

Multiplicity in supervision models: the supervisor's perspective

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Abstract

Supervision is a vital aspect in the success of postgraduate students and even more so in open distance learning. Various factors influence supervision success, some relating to the student, some to the supervisor and others to the institution. This article addresses an over-arching factor, namely the number of stakeholders involved in a supervision relationship, that is termed *multiplicity*. The allocation of more than one supervisor has capacity implications which have to be traded against improvements in quantitative success measures and quality factors such as richer pools of knowledge and complementary expertise. This study investigates the perceptions on multiplicity of 22 supervisors who have undertaken supervision in ODL contexts. The research strategy is qualitative, based on an open-ended questionnaire survey and interviews. The main contribution is a set of dimensions, comprising factors that influence postgraduate supervision relationships, and the identification of conditions for considering more than one supervisor.

INTRODUCTION

Supervision is a fundamental factor in the success of postgraduate students (Bitzer 2011, 435). UNISA's definition of open distance learning (ODL) is 'a multi-dimensional concept aimed at bridging the time, geographical, economic, social, educational and communication distance between

student and institution, student and academics, student and courseware and student and peers' (UNISA 2008, 2). The definition points out that, in the context of minimal contact teaching, ODL is focused on removing barriers to accessing learning, flexible means of providing learning, student-centricity, student support, and constructing learning programmes aimed at helping students to succeed. In postgraduate ODL, supervisors are the students' main, and sometimes only human link to the institution; therefore they are the primary means of removing the barriers. The supervision process in distance-learning environments has thus escalated from an important to a critical success factor (van Biljon and de Kock 2011, 988). Considering factors that contribute to successful supervision, some matters relate to the student, some to the supervisor and others concern the institution (Albertyn, Kapp and Bitzer 2008, 749; Bitzer 2011, 427). Research has been undertaken on various student factors, for example:

- Themes identified by Albertyn et al. (2008, 760) on the most difficult aspects experienced by postgraduate students, namely personal fear and insecurity; the need for funding; integrating information; expertise in analysing and interpreting findings; academic writing and finding a focus;
- The non-responsive student, poor proficiency in English, expectations regarding supervisors' turnaround times and the technologies used for communication – all of these in a distance-education context (Erwee, Albion, Van Rensburg, and Malan 2011, 894);
- Increased demand for master's degree studies in South Africa, influenced by national policies aiming for growth in enrolment, yet without real increase in success rates (Swanepoel 2010, 142) and
- Students who have not acquired the research skills necessary to proceed to dissertations (Schulze 2009, 992) or conduct independent research, unless they receive intensive supervision, mentoring, and further training in research methodology (Swanepoel 2010, 142).

Supervision practice is a focal issue which impacts the student, the supervisor and the institutional resources. Furthermore there is evidence of dissatisfaction with many existing supervision practices

(Grevholm, Persson and Wall 2005, 174) and that provides the rationale for investigating supervision practice with regard to the optimal number of supervisors involved. The rationale for this study is the rapid growth in the number of postgraduate students in Computing studies at UNISA, without a corresponding increase in supervision capacity. The severity is exacerbated by the ODL situation, where supervision-from-a-distance presents challenges different from those of contact supervision and those of relationships with full-time, on-campus students. The aim of this study is to investigate supervisors' perceptions of the concept of multiplicity within ODL supervision relationships. Supervision in the ODL context is addressed in the literature review and the concept of *multiplicity* is now unpacked in more detail.

Multiplicity

The term *multiplicity* distinguishes the practice of *solo supervision* from *co-supervision* and *cohort supervision*. From the perspective of the number of students, *cohort-supervision* means one or more lecturers supervising groups of students (Dysthe, Samara, and Westrheim 2006, 300; Pillay and Balfour 2011, 369). There may be other interpretations, but in this paper the terms defining supervision models are used as follows:

- Solo-supervision: one supervisor supervising one student (one-to-one relationship).
- Group supervision: more than one supervisor supervising one student (many-to-one relationship). When there are two supervisors, it is called *co-supervision*.
- Cohort supervision: a supervisor, or more than one supervisor, supervising more than one student (one-to-many or many-to-many relationship) in a group structure.

Students' perceptions on multiplicity have been studied, and despite certain concerns, students generally preferred having more than one supervisor (de Lange, Pillay, and Chikoko 2011, 22, Van Biljon and de Kock 2011, 998). Nevertheless, the students' preference has to be traded against supervisors' preferences and capacity implications. According to Mouton (2011, 20), the most experienced and well-reputed South African doctoral supervisors carry heavy loads, therefore the

added value of a co-supervisor must be considered against the overheads of involving another supervisor.

This study investigates supervisors' perspectives on supervision models in master's and doctoral studies in the broad context of Unisa and the immediate context of the School of Computing at the University of South Africa. Addressing the former, Subotzky and Prinsloo (2011, 178) caution that achieving student success is a particularly daunting task in the Unisa situation, with its institutional character as an ODL mega-university, the challenging socio-economic circumstances of most of its students, and its mandate to promote open access to higher learning. Regarding the latter, postgraduate supervision capacity in the School of Computing has changed drastically due to rapidly increasing student numbers. In June 2010 there were 88 registered master's and doctoral students; in June 2011 there were 131; while in June and in November 2012 there were respectively 197 and 226 students. Over the same period supervision capacity increased marginally, but nowhere near the more-than-doubling of the student numbers since 2010. Furthermore, many of the supervisors do not hold doctoral degrees themselves, a fact that increases the pressure on the supervisors who do.

The contextual dynamics and the pressure on supervision capacity triggered this study to investigate perspectives of supervisors on supervision models in master's and doctoral studies with regard to the number of supervisors involved. The research aims to capture the experiences of both expert and novice supervisors regarding capacity implications, supervision quality, and the factors that determine when solo, co-supervision and cohort supervision are advisable. The findings incorporate positive and negative issues, and suggest conditions appropriate for the various multiplicity models for supervision of postgraduate students in ODL contexts. The main contribution of this research is to identify dimensions of supervision models, based on an enquiry into supervisors' experiences with different multiplicities.

LITERATURE REVIEW

The allocation of supervisors to students is influenced by policies of the institution, department, and supervisors (McAlpine and Norton 2006, 16). Despite the merits and demerits of multiplicity in principle, we argue that the ultimate decision to engage in supervision relationships with other supervisors lies with the supervisors. Therefore supervisors' views and motivations for engaging in specific supervision models warrant investigation.

Multiple supervision models

In the traditional 'apprenticeship model', students are supervised by an academic who is an expert in the field, sometimes supported by a co-supervisor with supplementary expertise (Pillay and Balfour 2011, 369). De Lange et al. (2011, 18) caution that apprenticeship can become an in-depth personal relationship or even a dependency. The roles of the primary and secondary supervisors have been studied from various perspectives; examples include the studies by Dysthe et al. (2006), Lee (2007) and the recent study by Pillay and Balfour (2011). Faster throughput associated with multiple supervisors per student, suggests that multiplicity adds measurable value to postgraduate supervision success (van Biljon and de Kock 2011, 999). On the other hand, more than one supervisor adds organisational overheads and impacts supervision capacity. According to Dysthe et al. (2006, 312), co-supervisors can add value by contributing particular experience, knowledge and skills, but completion times are not always reduced. Supervisors often differ in expertise, experience, roles and even physical location. Following five years of research on socialization and supervision of doctoral students in 18 universities Pole (1998, 263) describes joint supervision as 'complex, multifaceted and dynamic'. He encounters successful cases, where PhD students and trained new supervisors are supported, but also cases that impact negatively on all parties. Pole's study investigates interplay between the number of supervisors, their expertise, experience and relative status, as well as their physical location (Pole 1998, 263). Students' needs and competencies have changed during the process. Moreover, supervisors in the teams have different involvements and arrangements can change over the duration of the study, e.g. one supervisor may play a major role in the proposal, while

another provides the needed support, and yet another is a subject-matter expert (Pole 1998, 267). In a Swedish study, Franke and Arvidsson (2011, 16) investigate how supervisors view supervision of doctoral students and the associated pedagogic issues. They identify advantages for students when there are two active supervisors or when one supervisor is more experienced. Nerad (2011) investigated the reform of doctoral education worldwide and the implications for South Africa. Among other trends, she encountered structured programs including multiple supervisors or advisors. In some cases a dissertation committee comprising a panel, often with international members, is set up to guide doctoral students throughout the dissertation process. In the next section we look at supervising groups or cohorts of students.

The cohort supervision model

There is currently a growing interest in cohort supervision. Based on their experience in a South African Education Faculty, Lange, Pillay, and Chikoko (2011, 15, 16) propose the cohort model, where classes of students are jointly schooled as their doctoral studies proceed. It is a supportive approach because it dilutes, yet complements, the supervision load. Students serve as participative partners as they present work and peer-critique each other (Wisker, Robinson and Shacham 2007, 309). Fleming, Glass, Fujisaki and Toner (2010, 196-197) study thirteen cohorts, investigating students' perceptions of group cohesion. The students identify positive aspects of cohorts such as mutual support and the emergence of leadership as well as negative issues such as vulnerability and conflict. Regarding distance learning, Wisker et al. (2007, 306) at a UK university, address cohort supervision and communities of practice in distance education, due to their increasing numbers of part-time and international PhD students. Students are empowered to support and criticize each other's work in workshops and online discussions; this supplementary evaluation supports the supervisor (Wisker et al. 2007, 301). From the literature overview presented, it appears that the issues and advantages of multiple relationships in supervision have been well-researched. However, supervisors' personal views on multiplicity and the merits and demerits of more than one supervisor, are less theorized. Given this background, we now consider the ODL context and related implications this holds for supervision.

Supervision in the ODL context

Globalization, increased competition, and the information technology revolution drive a convergence between traditional and distance education methodologies towards open and lifelong learning approaches (Ntshoe 2010, 31.). This blurred distinction between distance and contact provision implies that pedagogical models and supervision approaches of traditional contact universities become relevant to the ODL context and justify the references to research done at contact universities. Key features of open learning include the fact that students are part-time and non-traditional (Subotzky and Prinsloo 2011, 182), the lack of face to face contact between lecturers and students (Lessing 2011, 934), flexible learning and the use of student-centred self-instructional learning content (UNISA 2008). The challenges faced by distance-education students can be ascribed to students personally, as well as to institutional and environmental aspects, about which Galusha (1997, 8) mentions the following:

- Personal and emotional: Insecurities about learning; fear of failure; sense of isolation; lack of social interaction and inadequate technical training.
- Infrastructural: Poor Internet access, technology failures, unreliability and cost of connectivity.
- Institutional: Lack of user support, such as tutors to help set up systems.
- Program design: Didactic and pedagogic approaches differ from undergraduate patterns.
- Lecturer: Lack of regular contact with lecturers complicates communication.

In a South African case study on postgraduate student retention and success, Koen (2007, 23-33) identifies seven collective variables, namely: the *institutional context* (social climate, physical setting, social and academic spheres); *household spheres* (socio-economic group, educational background, domestic obligations, workplace responsibility and financial circumstances); *personal factors* (academic ability, motivation, commitment and desire to finish); *organizational factors* (appointment policies, financial allocations, departmental structures, intellectual environment and institutional resources); *socio-political influences* (allocation of state resources and scholarships, higher education legislation and regulation); *academic performance factors* (progress with a thesis, full-time versus

part-time study and faculty affiliation) and *research factors* (teaching and supervision, problems inherent in research, language and student attributes). Although these variables were not identified specifically for ODL students, they apply strongly to postgraduate ODL as well.

A further consideration is that students studying in an ODL environment vary in terms of their backgrounds, qualifications and aptitudes. In conventional contact-teaching institutes, postgraduate students gain access to their research programmes through three main routes (Blunt 2009, 859):

- (i) Having distinguished themselves at undergraduate or honours level, they are invited to continue to postgraduate level. Such students often indicate preference for a specific supervisor.
- (ii) Students apply, based on an academic field offered by the institution.
- (iii) Students are referred to a particular supervisor due to his/her academic reputation.

For the second and third routes, candidates are screened as part of the admission requirements. Their academic records and their personal qualities are assessed. In most cases, the department and the prospective supervisor have a say in the allocation to supervisors. In ODL, by contrast, many applicants are not known previously by prospective supervisors and, under Unisa's current system, admission is done on the basis of prior qualifications, not by selection and quotas. Supervisors take high numbers of students and typically, have students whose academic prowess ranges from exceptional to less adequate. At Unisa there are many second-language students with low expertise in the English language (Lessing and Schulze 2003, 164). These factors increase the pressure and challenges faced by supervisors.

This study lies at the intersection of two dynamic domains, namely: the challenging environment of distance learning and the rapidly-growing sphere of master's and doctoral studies, both of which have been addressed in this section and preceding sections. To determine the success of postgraduate ODL, we should identify the aspects that supervisors can influence and address those in an optimal way. We now discuss the research approach and methods, aimed at capturing opinions from experienced and novice supervisors, all of whom have been involved with ODL supervision.

METHOD

Research approach

The primary research philosophy is interpretivism with an inductive approach to theory development. Interpretive research (Creswell, 2009, 8) is the study of individuals and their interpretations of phenomena in the real world in which they live and work. Theory emerges as it arises from the particular situations investigated. The researchers work directly with human experience and understanding as they gather and interpret data, based on the meaning and purposes of the participants. Interpretivism is typically viewed as an approach to qualitative research as done in this study.

Research Questions

The research question that guides the study, is:

What can be learned from the supervision experience reported by expert and novice supervisors, regarding the number of supervisors in a relationship?

This broad goal was translated into specific points for investigation in the survey, relating to aspects such as:

- the level of supervisors' experience,
- their preferences on solo supervision versus multiplicity, perceived advantages and disadvantages of various supervision models and
- cohort supervision.

The responses were grouped according to these aspects and the analysis is presented in the *Reporting of data* section. The questionnaire is included as Appendix A.

Data gathering and analysis

Data collection was undertaken by a survey and interviews. Questionnaires were administered to participants who are currently supervising in ODL situations, or who have supervised such to

completion. Furthermore, a small set of interviews was held with selected candidates. A mixed-methods approach (Creswell, 2009, 14, 99) was used in collecting data, in that the data gathered is mainly qualitative text but quantitative facts are also elicited to categorize the supervisors who have participated. The categorisation into *expert*, *intermediate* and *novice* is based on the number of students that had graduated under each participant, respectively:

- Experts (SI): The seven most experienced supervisors are termed *experts*; they have supervised more than six students to completion and all have currently-registered students.
- Intermediate (SE): The seven supervisors classified as *intermediate* have supervised between one and five students to completion; and have currently-registered students.
- Novice (SN): The eight *novices* have registered students, but have not supervised to completion.

The decision to use a minimum of one graduated student as the differentiator between intermediate and novice is based on the fact that a completed student means a minimum of two (in most cases three or more) years of supervision experience and knowledge of the entire process.

Due to the general lack of experience on cohort supervision, interviews were subsequently conducted with the five participants who had used the cohort model. Data analysis and interpretation of the questionnaire and interview data were done by thematic conceptual matrix analysis (Miles and Hubermann, 1994, 131-132). In line with the interpretivist approach, emerging themes and patterns were identified, which we term ‘dimensions’, substantiating our conclusions with textual data obtained from the participants.

Research setting, procedures and sampling

The methodology entails mainly qualitative strategies. First a brief questionnaire was developed to capture data on the following: supervision experience, supervision preferences, relative merits of multiplicity models, and anonymous biographical data relating to gender and age. The questionnaire was distributed by e-mail to the entire population of supervisors in the School of Computing at Unisa,

namely 34 supervisors. Eighteen responses were obtained, giving a 53% response rate. In addition, we enrich the set of experiences represented by sending e-mail requests to four selected external supervisors in Computing disciplines, all of whom had supervised distance learners. The sample thus comprises 22 supervisors, both experts and novices, in the disciplines of Computer Science or Information Systems. Most participants have not conducted supervision of cohorts. Subsequent to the questionnaire survey, the five participants who indicated that they had done it, were invited for post-questionnaire interviews to capture richer data on cohort supervision.

Ethical aspects

In an explanatory e-mail the purpose of the research was clearly set out to the potential respondents. For ethical reasons, participants were required to sign informed consent regarding the purpose of the research and use of the data.

Roles of the researchers

Both researchers are supervisors in the School of Computing at Unisa and as such they have experience of ODL supervision. Their experience of the tension between the merits and demerits of multiplicity, prompted the study. Given the interpretive approach, the researchers acknowledge that knowledge is context-specific and their personal objective is to obtain and present an improved understanding of the situation. The researchers developed the questionnaire and both of them administered the questionnaire. The primary author analysed the data while the secondary author was responsible for the quality assurance of the data as explained in the next section.

Quality of data

The questionnaire (as presented in Appendix A) is designed to capture respondents' thoughts, feelings, insights and experiences on the issue of more than one supervisor in the supervision relationship. All the supervisors who have responded, made an effort to provide complete responses

and often support that with examples from their experience. Therefore the qualitative data quality is rich and meaningful.

REPORTING OF DATA

The results of the data capturing will now be presented in response to supervision aspects, namely the level of supervisors' experience, supervisors' preferences on solo supervision versus multiplicity, including perceived advantages and disadvantages of various supervision models; and finally the data captured during interviews on cohort supervision.

Level of supervisors' experience

Responses to the first question on the number of students completed in solo, co- and cohort supervision are summarised in Table 1. Several respondents had little, or no, experience of group supervision (more than two supervisors supervising one student) so responses are disregarded in further analysis. All of the experienced supervisors and three of the intermediate group have experience of both solo and co-supervision but less than 20% had undertaken cohort supervision. Therefore it was decided to focus the analysis on solo and co-supervision and, as explained in the Method section, address cohort supervision separately through focused interviews.

Table 1 depicts the number of completed students per respondent (master's or doctoral) and the percentage of those done in solo supervision for the expert and intermediate group (responses to the first question). From inspection of Table 1, it can be established that the experts' experience ranges from 7 to 50 students and that they all have experience of both solo and co-supervision, but more of solo supervision (average 74%) – except for one participant. In the intermediate group the number of students ranges between 1 and 5 with a more equal balance between solo and co-supervision experience (average 56%). The cases with very high student numbers are a result of supervising mini-dissertations.

Table 1: Expert and intermediate groups – completed students and percentage solo supervision

Participant number	Expert group: students completed	Percentage completed in solo supervision		Participant number	Intermediate group: students completed	Percentage completed in solo supervision
SE1	50	92		SI1	4	50
SE2	7	71		SI2	2	0
SE3	12	83		SI3	1	100
SE4	18	39		SI4	3	0
SE5	35	86		SI5	5	40
SE6	41	56		SI6	1	100
SE7	10	90		SI7	1	100

The novice group has no completed students, so the number of registered students per respondent is shown in Table 2, together with the percentage in solo and group supervision respectively. Considering multiplicity, 43% of the novice group also do solo supervision. It is interesting to note that solo supervision experience increases with supervision experience, indicating either that co-supervision is more common among intermediate and novice supervisors or there is a current trend to have more supervisors, or that both of these apply.

Table 2: Novice group: Students registered per participant and percentage solo supervision

Participant number	Novice group: number registered	Percentage in solo supervision	Percentage in group supervision
SN1	6	50	50
SN2	2	100	0
SN3	0	0	100
SN4	7	17	83
SN5	2	100	0
SN6	8	63	37
SN7	3	33	67
SN8	2	0	100

Supervisors' preferences in terms of multiplicity

The second question in the questionnaire relates to participants' preferences in terms of multiplicity. The responses do not provide conclusive evidence on the most preferred method, as most participants argue that cases differ and it depends on factors relating to the supervisors, the student and the context. These factors are discussed later under the conditions for co-supervision in response to

Question 3. Participants' comments in response to Question 3 relate to the advantages, disadvantages and conditions for selecting each supervision model. Although the advantages and disadvantages of each method were requested separately, respondents viewed the advantages of the one correspondingly as disadvantages of the other, hence we group them into advantages of solo- and co-supervision respectively, as shown in Table 3.

Table 3: Advantages of supervision models	
Solo-supervision	Co-supervision
More efficient: Less overheads in terms of scheduling, time delays, administration and organisation involved. Student has only one contact point and both parties have only one relationship to manage.	Shared responsibility: Supervisors share the accountability and responsibility for the research, technical, administrative and quality aspects. Back-up on decisions is reassuring and confirmatory.
Control: Solo supervision allows the supervisor full control over all aspects of the study.	Stand-in, support and back-up: One supervisor can take charge when the other is unavailable.
No conflict in management: no conflicting paradigms, viewpoints, requirements, or supervision styles in leadership of the study or approaches to research.	Gains in knowledge and experience: Additional expertise, wider pool of ideas which could lead to faster identification of key issues. Knowledge transfer regarding special skills, different specializations, and mentorship within supervision.
Improved return on investment: The financial rewards and credits for publications are shared between two (one being the student) instead of three.	Moderation/mediating effect: Should disputes arise between the student and a supervisor, the other supervisor can mediate.
Simpler: fewer complications due to no distinct roles in supervision and fewer expectations to manage.	More management strategies available: Different roles can be assigned to the supervisors, for example leadership in the research process versus content expert. These may also be enacted on the emotional management levels e.g. 'good cop/bad cop' roles.
	Resources: Better networking opportunities– students have access to the contacts and resources of two supervisors.

After the advantages and disadvantages emanating from the data had initially been listed, participants' responses are iteratively re-read and analysed to identify emerging themes. Table 4 provides a holistic view of the entire dataset and presents the themes, which we termed *dimensions*, together with explanations and the selected identifying phrases. Arguably, knowledge and experience are resources too, but they are addressed separately, as the other resources relate to finances. The *Discussion* section discusses and contextualises these supervision dimensions.

Table 4: Dimensions of supervision and how they were identified

Dimension	Explanation	Typical identifying phrases
Effectiveness	A measure of a student's progress towards obtaining the qualification.	<i>Less effective, more effective, not all co-supervisors pull their weight</i>
Efficiency	A measure of the resources (including time) required from the supervisor/s and the student.	<i>Time to complete, organisational overheads, scheduling, managing/organising</i>
Knowledge & experience	Supervisors' knowledge: <ul style="list-style-type: none"> • content knowledge and • supervision knowledge. 	<i>Inexperience may disadvantage students, knowledge transfer, special skills, different specializations, mentoring, access to specialised knowledge and experience</i>
Shared responsibility	Supervisors share accountability and responsibility for the technical, administrative and quality assurance aspects.	<i>Back-up on decisions, reassuring, confirmatory, no validation, no confirmation of guidance</i>
Support and back-up	One supervisor can take charge when the other is not available.	<i>Stand-in , sounding board</i>
Conflict management	Conflicting ideas, different supervision styles or approaches.	<i>Contradictory views, conflicting ideas, approaches and interpersonal differences, no 'tie breaker', student plays off supervisors against each other</i>
Control of supervision situation	Solo supervision allows full control over all aspects of the study.	<i>Student has only one entry point, can do it my preferred way, only one relationship to manage</i>
Resources	Refers to the pool of available resources to use in doing the study and also to the sharing of the research outputs in terms of articles and the completion incentive.	<i>The pool of resources to be accessed should be considered as well as the sharing of credits and monetary rewards for the research outputs and completion of the study</i>

Cohort supervision model

As noted, most of the respondents in the present study had no experience of group supervision, but five have used it. Noting the implications of the literature review, we used our study to elicit early impressions of cohort supervision in ODL by conducting interviews with those five participants, who gave valuable qualitative feedback on the phenomenon during their interviews. Their input summarised in terms of advantages, disadvantages and solutions, is as follows:

Advantages: It allows peer tutoring and broader critiques, as it creates a community of scholars with multiple perspectives. As students connect with each other, they can inform and motivate one another. They learn from mutual strengths and mistakes. In addition, literature and other resources can be shared.

Disadvantages: Some students are not team players. Furthermore, students do not progress at the same pace and those who lag behind may become demotivated. Scheduling meetings and workshops to accommodate everyone can be problematic for the supervisors.

Recommendations: To make it work, the supervisor should be experienced and have organisational ability. Students should be mature and highly motivated and there should be common ground for cooperation, i.e. they should belong to the same focus groups and be committed to the group approach. One respondent (previously from Unisa) finds cohorts effective in contact teaching of master's students doing half-dissertations. For those who stayed on board, throughput was better, because the students did not want to lose face. With distributed students, as in ODL, the scheduling issues have been overcome by some UNISA supervisors who hold a limited number of contact sessions and supplement communication with technology: video conferencing, VOIP systems (like Skype) and creating online postgraduate communities. These mechanisms foster student-student communication and peer-review, as well as supervisor-student contact.

DISCUSSION

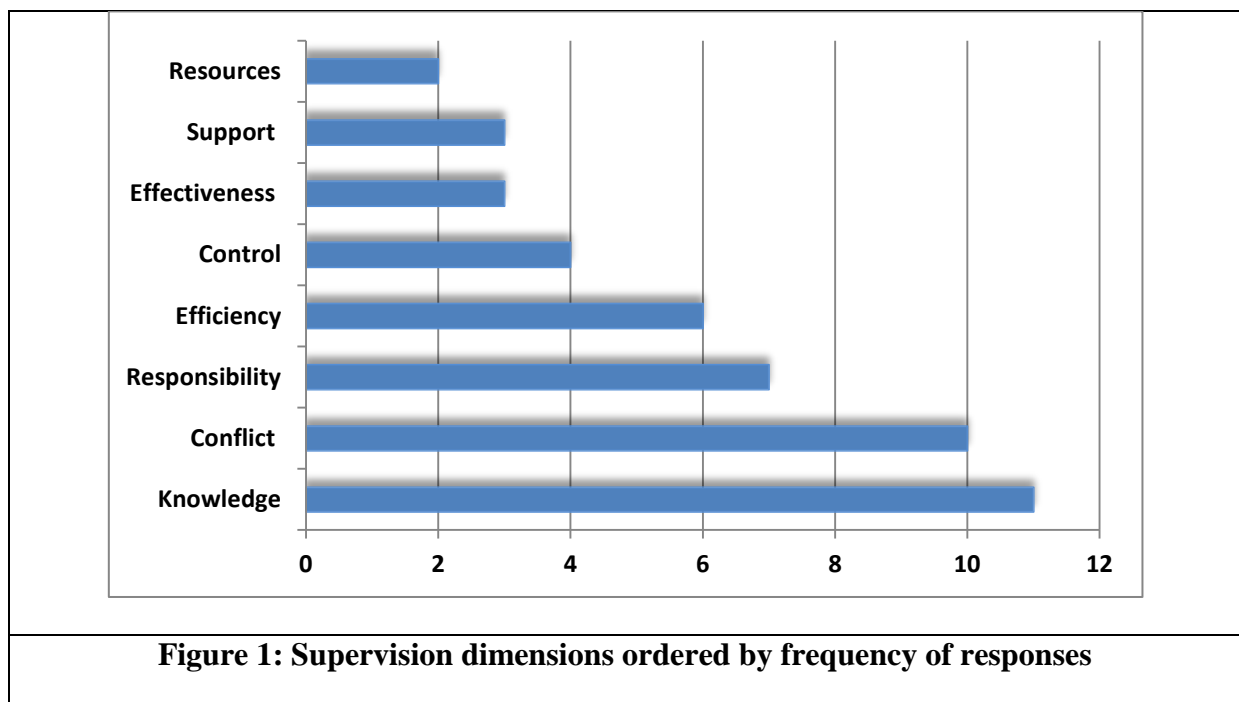
Multiplicity models

Given the exploratory nature of the study, the questionnaire items required participants to provide advantages and disadvantages of each model rather than weigh specified items. This approach allows rich data capturing but does not provide prioritisation of advantages and disadvantages. However, the number of times a theme occurs was tallied towards gaining some understanding of its importance as presented in Figure 1. From observation of Figure 1, *knowledge* (which includes experience) and

conflict management are the most noted themes. The order is interesting but not significant due to the small sample size and the fact that it is based on participants' responses rather than a specific rating question. Regarding the conditions for co-supervision, the two main themes that emerge are *subject knowledge* and *supervision knowledge*, where the more experienced supervisor could play a mentoring role.

Considering the findings per supervision group, we look at the most important advantages and disadvantages identified in each group.

- Expert group: the most important advantage listed for co-supervision is *subject knowledge transfer* and the most prevalent disadvantage is *reduced efficiency*. A significant difference in experience or content knowledge is seen as an indicator for co-supervision, this is supported by earlier finding of Pole (1998, 262).
- Intermediate group: the most prevalent advantages listed for co-supervision are *backup* and *shared responsibility*, with *conflict of ideas* and *conflict management* as the main obstacles. Like the expert group, they also view differences in experience or content knowledge as indicators for co-supervision but they emphasize the moral support offered by the practice.



- Novice group: the most prevalent advantages listed are *confirmation* and *validation of supervision advice* and the most prevalent disadvantage is *efficiency*. The need for being mentored and having access to specialised knowledge are the main indicators for more than one supervisor. Bitzer (2011, 435) contends that younger supervisors are increasingly expected to supervise mature-age professionals and that the situation could be mediated by the help of a co-supervisor.

It is concluded that the three different groups prioritise the advantages and disadvantages differently, but there is consensus that differences in supervision knowledge or content knowledge are the main indications for having more than one supervisor. This finding concurs with earlier research on the value and reasons for having more than one supervisor (Pole 1998, 270, Pillay and Balfour 2011, 369-370) but adds value in differentiating the needs of novice and experienced supervisors.

Cohort supervision model

Considering the growing number of recent implementations and publications on cohort supervision, for example Grevholm, Persson and Wall (2005); Wisker, Robinsons and Shacham (2007); Fleming et al. (2010); Botha_a, (2010); Botha_b (2010) and Nerad (2011), there are strong indications of a growing interest in the cohort approach to postgraduate supervision. Apart from the social and collaborative advantages, it can also reduce problems in supervision capacity. The findings from this study support the advantage of cohort supervision with regard to peer tutoring (Dysthe et al. 2006, 313) and broader critiques (Wisker et al. 2007, 301) as it creates a community of scholars with multiple perspectives. As students connect with each other, they can inform and motivate one another – this is particularly useful in the ODL context.

There are prominent challenges to be dealt with in cohort supervision. Notably, the willingness to work in groups and progress at the same pace. The challenges involving organisation, time, the size of the cohort, and the supervisors' participation are also acknowledged by De Lange et al. (2011, 27).

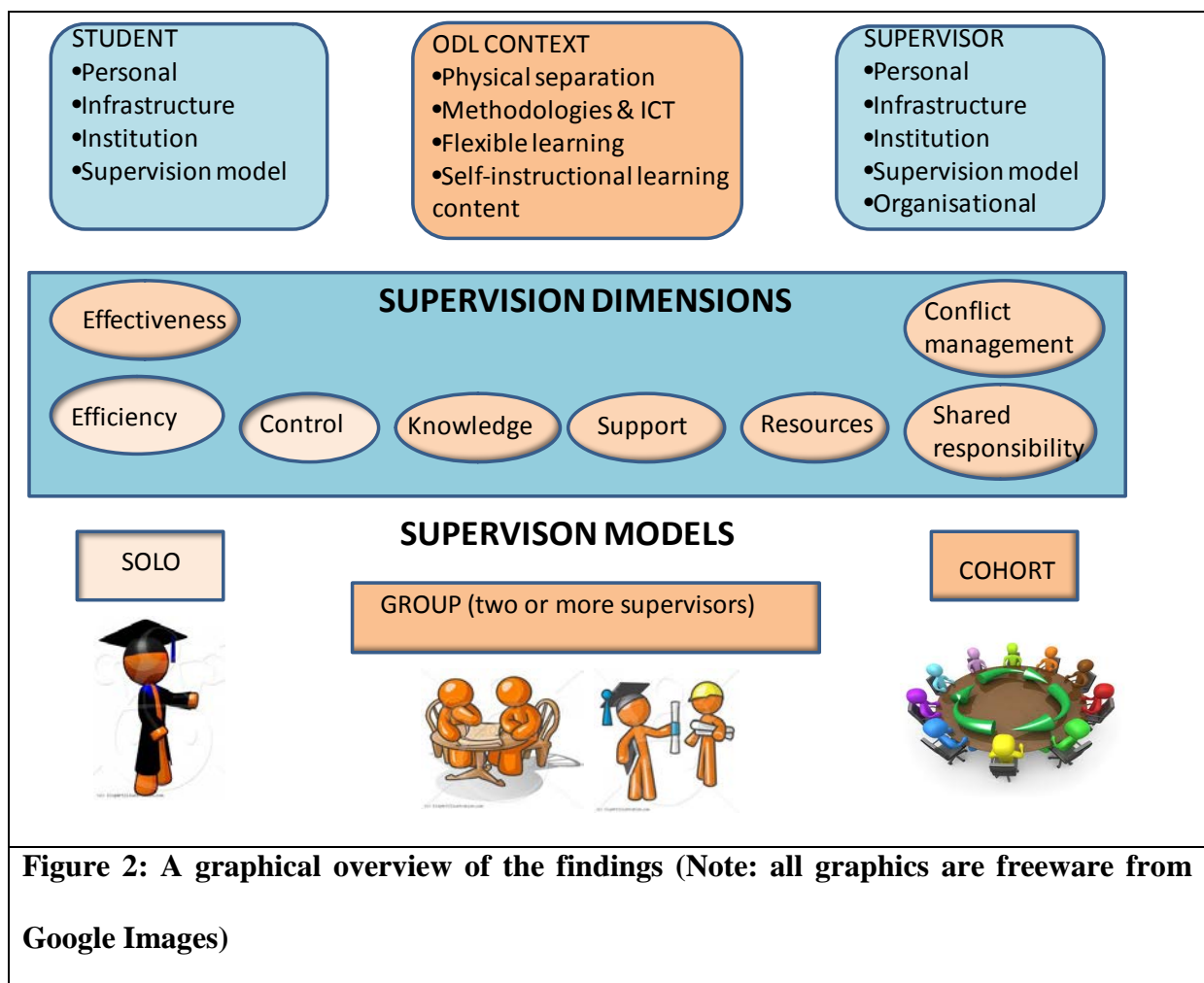
The findings also allow us to extract necessary, but not complete, conditions for cohort supervision in the ODL context. Cohort meetings (both face to face and virtual) have to be purposively scheduled in the ODL context, taking into account that many students may be working full-time. Furthermore there are privacy issues to be considered before making students' contact information available to other students. This means that the supervisors have to be experienced, motivated to make the cohort model work and have organisational ability (De Lange et al. 2011, 27). The interviewees state that students should be mature and committed to the cohort approach; this means that they should agree on the benefits of sharing information and ideas. This also implies common ground in terms of research topics or research approach.

Summary

Based on a survey with an equal distribution of novice, intermediate and experienced supervisors, we have identified the following dimensions from the textual data: *effectiveness, efficiency, knowledge and experience, responsibility, support and back-up, conflict management, control of supervision situation* and *resources*. Figure 2 depicts a graphic summary of the dimensions together with the supervision models and the factors influencing the role players namely the student, the supervisor and the ODL context. Considering the factors influencing the supervisor and the student, infrastructure could possibly be categorised as an institutional factor but it is highlighted as a result of the prominence in ODL supervision. We do not claim this unordered set is exact or exhaustive but we propose it as a point of departure in attempting to understand the concept of multiplicity-in-supervision relationships. The dimensions are phrased in ways that acknowledge existence of the dimension as an attribute that can be manifested in a positive or negative way, depending on the context and academic domain. For example, 'effectiveness in supervision' can manifest itself as effective or ineffective, while the status of the 'conflict' dimension could be neutral, active, or latent. Conflict management may be viewed as an overhead (disadvantage) of co-supervision, but the presence of a co-supervisor can also have a moderating effect in supervisor-student disputes, in which case it is a positive aspect. Regarding resources, additional supervisors imply a trade-off between general resources (time and subsidy) on the one hand and supervision resources (subject knowledge

and supervision knowledge) on the other. Hence, from a quantitative perspective, having more than one supervisor involved is only worth considering when there is a significant difference in experience or content knowledge, or both and the additional supervisor is thus essential for the supervision to be successful. Based on the findings, we suggest the following conditions for having more than one supervisor:

- Abilities of the supervisor regarding the supervision process, stages of supervision, and approach to research (experience).
- Abilities and expertise of the supervisor regarding the subject matter.
- Nature of the topic (multi- or interdisciplinary).
- Particular type of support – academic and/or affective – needed by an individual student.



Finding that the main condition for having more than one supervisor is differences in knowledge, expertise and supervision experience, is in harmony with (Pole 1998, 265) who contends that co-supervision is based on a relationship of inequality. The other dimensions (such as shared responsibility, back-up and decision support) can be seen as mediating factors and their importance depends on the individual situation. The mediating factors seem to be more important for novice and intermediate supervisors. This is supported by Lessing and Schulz (2003, 167) who find that experienced supervisors are less enthusiastic about co-supervision since they believe it complicates the process and slows it down. This raises questions regarding the incentive for experienced supervisors to co-supervise when they are under time constraints and may also explain the trend towards cohorts and team supervision, particularly in the ODL context.

Given the challenges faced by ODL students, as explicated in the section on supervision in the ODL context, the availability of more than one supervisor can enhance the required emotional, academic and pedagogic support. Cohorts have the added advantage of peer-support, which assists in overcoming students' challenges of isolation and insecurity (Botha_a 2010, 106). This aligns with the proposed conceptual framework for student support at Unisa which comprises three distinct 'types' of student support, namely academic (cognitive), affective (non-academic) and administrative (non-academic) support (Prinsloo 2011, 12-13).

CONCLUSION

Supervision relationships remain complex, multifaceted and dynamic (Pole 1998, 263) and yet the pressure on institutions and academics to deliver more postgraduates is increasing (Bitzer and Albertyn 2011, 875). A factor that notably impacts an institution's supervision capacity, the quality of graduates delivered and both the supervisors' and students' supervision experience, is the issue of having more than one supervisor involved in the supervision relationship. This article identifies themes inherent in supervision models as viewed from supervisors' perspectives and proposes them as dimensions of the supervision relationship. Additionally, conditions for having more than one supervisor are listed. The aim of this paper is not to identify a superior model, but rather to present

dimensions that should be considered in the selection of an appropriate supervision model for a particular case. In practice the dimensions could be used to support supervision model selections in addressing large student numbers and orienting novice supervisors under conditions of low supervision capacity.

Given the fact that many of the advantages of co-supervision apply only to novice and intermediate supervisors, the feasibility has to be questioned in situations of low supervision capacity. Although cohort models have been identified as more complex to manage, they may offer an alternative when there is a need to provide support and mentoring to novice supervisors in resource-constrained situations. Structuring the supervision approach more tightly and having multiple supervision relationships and team supervision is in line with international trends (Bitzer and Albertyn 2011, 879; Nerad 2011, 7; Mouton 2011, 14). However, the supervisor remains central to the supervision process, thus co-supervision and cohort supervision should be adopted only if individual supervisors are in agreement. The generalisability of the findings is limited by the relatively small number of participants. Nevertheless, the quantitative data is presented mainly for contextual and description purposes; the value of the study lies in the evaluation of the qualitative responses and interviews. The in-depth, rich responses received allow the use of thematic analysis to motivate the identification of the proposed supervision dimensions and issues in cohort supervision. Future research is needed to validate the multiplicity dimensions identified here and quantify the importance of each dimension towards prioritisation of dimensions in a given context.

REFERENCES

- Albertyn, R. M. , C. A. Kapp, and E. M. Bitzer. 2008. Profiling exiting postgraduate students' performance and experiences. *South African Journal for Higher Education (SAJHE)* 22 (4):749-772.
- Bitzer, E.M. 2011. Doctoral success as ongoing quality business: A possible conceptual framework. *South African Journal for Higher Education (SAJHE)* 25(3):425-443.
- Bitzer, E.M. and R.M. Albertyn. 2011. Alternative approaches to postgraduate supervision: A planning tool to facilitate supervisory process. *South African Journal for Higher Education SAJHE* 25(5):874-888.
- Blunt, R.J.S. 2009. Research supervisor's perceptions of effective practices for selecting successful research candidates. *South African Journal for Higher Education (SAJHE)* 23(5) 852-864.

- Botha_a, P. 2010. Student throughput : The role of the individual lecturer. *Progression* 32 (2):102-116.
- Botha_b, N. 2010. *Acta Academica Supplementum*, 1: 57-74, ISSN 0587-2405©UV/UFS, Accessed on 26 November 2012 from http://www.ufs.ac.za/journals_ActaAcademica
- Creswell, 2009. *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. 3rd edition. SAGE Publications. Thousand Oaks, California.
- de Lange, N., G. Pillay and V. Chikoko. 2011. Doctoral learning: a case for a cohort model of supervision and support. *South African Journal of Education* 31 (1):15-30.
- Dysthe, O., A. Samara, and K. Westrheim. 2006. Multivoiced supervision of Master's students: a case study of alternative supervision practices in higher education. *Studies in Higher Education* 31 (3):299-318.
- Erwee R., P. Albion, H. Van Rensburg, and R. Malan. 2011. Dealing with doctoral students: Tips from the trenches. *South African Journal for Higher Education (SAJHE)* 25 (3):889-901.
- Fleming, L.M. , J.A. Glass, S. Fujisaki, and S.L. Toner. 2010. Group process and learning: A grounded theory model of group supervision. *Training and Education in Professional Psychology* 4 (3):194-203.
- Franke, A, and B Arvidsson. Research's different ways of experiencing supervision of doctoral students. Accessed 2011 [cited 1 March 2011. Available from <http://dx.doi.org/10.1080/03075070903402151>.
- Galusha, J M 1997. Barriers to Learning in Distance Education. *International Computing and Technology* 5 (3-4):6-14.
- Grevholm, B. L. Persson, and P. Wall. 2005. A Dynamic Model for Education of Doctoral Students and Guidance in Research Groups. *Educational Studies in Mathematics* 60 (2):173-197.
- Jones, J. 2008. Issues and Concerns of Directors of Postsecondary Distance Learning Programs Regarding Online Methods and Technologies. *The American Journal of Distance Education* 22 (1):46-56.
- Koen, C. 2007. *Postgraduate student retention and success: A South African case study*. Cape Town: HSRC Press.
- Lee, A. 2007. Developing effective supervisors: Concepts of research supervision *South African Journal of Higher Education (SAJHE)* 21 (4):680-693.
- Lessing, A. 2011. The role of the supervisor in the supervisory process. *Journal of Higher Education (SAJHE)* 25(5):921-935.
- Lessing, A.C. and S. Schulze. 2003. Lecturers' experience of postgraduate supervision in a distance education context. *SAJHE/SATHO* 17 (2):159-168
- McAlpine, L. and J. Norton. 2006. Reframing our approach to doctoral programmes:[?] an integrative framework for action and research. *Higher Education Research and Development* 25 (1):3-17.
- Miles, M. B. and A. M. Huberman, 1994. *An expanded sourcebook: Qualitative Data Analysis*, 2nd edition. SAGE Publications. Thousand Oaks, California.
- Mouton, J. 2011. Doctoral production in South Africa: Statistics, challenges and responses. *Perspectives in Education* 29 (3).
- Nerad, M. 2011. What We Know about the Dramatic Increase in PhD Degrees and the Reform of Doctoral Education Worldwide: Implications for South Africa. *Perspectives in Education* 29 (3).
- Ntshoe, I.M. 2010. Realigning visions and missions of universities in a transbinary setting. *Progressio* 32 (1):27-41.
- Pillay, G., and R. Balfour, J. 2011. Post-graduate supervision practices in South African universities in the era of democracy and educational change 1994-2004. *SAJHE* 25 (2):358-371.
- Pole, C. 1998. Joint Supervision and the PhD: safety net or panacea? *Assessment & Evaluation in Higher Education* (3).
- Prinsloo, P. Implementing the Conceptual Framework for student support at Unisa - a proposal for 2011-2013. 2011. Accessed 6 December 2012. Available from http://unisouthafr.academia.edu/PaulPrinsloo/Papers/1273661/implementing_the_conceptual_framework_for_student_support_at_unisa.
- Schulze, S. 2009. Teaching research methods in a distance education context: Concerns and challenges. *South African Journal for Higher Education (SAJHE)* 23 (5):992-1008.

- Subotzky, G. and P. Prinsloo. 2011. Turning the tide: a socio-critical model and framework for improving student success in open distance learning at the University of South Africa. *Distance Education, Special Issue: Distance Education for Empowerment and Development in Africa*. 32 (2):177-193.
- Swanepoel, C.H. 2010. Master's degree studies: Expectations versus reality *South African Journal for Higher Education*. (SAJHE) 24 (1):132-144.
- UNESCO. Open and distance learning: trends, policy and strategy considerations. 2002. Available from <http://unesdoc.unesco.org/images/0012/001284/128463e.pdf>.
- UNISA. 2008. Open Distance Learning Policy. UNISA Online www.unisa.ac.za.
- van Biljon, J. and E. de Kock. 2011. Multiplicity in supervision relationships: A factor in improving throughput success? *South African Journal of Higher Education (SAJHE)*. 25 (5):987-2002.
- Wisker, G., G. Robinson, and M. Shacham. 2007. Postgraduate research success: communities of practice involving cohorts, guardian supervisors and online communities. *Innovations in Education and Teaching International*, 44(3) 301-320.

Appendix A

Questionnaire on Postgraduate supervision

We are investigating multiplicity (i.e. one or more supervisors per student) in postgraduate supervision and would like to get your view. Please give us some information to about your supervision experience and opinions on the following questions related to postgraduate supervision.

Question 1:

Indicate your current involvement with the supervision of postgraduate students (Master's and/or Phd)

	Students registered	Number completed	Number in progress
Solo-supervision			
Co-supervision			
Group supervision			

Question 2:

2.1 As supervisor, what kind of supervision do you prefer (one, two or more than two supervisors)? Please motivate your response.

.....

2.2 How would you describe your personal experience as supervisor (wrt multiplicity)?

.....

Question 3:

Indicate your position on multiplicity by completing the following table:

	Advantages	Disadvantages	Conditions when appropriate
Solo-supervision			
Co-supervision			
Group supervision			

Question 4: What kind of multiplicity (solo, co- or group supervision) would you recommend for an ODL environment? Please motivate your response.

.....

Question 5:

Supervision experience(indicate yes or no, indicate number of students if yes)		
Solo-supervision	Co-supervision	Group/Cohort supervision