postgraduates' psychological attributes. The Self-Efficacy Subscale, the Learning Strategies Subscale, and the Social Support Subscale.
Vilkinas (2008)	Integrated competing values framework (ICVF)	Investigative design	Purposive sampling. Thirty senior faculty members from seven Australian institutions	N =25	A structured interview format was adopted for this study.	Content analysis of the interview data. The interviews were taped, transcribed, and content analysed in hard copy by the researcher.
Armstrong (2004)	Not reported	a single variable study	Purposive (inferred)	N = 118 Supervisor – student dyads	Cognitive Style Index: analytic-intuitive dimensions A self-developed attitude scale measuring students' perceptions of the quality of supervision	Quantitative analysis (inferred) A second parallel scale was developed to test the instrument's reliability characteristics.

Lessing and Schulze (2003)	Not reported	A two-phase study	Purposive (inferred)	N = 75 – phase one (students) N = 28 – phase two (three focus groups) First focus group consisted of n = 7 full professors, the second group of n = 12 associate professors and some experienced senior lecturers, and the third group of n = 9 lecturers and other less experienced supervisors.	Data collection methods included focus groups, individual interviews and document analysis.	The data were divided into two broad categories, namely *satisfying aspects* and *issues experienced with postgraduate supervision*. Within these two broad categories a bottom-up strategy was adopted
McFarlane (2010)	Interpretive paradigm	Exploratory study utilising a qualitative research approach.	Not reported	N = 15 – two cohorts N = 10 and N = 5	Data gathering consisted primarily of participant (student) observation as they interacted with each other and with the researcher who was a participant observer.	The data analysis consisted of identifying categories as they emerged from the data, and then interpreting the categories.
Calma (2011)	Not reported	Quantitative research approach	Purposive (inferred)	N = 53	Semi-structured interviews and survey of academic staff via questionnaire.	Two methods were employed to analyse the survey data: thematic analysis and quantitative analysis.

a. Theoretical Orientation: Of the ten included studies only three studies reported on theoretical orientation, namely Phenomenography (Franke & Arvidsson, 2011); Integrated competing values framework [CVF] (Vilkinas, 2008), and Interpretive paradigm (McFarlane, 2010). The seven remaining studies did not report on this feature. This may simply be a case of the studies actually having theoretical bases, but failing to report on them because of publication conventions, such as journal requirements which state that authors need to meet a certain word count limit in order for their work to be published. In these instances publication bias would result in the exclusion of pertinent information that is perceived to be less important for publication.

There are a couple of implications to consider on the topic of the exclusion of theoretical orientations within seven of the included studies. The first implication deals with replication. All research should be replicable which is important to verify the process and findings of disseminated research from primary or secondary studies. Replication is contingent on sufficient information being provided in the published report or manuscript. As mentioned before only three studies reported on theoretical orientations and the remaining seven that did not cannot be fully replicated. Of particular importance is the challenge of implementing the strategies or interventions without the benefit of understanding the theoretical tenets that underpin them. The other option would be to contact the original authors and enquire about the theoretical orientation, but this will not guarantee a positive outcome. The second implication relates to the evaluation of the studies. Readers will not be able to perform a preliminary evaluation of published studies to determine whether they want to obtain more information.

b. Design: All of the ten included studies reported on this feature, however, each study utilised different designs. Severinsson (2012) reported a mixed method design, whereas

Lessing and Lessing (2004) utilised a literature study as well as an empirical investigation by means of focus group interviews of the phenomenon highlighted in the literature. Lidell et al. (2008) implemented a single case study, which has a descriptive design with a qualitative approach, and Franke and Arvidsson (2011) opted for the phenomenographic research approach. Abdullah and Evans (2012) used an online research survey as the basis of their design, and Armstrong (2004) utilised a single variable study. The four studies that remain each implemented an investigative design (Vilkinas, 2008); a two-phase study (Lessing & Schulze, 2003); an exploratory qualitative research approach.
(McFarlane, 2010) and finally a quantitative research approach (Calma, 2011).

Given that the authors of all ten studies reported on design features for their respective studies, it indicates that there is a level of importance assigned with reporting on the features of the study design. It may also possibly point to publication convention; that might make it mandatory for authors to report on features of their study design. This is ideal for both replication and evaluation of the studies.

c. Sample Type and Size: In terms of sample type; two studies, Lessing and Lessing (2004) and Vilkinas (2008), reported explicitly on the sample type, which was purposive sampling in both studies. One study, McFarlane (2010), failed to report on a sample type. While the remaining seven studies, Severinsson (2012); Lidell et al. (2008); Franke and Arvidsson (2011); Abdullah and Evans (2012); Armstrong (2004); Lessing and Schulze (2003) and Calma (2011) did not explicitly report on the sample type, but they included information that made it possible to infer the sample type.

The fact that inferences had to be made for seven studies and one study neglected to report on this feature at all compromised the task of evaluating the extent to which analyses were supported by the sampling strategy. Once again, the fairly systematic manner in which

explicit detail about sampling is excluded would appear to be a manifestation of publication bias.

Sample sizes on the other hand were reported in nine of the studies except in Lessing and Lessing (2004). The samples range from the smallest Lidell et al. (2008) being n=1 supervisor to the largest being n=118 supervisor-student dyads, Armstrong (2004). The average sample size of the nine articles that reported on this feature is 68. The average was calculated with the 118 supervisor-student dyads being reflected as 236 to account for the actual number of participants.

d. Data Collection: The process of data collection varied across the ten studies, however, six of the studies reported on using methods of data collection that were mostly qualitative in nature. Severinsson (2012) utilised a two-pronged approach in a 25-item questionnaire designed to elicit quantitative data and interviews to elicit qualitative data. Lidell et al. (2008) used an interview to elicit data from the participant, whereas Franke and Arvidsson (2011) utilised semi-structured interviews to collect data from participants. The Postgraduate Research Experience Survey (PRES) was administered online to gauge the research experiences of postgraduates in the study conducted by Abdullah and Evans (2012). Vilkinas (2008) adopted a structured interview format for the study. Finally, Calma (2011) implemented semi-structured interviews and survey of academic staff via questionnaire as methods of data collection.

The six studies did well to comment in part on the contextual appropriateness of their data collection methods, with Severinsson (2012) stating that the questionnaire was partly adopted from Kam (1997) and it covered the four major issues of supervisory style, research related tasks, as well as the importance and quality of research supervision. Lidell et al. (2008) mentioned that the interview was designed to focus on the informant's perceptions on

supervising doctoral students. Franke and Arvidsson (2011) intended to make an attempt to find a variation that reflected different aspects of research supervision in its pedagogical context. Abdullah and Evans (2012) cited that the survey was a valid and reliable measurement for their study, however, failed to report on further details in terms of contextual appropriateness. Vilkinas (2008) mentioned that the interview method of data collection was chosen as the most appropriate because of the exploratory nature of the study, and Calma (2011) stated that the interviews and questionnaires was designed based on predetermined themes and informed by earlier studies – in particular (Aspland et al. 1999) – and knowledge of the higher education system in the Philippines. None of the studies reported on pilot testing the instruments.

The remaining four studies reported on methods that were mostly qualitative in nature. Lessing and Lessing (2004) implemented focus group interviews by means of workshops facilitated by researchers. Armstrong (2004) utilised the Cognitive Style Index to measure subjects on the analytic-intuitive dimension of cognitive style. Lessing and Schulze (2003) included focus groups, individual interviews and document analysis. McFarlane (2010) gathered data, over a period of one year, through participant (student) observation as the students interacted with each other and with the researcher who was a participant observer.

In more general terms the four studies all reported on the experience of the field workers and participants. However, McFarlane (2010) mentioned that throughout the one year period of three-day contact sessions with a small group, the relationship between the supervisor and students became so natural that the interviews took the form of discussions in which questions and answers were discussed in open and relaxed manners. The author stated that the interaction as previously described can be identified in what Delamont (2002) refers

to as “reflexivity” – which refers to an endless cycle of interactions and perceptions which characterise relationships with other human beings.

e. Data Analysis: Lessing and Lessing (2004) and Armstrong (2004) did not explicitly report on methods of data analysis, but provided sufficient information to support inferences about the analysis employed. Lessing and Lessing (2004) used strategies such as induction, synthesis, bracketing and logical thinking to identify different themes and categories suggesting a form of thematic analysis (inferred). The researchers processed the raw data to identify repetitive themes mentioned in the workshops. The emerging information was interpreted and explained to construct meaning to answer the research question. Armstrong (2004) reportedly tested the instrument’s reliability characteristics and such psychometric properties require the use of statistical techniques (inferred. The remaining eight studies reported on data analysis such that the different methods of data analyses were explicit. The first two studies reported on features of statistical analysis. Severinsson (2012) reported that descriptive and inferential statistics were analysed using the Statistical Package for the Social Sciences (SPSS). The analytic process involved both confirmative factor analysis (CFA) and explorative factor analysis (EFA). The CFA was adopted for the factors as developed by Kam (1997). Alternatively, the EFA data were used for postgraduate students’ and supervisors’ views on the importance and quality of research supervision. Abdullah and Evans (2012) reported that three instruments were used to measure the postgraduates’ psychological attributes; The Self-Efficacy Subscale – was executed to gauge their confidence in learning and conducting research independently, while the Learning Strategies Subscale – was employed to measure their independent learning skills at postgraduate level. The Social Support Subscale was adapted from PRES.

Five of the six remaining studies reported only on features of qualitative analysis which mostly approximated content or thematic analysis using different approaches. Lidell et al. (2008) revealed that the data were analysed in accordance with content analysis (Graneheim & Lundman, 2004). The trustworthiness of the analysis was tested by means of comparison with the empirical data. Franke and Arvidsson (2011) used qualitative analysis of the interview data and utilised it in order to search for similarities and differences in the supervisors' descriptions of supervising. Vilkinas (2008) highlighted content analysis of the interview data as a method of analysis. The interviews were taped, transcribed, and content analysed in hard copy by the researcher. Lessing and Schulze (2003) reported that the data were divided into two broad categories, namely *satisfying aspects* and *issues experienced with postgraduate supervision*. Within these two broad categories a bottom-up strategy was adopted. McFarlane (2010) reported that data analysis was an ongoing process that consisted of identifying categories as they emerged from the data, and then interpreting the categories.

The sixth and final study, Calma (2011), reported on two methods to analyse the survey data: thematic analysis and quantitative analysis. The thematic analysis was selected as the most suitable tool for analysing the interview data and the qualitative responses from the academic staff questionnaire. The quantitative analysis was used for the rating scale and other "check-box" data from the academic staff survey questionnaire.

4.3.1.3. Results:

Table 4.3 represents the results for each of the six included studies.

Table 4.3: Results (n=10)

Authors	Results			
	Findings	Conclusion	Recommendations	Limitations
Severinsson (2012)	Problem-solving, research preparation, communication and interaction appear to be key aspects of supervisory style. The research-related tasks of research supervision comprised monitoring the research process, providing encouragement and critical comments on drafts as well as fostering an academic role. The perception of the atmosphere of the session was good and the supervisor's feedback on the text was deemed well-prepared and constructive. Overall satisfaction with the quality of the academic leadership was high.	Research supervision is a mutual, interactive process aimed at improving the supervisor's ability to be sensitive to the students' competence and limitations.	Additional research using different methods such as explorative and case studies is needed to determine and conceptualize key concepts of various supervisory models, for example encountering and becoming a member of the research discipline.	One limitation is that the sample is small and only used to explain the responses. A larger sample might have captured additional interrelated factors. A different approach could have been to highlight the differences and similarities between the two groups. One other limitation is that data were collected from only one university, even though it was a large and research-intensive one.
Lessing and Lessing (2004)	Administrative problems and the need for supervisor training were seen as important aspects in postgraduate supervision. The findings from the research indicated a need for supervisors to be trained in research supervision skills to meet the needs of students.	The interviews revealed that veteran supervisors experience the guidance of postgraduate students as quite satisfactory although a number of pitfalls were raised by less experienced supervisors. None of the interviewees indicated that they have been formally trained to act as a supervisor; therefore a definite need exists for newer academic staff to be trained in research supervision.	Not reported	Supervisors highlighted the satisfaction that is gained from supervision and also indicated some challenges in the research process. Administrative problems and the need for supervisor training were seen as important aspects in postgraduate supervision.
Lidell, Hildingh and Arvidsson (2008)	The qualitative analysis resulted in four categories: self-appraisal, orientation towards a goal, interaction, and performance of an art, which describe the content of research supervision as perceived by a research supervisor. The latent content was formulated into the theme; awareness of underlying structures and preconditions for learning.	From the perspective of a research supervisor, the research supervision had a hidden content of awareness of underlying structures and the preconditions for learning, which became visible in the supervisor's appraisal of herself as well as in the orientation towards a goal, interaction and the performance of an art. Awareness was a foundation in research supervision that enabled both the "what" and the "how" aspect of learning. Supervisor experiences and theories were also found to be a base for development of research supervision within nursing.	It is recommended to conduct more studies in this field.	Limitations mostly concerned the informant's scientific knowledge. The transferability of a single subject study is limited.

Franke and Arvidsson (2011)	The results show two supervision structures, called *research practice-oriented* and *research relation-oriented supervision*. The main differences between these two ways of structuring supervision consist of whether the supervisor and the doctoral student participate in a common research practice and share objects of research with the same or a related research approach, or whether the doctoral student's research problems and research objects lack a clear connection with the supervisor's research.	By uncovering supervisors' different ways of experiencing supervision and their consequences, supervisors can become aware of the meaning of different ways of structuring research supervision.	Qualitative analysis can be a tool and contribute to developing an awareness of what one does, tries to do and should achieve in the supervision of doctoral students based on common concepts of research supervision.	Not reported
Abdullah and Evans (2012)	On the whole, the respondents' ratings of their experiences in supervision, skill development, and goals of the research project were above average. Infrastructure and intellectual climate, however, were rated as average by the respondents. This study also found that the respondents' research experiences differ according to the supervisor's background and it was related to their psychosocial attributes.	There were positive correlations between students' confidence and competency and their proactive engagement with their research experiences and their perceptions thereof. "Fast track" supervisors were perceived slightly more favourably by their candidates than were the "normal" supervisors; although this was not significant, it indicates that the "fast track" supervisor development appears to be successful.	Aspects where improvement may be required include the provision of technical support, financial support, and computing resources.	It should be noted that Deakin University has a significant proportion (approximately 40%) of part-time, off-campus research degree candidates whose infrastructure needs (such as, office space) are quite different from those of full-time on-campus students. Likewise, in terms of intellectual climate, the former candidates" responses to statements such as, "The research ambience in my department or faculty stimulates my work" need to be expected to be less positive or even 'not applicable'.
Vilkinas (2008)	Nearly three-quarters (72%) of the interviewees said that they used a "hands-on" approach. Fifty-six percent (56%) indicated that they did not enjoy supervision when students were not progressing, when they had to 'hound' them, or when they were forced to terminate them because of poor performance. Twenty percent (20%) felt they themselves took too much control over the thesis and should not have done so.	Overall, the faculty members in this study were task-focused in the supervision of the theses of their Ph.D. students.	It would be informative to test the findings from this exploratory study on a larger population. Further research on whether faculty members do undertake activities associated with the Innovator role and whether they reflect upon and learn from their experiences (Integrator).	There were some desirable aspects of supervision that were not evident, specifically innovation and reflection. This unbalanced approach potentially limits the faculty members' effectiveness as supervisors.
Armstrong (2004)	Findings showed that students perceived the quality of supervision to increase significantly with the degree to which supervisors were analytic in their cognitive style. Students whose supervisors were more analytic also achieved considerably higher grades for their dissertations.	Taking into account that there may be many factors influencing interpersonal relationships of this nature, this study demonstrated the potential relevance of cognitive style, which may prove to be a fertile area for further investigation.	A major recommendation is to select research supervision teams whose dominant cognitive styles are analytic.	The way a supervisor manages the context within which students work could be as important as the supervisor's cognitive style, and different styles might be appropriate in different contextual settings.

Lessing and Schulze (2003)	Unmet needs of students related to the planning of the research, research methodology, contact with supervisors, feedback, response time and examination feedback. Supervisors desired the recruitment of higher potential students who would deliver better work.	Higher education institutions need to discuss the issues raised in this article so that means can be found to address the unmet expectations of students as well as supervisors. This could bring greater clarity on the various roles and responsibilities of master's students, doctoral students and supervisors. Moreover, it could lead to the implementation of more favourable practices and to an improved quality of research.	Many supervisors are insufficiently trained in research methods and do not attend the workshops presented for them. Compulsory training is needed in all aspects of the research process by means of workshops, seminars and colloquia. In view of students' positive evaluation of the research seminars presented to them, such seminars, too, seem valuable. In addition, previous training, for example during the BEd Honours, may need to be evaluated and improved.	Not reported
McFarlane (2010)	In general students were satisfied with the process and recognised the learning principles.	Universities will need to find a way to accommodate students in a research environment that does not become a debilitating drain on the staff. Group supervision can offer a solution to this problem in a way that not only allows the supervisor to cover the entire group when giving guidance on the research and writing processes, but also involves students in the development of themselves and their peers.	Not reported	The main problems that arose in our group supervision processes were related to participants working at a different pace; the risk of keeping the group together for too long; the problem of students falling behind, and the question of the effective use of time.
Calma (2011)	Findings suggest that: (1) there are inadequate facilities and resources dedicated to support staff and student research; (2) there is a lack of specific training to develop staff for research and supervision; (3) the emphasis of supervision is on proofreading and the rewards are unattractive; (4) the range of student support available is less dedicated to research; (5) there is low research quality in both staff and student research; and (6) there is limited research collaboration locally and internationally.	The issues identified centre around making progress with funding, infrastructure and academic staff development; all having to do with capacity. Therefore, it is necessary for the Philippines, and for developing countries with many providers, to strategically focus on developing capacity within the few research-active universities by providing significant funding and support.	Expand funding opportunities for Fund research training programmes and expand international research collaboration. Ongoing professional development to improve academic staff's teaching, supervision and research skills develop broad and specific skills among higher degree research students Improve infrastructure and services to support staff/ students research.	The participation of other relevant public and private universities and government agencies in the research may have enriched the insights gained from this study.

a. Findings: Each of the ten studies reported on the *findings* feature. The findings across the ten included studies were largely congruent with the aims, objectives and research methods that were outlined in each of the studies. The studies produced meaningful empirical findings that illustrated significant results with varying effect sizes. The empirical evidence provided in these primary studies were well explained and justified consistent with the conventions in quantitative data analysis and inferential statistics. The attention to detail in this section suggests that this is an important feature of research submitted for publication and has been prioritized above some other aspects mentioned previously.

b. Conclusion: The ten included studies did well to include conclusions and in each of the ten studies' conclusions were based on the results, findings, and prior literature contained within each respective study. As with any piece of academic writing, a conclusion is a very important feature that is mandatory for authors to include. In terms of the included studies; each respective conclusion summarised the key findings very well and set up an inquisition for future research. Recommendations and limitations were built into the conclusion in some studies, which may again emphasise the importance of the conclusion. It can thus be said that drawing conclusions based on primary research is in keeping with the publication conventions.

c. Recommendations: Recommendations were reported across eight of the included studies (Severinsson, 2012; Lidell et al. 2008; Franke & Arvidsson, 2011; Abdullah & Evans 2012; Vilkinas, 2008; Armstrong, 2004; Lessing & Schulze, 2003; Calma, 2011). Of the eight studies which reported on recommendations, a number of them reported on this feature implicitly, this meant that that in some cases it was required of the reviewer to "read between the lines" or make inferences as to what constitutes a valid recommendation. Of those eight

studies only Calma (2011) explicitly reported on recommendations and included a heading to highlight this feature.

d. Limitations: The studies reported fairly well in this section, with eight out of the ten included studies reporting on this feature (Severinsson, 2012; Lessing & Lessing, 2004; Lidell et al. 2008; Abdullah & Evans, 2012; Vilkinas, 2008; Armstrong, 2004; McFarlane, 2010; Calma, 2011). As with the recommendations section, the same troubling aspect of implicit reporting was present in some of the eight articles that reported successfully on limitations. Of the eight studies that reported on limitations, only Severinsson (2012) and Armstrong (2004) reported explicitly on limitations under appropriate headings. Franke and Arvidsson (2011) and Lessing and Schulze (2003) failed to report on limitations,

4.3.2. *Rank Order:*

The rank order is the second section of a two part descriptive meta-synthesis. Table 4.4 reflect the ranking of the consensus scores obtained by the respective articles on the critical appraisal tool. The ranking includes the overall ranking based on composite scores, as well as the ranking of scores obtained in each of the subsections.

Table 4.4: Representing the ranks based on methodological rigour (n=10)

Authors	Rank	Quality	Subsections							
			Purpose (5)	Design (7)	Ethics (6)	Data collection (7)	Analysis (5)	Sample (8)	Results (3)	Conclusion (4)
Severinsson (2012)	1	Strong 75.5%	1 (5/5)	2 (4/7)	1 (6/6)	1 (7/7)	3 (3/5)	3 (2/8)	1 (3/3)	1 (4/4)
Lessing & Lessing (2004)	2	Strong 68.8%	1 (5/5)	1 (5/7)	2 (5/6)	5 (3/7)	2 (4/5)	2 (3/8)	1 (3/3)	2 (3/4)
Lidell, Hildingh & Arvidsson (2008)	3	Strong 66.6%	1 (5/5)	2 (4/7)	4 (3/6)	3 (5/7)	1 (5/5)	3 (2/8)	2 (2/3)	1 (4/4)
Franke & Arvidsson (2011)	4	Strong 64.4%	1 (5/5)	2 (4/7)	3 (4/6)	5 (3/7)	2 (4/5)	1 (4/8)	2 (2/3)	2 (3/4)
Abdullah and Evans (2012)	5	Strong 62.2%	1 (5/5)	3 (3/7)	6 (1/6)	1 (7/7)	2 (4/5)	3 (2/8)	2 (2/3)	1 (4/4)
Vilkinas (2008)	6	Strong 62.2%	2 (4/5)	3 (3/7)	6 (1/6)	3 (5/7)	1 (5/5)	1 (4/8)	2 (2/3)	1 (4/4)
Armstrong (2004)	7	Mod 60%	1 (5/5)	2 (4/7)	7 (0/6)	2 (6/7)	3 (3/5)	3 (2/8)	1 (3/3)	1 (4/4)
Lessing & Schulze (2003)	8	Mod 57.7%	1 (5/5)	2 (4/7)	5 (2/6)	5 (3/7)	2 (4/5)	3 (2/8)	1 (3/3)	2 (3/4)
McFarlane (2010)	9	Mod 55.5%	1 (5/5)	1 (5/7)	6 (1/6)	5 (3/7)	2 (4/5)	3 (2/8)	2 (2/3)	2 (3/4)
Calma (2011)	10	Mod 53.3%	1 (5/5)	2 (4/7)	7 (0/6)	6 (2/7)	1 (5/5)	3 (2/8)	2 (2/3)	1 (4/4)

4.3.2.1. Overall Methodological Quality:

The top five studies all scored 61% and higher which puts them in the "strong" category in terms of quality. Severinsson (2012) was ranked first (Rank #1) with the highest score of 75.5%, Lessing and Lessing (2004) ranked second (Rank #2) at 68.8%. Lidell et al. 2008) ranked third (Rank #3) with the third highest score of 66.6%. Franke and Arvidsson (2011) ranked fourth (Rank #4) with score of 64.4%, while Abdullah and Evans (2012) ranked fifth (Rank #5) and Vilkinas (2008) ranked sixth (Rank #6) both scored 62.2% respectively. The remaining four studies all scored between 53.3% – 60% which put them in the "moderate" category in terms of quality. Armstrong (2004) ranked seventh (Rank #7) scoring 60%. Lessing and Schulze (2003) ranked eighth (Rank #8) with a score of 57.7%. The final two studies; McFarlane (2010) ranked ninth (Rank #9) with a score of 55.5%; and Calma (2011) ranked tenth (Rank #10) with a score of 55.3% each.

4.3.2.2. Ranking on subsections

Each of the subsections on the critical appraisal tool has an individual score. Table 4.4 indicates each subsection and the maximum score that could be obtained. Articles were assigned ranks based on the score obtained for that subsection.

a. Purpose: Out of the ten included studies, only nine studies reported on all the necessary features for this subsection, thus all nine studies scored 5/5 for this subsection and were jointly ranked first. However, Vilkinas (2008) reported on all the necessary features for this subsection except one and therefore it scored 4/5, which made it rank second. Thus all ten included articles scored well for this subsection.

The fact that the articles scored well in this subsection is indicative of the importance of including and outlining the *purpose* of a study. Features such as aims, problem statements, rationales, and literature being consulted in the background or introduction of studies; appear to be valued highly by these studies. Thus, it can be said that those features are truly reflective of the *purpose* of the study and therefore, they are integral to include in any research study. Another feasible reason for the great performance by the articles in this section is that perhaps researchers are required to include those features in each and every study that they conduct. In other words, those features are necessary for inclusion in a research study in order for the study to be approved by the necessary research authority. Similarly, journals explicitly require this information suggesting that this phenomenon might be reflective of reporting conventions and by extension publication bias. Based on the scores for this section it emerged that there is a consensus amongst good quality research of the content required in published literature, therefore resulting in the ranking in this section being truncated.

b. Study Design: Two out of the ten studies Lessing and Lessing (2004) and McFarlane (2010) were jointly ranked first for this subsection with a score of 5/7. Six studies, ranked second for this subsection, all scoring 4/7 (Severinsson, 2012; Lidell et al. 2008; Franke & Arvidsson, 2011; Armstrong, 2004; Lessing & Schulze, 2003; Calma, 2011). Finally, the two remaining studies, Abdullah and Evans (2012) and Vilkinas (2008), ranked third for this subsection, scoring 3/7 each. The studies scored reasonably well in this section, with eight studies reporting on more than 50% of the features rated in this subsection, and the remaining two studies reporting on less than 50% of the features for this subsection.

The scores in this section were distributed binomially with two clear groups emerging of which eight studies scored relatively well, and only two scored rather poorly. The low scoring studies failed to report on most of the features of this section.

c. Ethics: Severinsson (2012) ranked first in this subsection, scoring 6/6. Lessing and Lessing (2004) ranked second with a score of 5/6. Franke and Arvidsson (2011) ranked third with a score of 4/6. Lidell et al. (2008) ranked fourth and scored 3/6. Lessing and Schulze (2003) ranked fifth, scoring 2/6. Abdullah and Evans (2012), Vilkinas (2008), and McFarlane (2010) were all ranked sixth and scored 1/6 respectively. Armstrong (2004) and Calma (2011) were both ranked seventh and scored 0/6 for this subsection. This subsection consists of a binomial distribution in which there is a visible difference in the scores attained by the studies in this section.

Ethics approval and informed consent were the primary features of this subsection; however, it also included ethical issues regarding confidentiality, anonymity, withdrawal, and informed consent. Three studies scored particularly well, registering 6/6, 5/6, and 4/6 respectively. The remaining seven studies did not perform as well, and scored between 3/6 – 0/6. Four of the lower scoring Lidell et al. (2008); Vilkinas (2008); Lessing and Schulze (2003) and McFarlane (2010) studies failed to report on whether ethics approval was obtained from an identifiable committee, but one study, Abdullah and Evans (2012), managed to report on it, and two other studies Armstrong (2004) and Calma (2011) scored 0/6.

The overarching trend was that the studies mostly neglected to report on ethics approval and opted instead to only report on specific principles e.g. informed consent. By contrast the three higher scoring studies all reported on obtaining ethics approval. Publication bias may well be responsible for the cause of this trend. This phenomenon refers to authors

and the fact that publishers allocate a specific word count (in keeping with publication conventions) that authors need to adhere to, thus the authors leave out information in certain areas so that more words could be allocated to areas that they perceive to be more important to the study. Authors then report on ethics in a nominal and cursory manner that is perfunctory rather than specific.

d. Data Collection: Out of the ten included studies, only Severinsson (2012) and Abdullah and Evans (2012) managed to report on all the necessary features of this subsection and therefore were ranked first with a score of 7/7 respectively. Armstrong (2004) ranked second with a score of 6/7. While Vilkinas (2008) and Lidell et al. (2008) both scored 5/7 and were ranked at joint third place; four of the included studies scored 3/7 and were jointly ranked fifth for this subsection (Lessing & Lessing, 2004; Franke & Arvidsson, 2011; Lessing & Schulze, 2003; McFarlane, 2010). Finally, Calma (2011) was ranked sixth, and scored 2/7 for this subsection. The five higher scoring studies reported on either all the features of this subsection (Severinsson, 2012; Abdullah & Evans, 2012), or missed out on just one feature (Armstrong, 2004), or two features (Vilkinas, 2008; Lidell et al. 2008). The remaining five studies reported on less than 50% of the features for this subsection.

Studies that reported on quantitative or qualitative methods of data collection scored consistently better than studies that failed to report on either one of those methods of data collection. Journal requirements or publication bias could once again have an influence on this subsection.

The scores for this subsection did not have a great impact on the overall ranking of the studies, as the first ranked and the fifth ranked studies in the overall ranking both have perfect scores for this subsection i.e. 7/7. The fact that half of the studies scored poorly for this subsection might have an adverse impact in terms of other researchers attempting to replicate

the study. Because there is a lack of information regarding either quantitative or qualitative methods of data collection, replicating those studies will prove to be fairly difficult. The paucity of information regarding the quantitative and qualitative methods of data collection may also have an effect on the evaluation of the methodological quality of the study.

e. Data Analysis: Three of the ten included studies (Lidell et al. 2008; Vilkinas, 2008; Calma, 2011) were jointly ranked first, because each study reported on all of the features for this subsection and therefore scored 5/5. Five studies were jointly ranked second and scored 4/5 (Lessing & Lessing, 2004; Franke & Arvidsson, 2011; Abdullah & Evans, 2012; Lessing & Schulze, 2003; McFarlane, 2010). These five studies all failed to report on motivations for their respective methods of analysis. The remaining two studies were ranked third and scored 3/5 (Severinsson, 2012 & Armstrong, 2004). These two studies failed to report on two criteria.

f. Sample: Two studies (Franke & Arvidsson, 2011; Vilkinas, 2008) were ranked first and scored 4/8. Only one study, Lessing and Lessing (2004), was ranked second and scored 3/8. The remaining seven studies were ranked third and scored 2/8 (Severinsson, 2012; Lidell et al. 2008; Armstrong, 2004; Abdullah & Evans, 2012; Lessing & Schulze, 2003; McFarlane, 2010; Calma, 2011). Overall the scoring for this subsection across the board has been very poor, with the highest score registering at 4/8. The main reason for this low scoring subsection is that all of the studies have consistently failed to report on how the size of the study sample was determined, and whether techniques were used to ensure optimal sample size. The scoring for this subsection seemingly did not have a major impact on the overall ranking of the ten included studies. The implications for this section is that replication will be

extremely difficult because of the lack of information regarding how the sample size was determined, as well as what techniques were used to ensure the optimal sample size.

g. Results: Four studies were ranked first and obtained full scores (Severinsson, 2012; Lessing & Schulze, 2003; Armstrong, 2004; Lessing & Lessing, 2004). The remaining six studies, were jointly ranked second (Lidell et al. 2008; Franke & Arvidsson, 2011; Abdullah & Evans, 2012; Vilkinas, 2008; McFarlane, 2010; Calma, 2011). The included studies scored fairly well in this subsection. Thus there is not much separating the studies in terms of this subsection and the scoring does not have a great impact on the overall ranking. Even though the studies that are ranked first and second overall are both also ranked first for this subsection, not a lot can be read into that, because the remaining two studies that are ranked first for this subsection are ranked sixth and eighth in the overall ranking respectively.

It can thus be acknowledged that good quality research share the consensus that it is important to report on the results, and therefore they agree on the content that is necessary in order for a study to be publicised.

h. Conclusion: Six studies, Severinsson (2012); Lidell et al. (2008); Abdullah and Evans (2012); Vilkinas (2008); Armstrong (2004) and Calma (2011), were ranked first and scored 4/4 for this subsection. The four remaining studies were ranked second and scored 3/ 4 (Lessing & Lessing, 2004; Franke & Arvidsson, 2011; Lessing & Schulze, 2003; McFarlane, 2010). The included studies scored well in this subsection that reflects publication or reporting convention.

4.4. Theory Explicative Meta-synthesis:

The theory explicative meta-synthesis will report on three levels, namely reciprocation, refutation and line of argument.

4.4.1. *The Reciprocal Stage:*

For the purpose of this particular stage in the meta-synthesis the core findings of each of the ten included studies will be arranged within two main categories as well as sub categories. The core findings of each of the included studies will be identified and compared, where possible, to the existing body of literature in order to establish resonance. A thematic analysis was conducted of the findings reported in the ten included studies. The results yielded two major themes namely, Supervision Models and Supervisor Training. The Supervision Models theme contains five sub themes: *Supervision Content, Supervision Structure, Supervision Process, Supervision Format, and Supervision Function*. These sub themes are considered to be features of supervision models. The Supervisor Training theme, however, acts as a solitary major theme.

Supervision Models:

For this category of the reciprocal stage the recurring findings, themes and ideas from the ten included studies will be identified and reported. The existing body of literature based on this category will be consulted in an attempt to establish resonance. The five features of supervision that appear to form the basis of supervision models have been identified throughout the ten included studies as possible recurring themes. These five features of supervision are *Supervision Content*, *Supervision Structure*, *Supervision Process*, *Supervision Form*, and *Supervision Function*, and each will be discussed as sub categories below. The ten included studies each identified specific target skills that are reflective of the aforementioned

features of supervision. Nine studies were implicit and their findings were determined through participatory research aimed at gaining knowledge about possible strategies for future use. One study was explicit and set out to test a particular strategy from the outset of the study.

Supervision Content:

Supervision content refers to the particular skills, competency, knowledge, and experience that are required for a supervisor to deliver adequate supervision of students. Four out of the ten studies supported the notion of supervision content through their findings. Severinsson (2012) made use of a survey to obtain quantitative data about supervisory style. The findings suggest that problem-solving, research preparation, communication and interaction appear to be central aspects of supervisory style which can be translated as a feature of supervision content. Severinsson (2012) affirmed that effective supervision of research is reliant on the supervisor's competence and skills, as well as the responsibilities that he/she assumes. The importance of supervision content is further supported by findings from Severinsson (2012) which highlighted characteristics that enhance research supervision. The characteristics that had great impact on research supervision were the supervisor's interest in the research topic and its progress, as well as his/her ability to successfully communicate and interact with students during supervision. Further aspects that enhanced research supervision were that the supervisor reviewed the research, provided constructive feedback and advice regarding research methodology, and also encouraged students (Severinsson, 2012).

The findings in Lessing and Lessing (2004) suggest that supervisors do not possess the necessary skills and competencies to adequately supervise students. Therefore a case is made for supervisors to be formally trained which is supported by the findings in order for them to establish appropriate content for supervision. According to the findings from the study

conducted by Lessing and Lessing (2004) very little attention is given to the development of supervisors. This raises the issue of supervisor training as a vehicle to achieve optimum supervision content within the supervisor. Furthermore, findings suggest that supervisors need to be trained for their role as a supervisor, but they also need a support structure to help cultivate their supervision content. One lecturer said: “No, we do not have formal training ... we learn from each other” (Lessing & Lessing, 2004; p 83). This is an example of a support structure wherein supervisors can learn from one another and help cultivate their supervision content. Skills, be it the development or acquisition of skills, is a vital cog in the machine that is supervision content. Without the proper skills the supervisor will not be able grow into the role of a supervisor, in terms of supervising, guiding and developing students. Watkins Jr. (2014) resonated with the findings by suggesting that the supervision experience has become thought of as a developmental process wherein supervisors are expected to progress through a process of growth that entails firstly, increasing the acquisition and refinement of conceptual or practical skills; and secondly increasing the formation and consolidation of a supervisor identity (Watkins Jr., 2014).

Lidell et al. (2008) highlighted one feature that is integral to supervision content, called Interaction. The findings reported that interaction takes place in a mutual exchange of knowledge between the student and supervisor. All supervisors can learn something about supervision through the interaction with doctoral students, irrespective of whether or not they possess prior experience in supervision. The supervisor will also learn more about the subject that is being studied and researched; as the student’s work adds new knowledge. Thus interaction may be viewed as a way to increase the supervisor’s supervision content. Competency and knowledge are two words that are synonymous with supervision, because the students often rely on and trust in the abilities of the supervisor as well as his/her

competencies and knowledge with regards to the supervisory process as well as research methodologies.

According to Borders et al. (2012) it is expected of supervisors to be aware of their constraints and restrictions both as researchers and supervisors. Supervisors are also obligated to inform students of their limitations, and help students find other resources when need be. As stated by Pearson and Brew (2002) it is useful for supervisors to extend their understanding and existing knowledge of the nature of research and supervisory practice, this will enable supervisors to deal more effectively with variations in the educational and career goals of different students (Pearson & Brew, 2002). In addition Black et al. (2004) and Brown et al. (2009) suggested that guidelines may be used to inform supervision practice in order to make the supervisor more competent in conducting supervision with students. According to Borders et al. (2012) the ACES research supervision guidelines consists of two core sections. The first core section focusing particularly on supervisors, this section outlines the features of supervisors, which include; knowledge and skills as a researcher.

According to findings in Vilkinas (2008), supervisors would benefit from critical assessment of their supervisory capability, and it could form part of an evaluation process. Feedback from students is essential so that supervisors are able to reflect upon the feedback and then determine which aspects of their supervisory capability are suitable and which aspects they might need to work on in order to become more effective supervisors (Vilkinas, 2008).

In reference to prior literature there seems to be a clear resonance between these findings and Granello et al's (2008) description that the "self-critical" model has a constructive and evaluative attitude that is directed toward and brought to bear on one's

supervision efforts. Granello et al. (2008) furthermore suggested that self-criticality is a key contributing factor to supervisors becoming better and more effective over time. As far back as 1995, Watkins (1995) reported that the self-critical supervisor takes time out to regularly think about and reflect on his/her supervisory work. Finally, Pearson and Brew (2002) asserted that supervisors are required to learn how to firstly manage themselves before they are able to manage others, as well as gaining feedback on performance, wherein self-reflection is encouraged.

Supervision Structure:

The structure of supervision refers to how supervision itself is structured – such as monitoring the research process, developing an academic role and providing research-related tasks. Severinsson (2012) suggested that research-related tasks might serve as a structure for supervision, in terms of the supervisor monitoring the research process, providing encouragement and critically commenting on drafts as well as developing an academic role. An effective supervision environment and research support services is necessary in order to maintain a good supervision structure (Severinsson, 2012).

Franke and Arvidsson (2011) in their findings revealed two supervision structures namely *research practice-oriented* and *research relation-oriented supervision*. The primary differences between these two ways of structuring supervision consist of whether the supervisor and the student participate in a common research practice and share objects of research with the same or a related research approach, or whether the student's research problems and research objects lack a clear connection with that of the supervisor's research. Findings report that in research practice-oriented supervision, the topic area and/or the methodology were shared between supervisors and students, whereas in research relation-

oriented supervision neither might be shared (Franke & Arvidsson, 2011). According to Franke and Arvidsson (2011) in certain instances where supervisors shared a research practice with some students but not others, it was found that this results in different prerequisites for supervising, which meant that the same supervisor can move between different structures of supervision.

Vilkinas (2008) found that there are five structures of supervision; (1) the Developer is people-focused; while (2) the Deliverer and (3) Monitor are task-focused (hands-on approach). Those three roles have an internal focus. The two remaining roles have an external focus, they are (4) the Broker and (5) the Innovator. Under the ICVF model the five operational roles are paradoxical in nature (Vilkinas, 2008). Thus, supervisors need to be able to deliver a range of activities which are inherently contradictory; such as caring for the student (Developer role) while at the same time demanding that the student produce work (Deliverer role). Supervisors need to experience generative paradoxes in order to be effective supervisors (Robertson, 2005). Further findings suggest that the majority (72%) of the academics were hands-on (Deliverer role) and gave support to the students intellectually and encourage them to complete their research – these were all activities designed to get the task done (task-focused). Twelve faculty members (48%) preferred to utilise the activities associated with the Developer role, which focused on the individual person. The faculty members enjoyed developing partnerships with their students and supporting them emotionally.

Armstrong (2004) presented findings which suggest that students perceive the quality of supervision to increase considerably with the degree to which supervisors were analytic (task-focused) in their cognitive style. Adopting an analytic cognitive style is a feature of

supervision structure, as well as a paradox for teaching and supervising students. The findings went on to reveal that students whose supervisors were more analytic achieved significantly higher grades for their dissertations (Armstrong, 2004).

De Beer and Mason (2009) explored the idea of blended learning as an intervention to enhance supervision. The blended approach to supervision includes a combination of different training material (technologies/media, activities, and types of events) to create an optimum training program for a specific set of students. The term 'blended' refers to traditional instructor-led training being complimented with other electronic formats. De Beer and Mason (2009) further stated that such a model could reduce the workload of research supervisors and thus improve the quality and success of postgraduate students' research output.

Supervision Process:

The process of supervision can be understood as how the learning process is constituted between the student and supervisor, e.g. planning of research, research methodology, meeting with the supervisor, feedback, and response time. Lessing and Schulze (2003) suggest two aspects in terms of postgraduate supervision; firstly, the quality of the supervisory process (by supervisors) and the quality of the research output (by students). The findings furthermore suggested that supervisors should be more aware of students' needs in order to sustain a good supervision process. Therefore supervisors should be aware that students want advice in planning their study in terms of timeframes, regular contact with the supervisors, constructive criticism, and quick feedback for chapters submitted. Students also expressed their desire for written feedback after the examination process has ceased (Lessing & Schulze, 2003). These findings are supported in the existing body of literature through Cognitive apprenticeship which is described as an intervention strategy that is implemented

by many supervisors. During this strategy supervisors employ a “coaching” role that consists of actively observing students carrying out a task and offering hints, feedback, reminders and new tasks aimed at increasing their performance nearer to the expert performance (Collins et al. 1989; Pearson & Brew, 2002).

According to Lessing and Schulze (2003), supervisors need to develop their own individual ground rules that should be presented to students in a written format at the beginning of the research supervision process. These ground rules will set the tone for the rest of the supervision process. Supervisors should also include a list of textbooks or references in research methods for the students to consult. Further findings in this study insist that general guidelines on postgraduate supervision in the faculties of higher learning institutions should be clearly articulated during a supervisor workshop and made available in written format. This is essential for the inexperienced supervisor (Lessing & Schulze, 2003). Lidell et al. (2008) asserted that the aim of the supervision process was to develop a high-quality product, as well as a competent student. Furthermore the findings indicate that the supervision process should provide students with the knowledge and skills necessary to be able to carry out research independently. As a result the student undergoes a long developmental process before achieving his/her goal. The supervisor’s understanding of this process and what happens during this process is imperative (Lidell et al. 2008).

Supervision Form (Format):

Supervision form refers to the actual format of supervision, e.g. group supervision, one-on-one supervision, or an integrated online form of supervision. McFarlane (2010) aims to create awareness of the benefits of group supervision. The findings from McFarlane (2010) assert that group supervision is embedded in learning principles that contribute to creating a

learning community in which both academically strong and weaker students can participate and develop (McFarlane, 2010). The findings also indicate a very high level of personal satisfaction for the supervisor. Group supervision can be utilised as a way for universities to accommodate students in a research environment that does not become a debilitating drain on the staff. This way the supervisor can cover the entire group when giving guidance on the research and writing processes, but also helps students in the development of themselves and fellow peers (McFarlane, 2010).

In reference to literature Simons (2005) suggested that the Collective Academic Supervision (CAS) model might potentially increase and qualify students' participation and academic learning by means of stimulating their motivation to study and to write academic assignments. According to Nordentoft, Thomsen and Hansen (2012) the CAS provides a framework for supervision, as well as offers students systematic, progressive, and academic input from peers and supervisors which may encourage their writing process. One more incentive for the implementation of this model is that it possesses the ability to inspire and support academic staff in their work to supervise more than one student at a time (Nordentoft et al. 2012). Furthermore the findings are supported by Nordentoft et al. (2012) who asserted that the goal was to integrate qualities in CAS where students meet as a group, present and give feedback to one another together with their supervisor present.

Supervision Function:

The function of supervision refers to the role of the supervisor in relation to the demands or needs of the students. This of course extends to the psychosocial attributes of supervisors as well. For example, Vilkinas (2008) identified numerous roles that a supervisor can adopt in order to effectively supervise an array of different types of students. As

mentioned before there are five types of roles, the Developer, Deliverer, Monitor, Broker, and Innovator. Depending on the type of student and the needs or demands of that particular student, the supervisor can decide to adopt whichever function or role that best suits the learning and academic needs of the student (Vilkinas, 2008). Armstrong (2004) suggested that focusing on tasks results in a value-based role that provides structure and step-by-step logical guidance.

McFarlane (2010) underscored that the role of the supervisor increasingly is that of a facilitator who must affirm students and protect the space where learning and growth takes place. In doing so, the supervisor must remain alert to various facets of creating and maintaining a safe learning environment, as well as to the subtle nuances that might destroy this environment. The supervisor must focus on protecting each and every student from being hurt, marginalised, ridiculed, or overpowered (McFarlane, 2010).

According to McFarlane (2010) the role of the supervisor is ever-changing to ensure a safe environment that includes interaction and joint learning between lecturers and students withinin which peers play a vital role. Similarly, Severinsson (2012) concluded that the provision of guidance and the creation of a good environment for research is a necessary role for all supervision. In addition, the role/s that a supervisor adopts must be in relation to the needs of the individual student. Thus, the needs of the students might at times dictate the roles and function of the supervisor.

The notion that the supervisor needs to be able to adapt his/her role in accordance with the needs of the students has been emphasized in literature. For example, Pearson and Brew (2002) stated that supervisor development for research training in the modern context of higher learning should focus on allowing supervisors to become adaptable. The widespread belief of supervisors sticking to one model and set of behaviours is no longer considered to be

acceptable. Barnes (2005) resonated with the findings in terms of identifying the development of the CSSES which was designed to measure the self-efficacy of supervisors in domains that are specifically related to the role of the supervisor.

Lidell et al. (2008) identified awareness in supervision as a core role. In this role the supervisor will understand the student from a holistic perspective and adapt to suit the specific needs of the student. Thus flexibility of the supervisor in relation to the student's knowledge development creates the conditions necessary for increasing independence in the student's work (Lidell et al. 2008). Pearson and Brew (2002) agrees with the findings reported on by Lidell et al. (2008) which suggest that awareness in supervision is essential for a supervisor to actively adapt supervision to the changing needs of students. For example, Pearson and Brew (2002) asserted that although learning through self-awareness is fairly under researched, they, however, argued that the notion of managing oneself is an important requirement for managing others and also gaining feedback on performance, wherein personal reflection is encouraged. Pearson and Brew (2002) also noted that this strategy involves more than just purely focusing on interactions with others and communication skills, the supervisor first has to understand how he/she operates him/herself. In this way supervision function is closely related to the structure of supervision. In order to accommodate the needs of students the supervisor must adapt his/her roles to demonstrate flexibility which in turn will impact how the supervision has been structured.

Supervisor Training:

Supervision training is considered to be a vehicle for equipping the supervisor with the necessary skills to enable him/her to achieve success in supervising students and obtaining a high completion rate (Petersen, 2007). Lessing and Lessing (2004) boasted findings which

suggest that supervisor training and development is needed to ensure quality supervision. It was reported that very little attention was given to the development of the supervisors at the different universities. The consensus was that proper formal training in the practice of research methodology is an important aspect of research (Lessing & Lessing, 2004). The need for the formal training of supervisors was raised in all the workshops as part of acknowledging problem areas in research supervision. In addition to the previously stated findings, Lessing and Lessing (2004) also reported that none of the interviewees indicated that they have received formal training to act as a supervisor, therefore it seems that a definite need exists for newer academic staff to be schooled in research supervision (Lessing & Lessing, 2004).

> Very little attention is given to the development of supervisors at the different universities. One lecturer said: "No, we do not have formal training ... we learn from each other". Another supervisor mentioned the value of co-supervising, especially in the case of a new lecturer, as a means of training for supervision. (Lessing & Lessing, 2004; p.83)

Literature (Granello et al. 2008; Benshoff & Paisley, 1996; Watts, 2010) supports the notion of co-supervising that has been put forward in the findings of Lessing and Lessing (2004). Although the finding was not so much a conclusion drawn by the authors, but rather a statement made by one of the active participants in the study, it is still a valuable finding that resounds within the literature. According to Granello et al. (2008) the peer consultation model is ideal for supervisors who are no longer under formal supervision as a way of ongoing training or continuous professional development. This model is typified by the process of supervisors offering regular consultation for one another in order to help one

another accomplish self-determined goals (Benshoff & Paisley, 1996). Watts (2010) suggested the introduction of the “coaching” or “mentoring” model that is characterised by an experienced supervisor working with a novice supervisor. During this process the novice supervisor is supporting the student while he/she is being supported by his/her academic colleague.

Abdullah and Evans (2012) reported on findings that compared the supervision experience of postgraduates under “normal” supervisors and “fast-track” supervisors. The findings suggested that postgraduates under “fast-track” supervisors performed better than those under “normal” supervisors. The findings therefore indicate that supervisors who have undergone the training programme have sufficient knowledge and skills to supervise effectively. The respondents indicated that “fast-track” supervisors showed mutual respect, understood their difficulties, and provided helpful feedback during the supervision processes (Abdullah & Evans, 2012). These findings indicate that the Fast-Track Supervisor Training Programme is effective for speeding up the preparation of staff to become principal supervisors. Furthermore, it was found that the “fast-track” supervisors were perceived somewhat more favourably by their candidates than were the “normal” supervisors; this however, was not significant, but it indicates that the “fast-track” supervisor development appears to be successful (Abdullah & Evans, 2012). Literature suggests that there are two factors to consider; firstly the development of supervision capacity through the exploration of the role that supervisor training plays in developing the fundamental skills within the inexperienced supervisor. Secondly, through enhancing and developing the acquired supervision capacity by exploring how experiences within the supervision training help to further develop the supervisor’s supervision capacity (Culbireth & Cooper, 2008; Granello et al. 2008).

The findings in Calma (2011) indicate that there are inadequate facilities and resources dedicated to supporting staff and student research and there is a lack of specific training to develop staff for research and supervision. Literature highlights the detriment of having inadequate facilities and resources dedicated to supervisor training; it also echoes the need for adequate facilities and resources. Pearson and Brew (2002) resonated with the findings by suggesting that it is important to keep up with modern training resources, therefore the acquisition of formal supervisor training packages is a vital tool that can be used to update supervisors on the changing needs of students, faculty and government funding.

The primary issue remains to be the lack of government and university funding for research and research supervision (Calma, 2011). Calma (2011) further states that the issues identified within the findings surrounding making progress with funding, infrastructure and academic staff development; all have to do with capacity. Thus, it is necessary for the developing countries with many providers to focus on developing capacity within the research-active universities by providing considerable funding and support (Calma, 2011).

These findings are supported by McCallin and Nayar (2012) who claim that research in New Zealand has accounted for the broader research context and how it has changed in the last decade, and thereby concluded that academics need to understand how institutional and government processes influence research supervision (McCallin & Nayar, 2012). An example of how the broader context of research supervision comes into play is exemplified by the push for publication during thesis writing which has been found to be demanding, and also the socio-political accountabilities to the wider community. The final issue highlighted by the findings of Calma (2011) is the lack of government funding. This finding is echoed by McCallin and Nayar (2012) who suggests that changes to funding arrangements has a

significant effect on the nature of university work, research topic options, the models of supervision, student management, and how academics manage their supervisory responsibilities. Therefore it is imperative that supervisors undergo the necessary training so that they can address the changes to policy and process.

4.4.2. *The Refutational Stage*

The studies were addressed and scrutinised for findings that are not consistent with the common ideas highlighted in the existing body of literature. The findings highlighted within the included studies revealed that the strategies and target skills identified within those studies were achieved through an implicit research process, except for one article (McFarlane, 2010), which adopted an explicit approach. This is true for findings of both supervision models and supervisor training respectively. The existing body of literature was descriptive in reporting on both supervision models and supervisor training. Literature described the content, structure, form, function and process of supervision models, but did not report any empirical evidence. Therefore McFarlane (2010) stands in opposition to the existing body of literature by reporting explicitly on a particular supervision model, while also providing empirical evidence.

Refutation of Models:

The study conducted by McFarlane (2010) refutes the existing body of literature by providing empirical evidence, as well as detailing an explicit approach to conducting research. The study explored the potential of group supervision as a technique to deal with the growing number of students engaged in postgraduate studies. The supervision process required that the group met once every two months, over a period of one year, for a contact session that lasted three days (McFarlane, 2010). The findings demonstrated the benefits of

group supervision, and also discussed the problems associated with it as a supervision model. This was conducted with the supervisor as a participant observer during group supervisions held with students (participants) (McFarlane, 2010). The study set out to explicitly investigate group supervision and reported on the empirical evidence that the study yielded.

According to Whitman et al. (2001) a limited number of empirical studies have been conducted to test supervision models. Therefore the refutation of the existing body of literature is due to the fact that there is no empirical evidence present within the literature, but also due to the literature being descriptive and only offering a theoretical rationale for future research (Collins et al. 1989; Culbreth & Cooper, 2008; de Beer & Mason, 2009; Burnett, 1999; Granello et al. 2008; Pearson & Brew, 2002; Watkins; 1995; Watkins Jr., 2014; Worthington; 1987). Thus what is being refuted here is the notion that theoretical modelling suffices or that models are difficult to operationalize and test empirically. The research here demonstrates the important role that action research or participatory methods can bring methodologically in the testing of models and the explicit operationalizing of the learning outcomes and operational steps that have been implicit in theoretical models.

4.4.3. *The Line of Argument*

The present study contained three primary objectives of which the first related to determining the theoretical orientation of strategies. Only three studies managed to explicitly state the theoretical orientations they were utilising; Franke and Arvidsson (2011); Vilkinas (2008); and McFarlane (2010). However, McFarlane (2010) was the only study to report on the theoretical orientation of the strategy explicitly. The two other studies did provided theoretical orientations for their studies, but because they were implicit; they did not report on theoretical orientations for their strategies.

The second objective dealt with the examination of the content of the strategies and nature of activities implemented. Once again McFarlane (2010) the only study that was able to deliver on this objective by detailing the content of the strategy and the nature of activities implemented. McFarlane (2010) conducted group supervision with two groups of students over the course of a one year period. The activities ranged from students doing presentations to completing questionnaires for feedback on the process.

Research supervision is an intentional process in which the five features of supervision models namely; awareness of content, structure, process, form, and function of supervision were identified as fundamental components. The importance of awareness in the five features of supervision models was strengthened by the existing body of literature that reported on supervision models. However, included studies identified target skills/strategies that were linked to the five features of supervision models, therefore affirming the importance of supervision models in research supervision. Hence, awareness makes it possible for supervision to be intentional, because supervisors will learn to use these features of supervision models as a guide throughout their supervision experiences with students. It is also worth noting that supervisor training has been reciprocated between the findings of the studies and the existing body of literature. Supervisor training can thusly be thought of as an integral component that can be employed to adequately prepare supervisors for supervision as well as ensure that the supervisory process is of a quality that will achieve a steady completion rate of postgraduate students.

The final objective for the present study was to explore the evidence that was provided for the efficacy of strategies. This was the major point of refutation due to the fact that the implicit nature of the studies did not test the target skills/strategies highlighted in their findings, but rather expressed and reported on the ways in which they established the importance of those target skills/strategies. The studies only identified the target

skills/strategies that might be useful to implement as supervision models or in conjunction with supervision models. What is truly needed is the empirical testing and evaluation of these target skills and supervision models in order to establish whether they are indeed effective when put to practice. Thus, the target skills/strategies identified within these implicit studies needs to be researched more explicitly in order to achieve empirical evidence for the efficacy of the strategies. According to Whitman, Ryan and Rubenstein (2001) a number of supervisor development models have been proposed. Those models of supervision assume that supervisors develop in their role and that growth takes place in stages from less to more developed, with each stage having a range of developmental issues and concerns associated with it. Furthermore, Whitman et al. (2001) asserted that our understanding of the models of supervisor development is at a beginning level, because there are only a limited number of empirical studies that have been conducted to test those models. Here Whitman (2001) reinforces the notion put forward by emphasising the need for explicit studies that set out to test supervision models and determine whether they are effective tools that supervisors should implement within the research supervision process. McFarlane (2010) was the only study that met the objective, because the study provided empirical evidence for the efficacy of the strategy which it investigated explicitly.

Many of the findings regarding supervision models and supervisor training resonated with the existing body of literature. Supervision models appear to be a cornerstone feature of supervisor training moving forward, this is based on the attention that certain features of supervision models received within the findings as well as how it resonated with literature. The only deviation manifested itself in the form of the way in which supervision models were researched. Given that only one study conducted explicit research. Thus a clear need exists for supervision models and target skills/strategies to be researched more explicitly so as to provide empirical evidence.

Chapter 5

Conclusion

5.1 Executive summary

The process of completing the current systematic review, from inception to completion will be detailed below. The executive summary will make use of subheadings to illustrate each main point in the systematic review process for ease of reading.

Getting Started:

The supervisor met with the team of reviewers on a weekly basis to conduct supervision regarding the systematic review process. During the supervision meetings the reviewers learned more about conducting systematic reviews as well as constructing research topics and then continuing to draw up proposals. The research topic of the current systematic review was co-constructed between the supervisor and the primary reviewer based on a primary search strategy that lead to the deletion of a previous topic in favour of the current topic.

Proposal Stage:

The process of proposal writing required countless meetings with the supervisor to offer guidance on structuring and writing up the proposal. After the completion of the proposal it was required to go through certain academic conventions of the University of the Western Cape. Thus, the reviewers were each required to submit a hardcopy of their proposals as well as present the key features of their research proposals to a panel of academics from the psychology department. The panel then decided to grant permission for the systematic reviews to be conducted. The next step in this stage required the reviewers to gain ethical clearance from the Senate Research Committee of UWC.

Methodology:

The process defined by this stage of the systematic review can be described as the crux of the entire systematic review. The decisions made within this section of the systematic review dictated the actions and outcomes of the entire systematic review. The team of reviewers again met regularly with the supervisor during this stage of the systematic review. This stage of the systematic review, however, can be characterised by two main sections, the inclusion/exclusion criteria and the review process. The inclusion and exclusion criteria were the cornerstone of all the research conducted throughout the systematic review. Each and every study considered for inclusion first had to meet the criteria set in place for inclusion and exclusion. The review process on the other hand was a vital component of this stage of the systematic review because it outlined the steps that the primary reviewer took in order to achieve optimal search results. All of the steps outlined in the review process were conducted by the primary reviewer along with an additional reviewer to ensure thoroughness of research. The search results obtained throughout the review process were to be utilised within the next stage of the systematic review.

Results and Discussion:

This stage of the review utilised all of the search results from the previous section and attempted to make sense of those results by illustrating them firstly by means of a descriptive meta-synthesis and secondly, by means of a theory explicative meta-synthesis. The descriptive meta-synthesis consisted of three data extraction tables each including their own discussion. The descriptive meta-synthesis was capped off by a separate fourth table, the rank order table, as well as an ensuing discussion based on that particular table. The theory explicative meta-synthesis then followed and it contained three core sections namely; the Reciprocal stage, the Refutational stage, and the Line of Argument.

Conclusion:

The final stage of the systematic review is one that concludes all of the ideas and findings expressed within each of the prior stages of the systematic review. This stage consists of five sections, the Executive summary, Conclusion, Limitation of the study, Recommendation for future research, and Significance of the study. This stage concludes the systematic review as well as expresses the final thoughts and ideas of the primary reviewer regarding the systematic review process. This stage of the systematic review is useful as it expresses the key points and ideas from the systematic review process in an easy to read convenient summary of the primary reviewer's last thoughts and future recommendations.

5.2 **Conclusion**

The findings and issues that have been identified clearly demonstrate the importance of developing strategies to support higher degree research by developing capacity in supervisors. The findings illustrated that good quality research exists on the thesis topic and identified two core foci for future research and practical application. First, the need for a more active and explicit engagement with the theory, content and efficacy of supervision models was identified. Second, the findings suggested that supervisor training is important in formal and informal contexts, as well as part of induction and continuing professional development for staff providing supervision at institutions of higher learning. The benefits for all parties involved have also been highlighted and the relationship with current policy has been emphasised at a national and institutional level.

5.3 Limitations of the study

There are three limitations of the study that needs to be acknowledged. The first limitation was due to the fact that the primary reviewer did not have access to all of the articles that appeared amongst the search results of the databases searched during the database search, as well as during the reference mining of articles. The reason behind the lack of access to those articles was that they were secured behind a pay-wall. This meant that those articles were only available through purchase.

The second limitation was encountered during the database search as well. Some of the search results were restricted to abstracts only and thus they were not eligible for inclusion. A follow up search revealed that the full texts of those articles were either secured behind a pay-wall or only offered to a list of specific institutions of higher learning and thus not accessible to the primary reviewer.

The third limitation was that the primary reviewer and additional reviewer seldom attended supervision meetings together. Supervision as a pair needed to occur more frequently to ensure that the pair of reviewers who worked together was constantly on the same page concerning developments within the systematic review process. This hindered the pair's ability in terms of identifying the necessary steps forward, errors made, as well as coming up with new ideas, as a team, to use within the review.

5.4 Recommendation for future research

The primary recommendation for future research is that the target skills and strategies that were identified within nine of the studies, relating to supervision models and supervisor training, needs to be researched more explicitly so that empirical evidence can be provided. Therefore, because of the implicitness of the nine studies, it is recommended that

researchers attempt to test the findings (target skills/strategies) that were reported on within those studies, so that the efficacy of those strategies can be determined.

5.5 Significance of the study

The significance of the study is primarily due to the contribution that it is making within the academic knowledge economy of institutions of higher learning, because there are limited published studies reporting on the research topic of the current review in the form of a systematic review. Another significant aspect about the current study is that it is addressing a specific gap in literature, which is to address the need for filtered information (in the form of a systematic review) reporting on the current research topic, as well as evaluating that information/studies for methodological rigour and coherence. The study also forms part of a larger Parent Project which elevates the significance of this study even further, as it makes a contribution to the knowledge base of the larger project, but also maintains the ability to stand alone as an individual study.

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APPENDIX A: LIST OF DATABASES

Health/Education:

Health:

- Academic Search Complete (EbscoHost)
- BioMed Central
- Cambridge Journals Online
- CINAHL (Cumulative Index to Nursing and Allied Health) (EbscoHost)
- Cochrane Library
- Health Source: Consumer Edition (EbscoHost)
- MEDLINE (EbscoHost)
- MEDLINE (Pubmed)
- Sabinet Reference
- SAGE Journals Online
- ScienceDirect
- SCOPUS
- SciFinder Scholar

Education:

- EbscoHost Web
- ERIC
- PsychARTICLES
- Sabinet Reference
- Sage Journals Online
- SAGE Research Methods (SRMO)
- Teacher Reference Center

- African Journal Archive
- Africa-Wide Information

Social Sciences:

- EbscoHost Web
- Academic Search Complete
- SocINDEX
- Sabinet Reference
- SA ePublications
- SA Media
- Project MUSE
- Africa Journal Archive
- Africa-Wide Information

Natural Sciences:

- Academic Search Complete (EBSCO)
- JSTOR
- MEDLINE (via EBSCO)
- SAGE Journals Online
- ScienceDirect
- SCOPUS
- SpringerLink
- Agricola
- Cambridge Journals Online
- PubMed (BioMed Central)
- Sabinet Referen

APPENDIX B: TITLE SUMMARY – EXTRACTION SHEET

No.	AUTHOR	DATE	TITLE AND SOURCE	DATABASE	LOCATION WHERE STORED	OUTCOME ; Exclude/include
Total Titles Screened						
Included Titles						
Excluded Titles						

APPENDIX C: ABSTRACT SUMMARY – EXTRACTION SHEET

No.	TYPE OF DESIGN	STUDY POPULATION	INSTRUMENT USED	OUTCOMES
Total Abstracts Screened				
Included Abstracts				
Excluded Abstracts				

APPENDIX D: FULL TEXT SUMMARY – EXTRACTION SHEET

No.	AUTHOR	DATE	TITLE AND SOURCE	TYPE OF DESIGN	STUDY POPULATION	INSTRUMENT USED	OUTCOMES

Total Articles Screened	
Included Articles	
Excluded Articles	

APPENDIX E: CRITICAL APPRAISAL TOOL

Bibliographic Details	Author	Title	Source

Description of Study		Year

Purpose	**Yes(1)**	**No(0)**
1. Is there evidence that literature has been consulted in providing context or background?		
2. Is there a clear problem statement?		
3. Is there a clear rationale for the study?		
4. Are the aims of the study clearly stated?		
5. Are the aims explicitly related to the problem statement?		
Total points for this section		

Study Design	**Yes(1)**	**No(0)**
1. Is the theoretical orientation of the study reported?		
2. Was the theoretical orientation described in detail?		
3. Is the design of the study reported?		
4. Did the authors motivate their design choices?		
5. Were the elements of the design reported on?		
6. What is the relationship of the design to the aim of the study?		
a) Minimal to no relevance (0)		
b) Moderate relevance (1)		
c) Highly relevant (2)		
Total points for this section		

Ethics	**Yes(1)**	**No(0)**
1. Was ethics approval obtained from an identifiable committee?		
2. Was informed consent obtained from the participants of the study?		
3. Have ethical issues been reported on?		
a) Confidentiality?		
b) Anonymity?		
c) Withdrawal?		
d) Informed consent?		
Total points for this section		

Data collection	**Yes(1)**	**No(0)**
1. Were data collection methods clearly identified?		
2. Were choices of data collection methods motivated?		
3. Were methods of collection appropriate for the outcomes identified?		
4. For quantitative studies:		
a) Did they report on psychometric properties?		
b) Did they report on psychometric properties of the scale for this sample?		
c) Did the authors report on the type of data produced by the instruments?		
d) Did the instruments produce data that supported the data analysis?		
For qualitative studies: Did they report on		
a) Trustworthiness of the data		
b) Credibility of the data		
c) Reflexivity		
d) Respondent validation		
Total points for this section		

Data Analysis	**Yes(1)**	**No(0)**
1. Was the method of analysis made explicit?		
2. Was the method of analysis motivated?		
3. Was the method of analysis appropriate relative to the research question?		
4. Were the conclusions drawn appropriate and supported by the data?		
5. Were the inferences drawn supported by the type of sampling?		
Total points for this section		

Sample	**Yes(1)**	**No(0)**
1. Was the source population clearly identified?		
2. Were the inclusion/exclusion criteria specified?		
3. Was the sampling choice motivated?		
4. Was the sampling method appropriate for the study?		
5. How was the size of the study sample determined?		
a) Not reported (0)		
b) Using threshold numbers (1)		
c) Formulas (2) – quantitative		
d) Statistical requirements (3)		
e) Saturation (3) – qualitative		
6. Were techniques used to ensure optimal sample size? (Yes/No) Quantitative		
Total points for this section		

Results	**Yes(1)**	**No(0)**
For Quantitative studies: 1. Were alpha levels reported/significant levels? 2. Were results correctly interpreted? 3. Were the results clearly linked to the research questions? For Qualitative studies: 1. Was saturation reached? 2. Were multiple reviewers used? E.g. two people did an analysis 3. Were the results clearly linked to the research questions? Total points for this section		

Conclusion	**Yes(1)**	**No(0)**
1. Was a clear conclusion drawn? 2. Was the conclusion supported by the findings? 3. Were relevant recommendations made based on the findings? 4. Were limitations identified? Total points for this section		

Total Score/Score (%) **Score** **Score %**

100% _____ _____

Weak (<40%) ___ **Moderate (41-60%) ___** **Strong (61-80%) ___** **Excellent (>80%) ___**

(Studies will be excluded from the systematic review if the quality of evidence was rated as weak (<50%).

Overall Appraisal: Include _____ **Exclude _____** **Seek further info ____**

APPENDIX F: ETHICS REGISTRATION CERTIFICATE

UNIVERSITY of the WESTERN CAPE

OFFICE OF THE DEAN
DEPARTMENT OF RESEARCH DEVELOPMENT

18 March 2014

To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape approved the methodology and ethics of the following research project by:
Dr M Smith (Psychology)

Research Project:	Research capacity building: A concept map of factors contributing to developing research productivity in postgraduate students and new academic staff.
Registration no:	13/10/57

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

The Committee must be informed of any serious adverse event and/or termination of the study.

UNIVERSITY of the
WESTERN CAPE

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

Private Bag X17, Bellville 7535, South Africa
T: +27 21 959 2988/2948 . F: +27 21 959 5170
E: pjosias@uwc.ac.za
www.uwc.ac.za

A place of quality,
a place to grow, from hope
to action through knowledge

APPENDIX G: DATA EXTRACTION TABLES TEMPLATE

Table 4.1: General Description and Strategy (n=)

Authors	General Description			Strategy	
	Target group	Academic field	Geographical location	Target skill	Explicit/Implicit

Table 4.2: Methodological Appraisal (n=)

Authors	**Methodological Appraisal**					
	Theoretical orientation	Design	Sample type	Sample size	Data collection	Data analysis

Table 4.3: Results (n=)

Authors	**Results**			
	Findings	Conclusion	Recommendations	Limitations