

Workload Allocation and Postgraduate Research Supervision: From praxis to theory development

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Abstract. Workload management for academics within higher education settings has been and continues to be heavily contested and cited by some as a challenge that has proved impossible to satisfactorily decipher. This is especially problematic within postgraduate contexts where academics have multilayered roles and responsibilities that include teaching, producing research outputs, participating in civic engagement and providing research supervision to students. Related to this, wide-ranging scholarly efforts have been directed at developing workload allocation frameworks, most of which have had limited application utility. Motivated by this, the current article contributes to existing scholarship on workload allocation models in higher education institutions, with specific emphasis on the postgraduate supervision workload allocation dimension.

Keywords: postgraduate student matrix of competencies, supervisor matrix of competencies, risk-resilience, South African higher education context, university management, workload allocation model

Introduction

Workload allocation models are commonly regarded with significant suspicion by academics, yet they continue to be mobilized by academic managers, with different degrees of success. The literature in the field suggests that, when implemented poorly, workload allocation models can do more harm than good. However, when they are utilized with flexibility and due respect for context-specific differences, they can be a valuable resource in service of sound academic management of workloads. This article offers an overview of the scholarly debates on workload allocation models before moving on to summaries of

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higher education workload management considerations globally, using a South African university context as a case example. Utilizing scholarly perspectives from a range of secondary data sources, the authors conclude the paper with a critiqued presentation of workload allocation guidelines for the postgraduate supervision dimension of university workload allocation models. Carefully populated postgraduate student and supervisor matrices of competencies are suggested as key components of a set of risk-resilient workload allocation model guidelines that can meaningfully serve academic managers when they make workload allocation decisions in their postgraduate supervision contexts.

In service of conceptual clarity, the authors begin with concise definitions of the key terms that will be used throughout the article. The complexity of these terms will be unpacked in the discussion that follows, but this section will offer the working definitions that serve as the starting points of the article. At its most basic, a workload allocation model is a framework that governs how tasks are assigned to staff members within an organisation. It consists of guidelines that can be used to determine how any given staff member's available working hours will be allocated to accomplish the tasks that need to be completed within any given reporting period. According to Kernohan (2023), an "institutional workload model is an attempt to understand at an aggregate level what needs to be done and what is done, two often widely diverging ideas, and then to ensure resources are apportioned accordingly". In recognition of the challenges that confront line managers who use workload allocation models, and the risks that emerge when workload allocation models are used improperly, the authors developed guiding principles that attempt to control for these risks and challenges. The resultant set of guidelines make up what is referred to as a risk-resilient workload allocation model. A matrix of competencies is a visual representation, in tabular or grid format, of the key stakeholders' relevant skills, abilities, and adeptness. For the purposes of this article, the key stakeholders are supervisors and postgraduate students. A Postgraduate Student Matrix of Competencies and a Supervisor Matrix of Competencies have thus been developed to enhance the risk resilience of the proposed workload allocation model.

Context of the Scholarly Debate

South African universities are operating within a global higher education landscape that is characterised by tensions, competing demands, academic anxieties, and financial constraints. While these dynamics are stressors at universities internationally, the massification of education constitutes an additional challenge that is particularly acute in the South African context. The uncontested prioritisation of student massification is widely heralded as the single most uniting challenge that has faced universities across the globe. Universities have been compelled to increase their student numbers and many have done so exponentially. In Africa, the continent's largest university, the University of South Africa, reports a 300% student increase between 2005 and 2023 where undergraduate and postgraduate enrolments increased from 98 000 students to 357 000 students over the period. The increase, however, has not been matched by the number of facilitators of learning available and equally capable to undertake

undergraduate tuition and postgraduate supervision. In response, education providers have modified teaching approaches to allow for greater accommodation of students and this has been particularly successful within undergraduate contexts where open distance teaching modalities have developed to better simulate traditional face to face teaching and learning experiences. The postgraduate context presents a much more complex proposition driven by the diminishing numbers of experienced educators. The diminishing supervisory capacity relates to unmanageable workloads and a less experienced cohort of supervisors who are required to supervise students with greater support needs. This view is echoed by Kenny and Fluck (2022) who state that “high levels of stress are likely to undermine the delivery of high-quality teaching and research, and therefore diminish the effectiveness of universities” (p. 1373).

Results from studies conducted by Tight (2010) and Kenny and Fluck (2022) suggest that “92.5% of academics claimed they could not meet the requirements of their academic roles within the standard 38 hour working week” (p. 1378). This raises questions around the sustainability of current workloads. Furthermore, the mismeasure of academic workloads is magnified by the fact that there is very little consensus about the objective measurement of workload and what constitutes an acceptable or unacceptable workload. Many authors (Hesseldenz, 1976; Mustapha & Ghee, 2013) found evidence of unfairness and personal biases in the allocation of work, which have resulted in dissatisfaction amongst staff. However, Kenny and Fluck (2018) contend that when work allocation models are developed and implemented effectively, they enable academics to have meaningful discussions “with their managers to negotiate reasonable workload outcomes and performance expectations” (p. 1379).

To date, there is still no globally accepted model for university workload management and where there are attempts to devise such models, these are often critiqued for failing to take into account differences between academic environments. This view is echoed by Swartz et.al. (2019) who signal the “unique historical trajectories of higher education in South Africa” (p. 569). These specificities of context require local academics to engage with workload allocation models in ways that are fit for purpose in our environments. It is critical that different contexts develop solutions that speak to their own unique challenges. With due recognition of both the differences and the similarities in different higher education environments, these solutions need to be developed with the understanding that they may have transferable value to other spaces. Guided by this framework of thinking, this article presents a postgraduate supervision workload allocation model that was conceptualised and operationalised for use at a South African mega university.

In contexts where institutions need to navigate demands to accommodate increasing student numbers while producing cutting-edge research with ever tighter budgets and dwindling resources, nuanced approaches to workload allocation have become more important than ever. Academic capacity is severely constrained with levels of burnout, so-called quiet quitting, insufficient talent retention mechanisms and poor workplace morale at troubling levels (Lawless, 2023; Lee et al., 2022). Institutions are expected to do more with the academic staff they have, and in order to do so without compromising either the integrity of the academic project or the wellbeing of academics, line managers are required to

engage in fairly sophisticated managerial practices. The situation becomes even more complex when one notes how few line managers in university settings have any formal managerial qualifications (Gmelch, 2000; Wisniewski, 2019). In most institutions, excellence in teaching and learning, research publication output profiles, and academic citizenship activities facilitate progression in academic career trajectories to various levels of management (Strathe & Wilson, 2006). While these key performance areas offer solid indications of an individual's competency as a scholar, they do not provide real insight into management proficiency. The reality is that many academic line managers hone their managerial skills while in management positions. This learning by doing approach, coupled with a lack of formal management education, creates scenarios where line managers could benefit a great deal from additional support when they need to make workload allocation decisions. This article reflects on the type of support that line managers could find useful, and we argue that our proposed set of workload allocation guidelines can serve this function. The caveat is that such guidelines can only do so effectively when they are utilised in very specific ways, which we will discuss in the article.

Academic workloads encompass a range of activities but, for the purposes of this article, the focus will be on workload allocation in postgraduate supervision. There are a few core reasons for this analytical focus. First, in South African universities, the pressure to enhance postgraduate throughput rates has been immense. This is thus a part of universities' spheres of operation where the stakes are particularly high. Second, postgraduate spaces tend to involve fewer academics, with most departments and faculties needing to make supervisory allocations for, at most, a few hundred students per year. This is very different from scenarios involving modules with thousands of undergraduate students. It thus offers more opportunities for line managers to have meaningful discussions with academics about workload allocation when postgraduate students are being placed with supervisors. Managers are more likely to be able to carve out time to use the guidelines we propose in this article to engage with potential supervisors. The flexibility that is a key component of effective utilisation of our proposed workload allocation model guidelines is also more attainable in postgraduate supervision workload decisions. For instance, while not necessarily ideal, it is not uncommon to change a postgraduate student's supervisor or to add a co-supervisor over the course of the supervisor relationship.

Workload Management in Higher Education: Overview of the Global Context

The importance of workload management in higher education is reflected in the burgeoning body of scholarship that explores the multiple dynamics at play in the development and implementation of workload allocation models (WAMs) at universities across the globe (see, for instance, Crisp, 2022; Mushabe et al., 2022; O'Meara et al., 2019). Tensions around workload allocations and the ever-increasing sense amongst academics that they are over committed, are nothing new. Academics working at universities tend to be sceptical in their views of WAMs. This scepticism is exacerbated by the sense that WAMs are corporate instruments that do not have the capacity to accommodate the specific

dynamics of higher education institutions (Parsons & Slabbert, 2001). Despite these concerns, WAMs continue to be regarded as a tool to help manage these tensions. The current research on the topic suggests widely divergent views on the usefulness of WAMs in university contexts. The general consensus is that, while they can serve as a useful management tool, they cannot be regarded as a panacea for the workload challenges that the sector is facing. Fumasoli and Marini (2022) refer to WAMs as one of the “most contentious instruments” (p. 297) in universities’ human resource management toolkit. Their articulation of the benefits clearly signals why universities keep returning to this instrument: “WAM’s declared advantage is enhanced transparency and strategic direction in order to perform efficiently and effectively key activities in the university” (Fumasoli & Marini, 2022, p. 299). Regardless of the positive intentions, they also highlight the negatives, including inept implementation and widespread views amongst staff that this is a blunt tool that fails to account for the finer nuances of the ways in which academics work.

In a more uniformly negative assessment, Hostler (2023) argues that WAMs have become instrumentalised to “exploit researchers by mismeasuring academic labour” (p.1). For Boncori et al. (2020), the potential of WAMs to be used positively or negatively is summed up in the subtitle of their article: “Workload Allocation Models in Academia: A Panopticon of Neoliberal Control or Tools for Resistance?”. Kenny and Fluck (2022) offer an approach that aligns with the spirit of this article, namely that WAMs can be useful tools to foster transparency, fairness, efficiency and equity in workload decisions, but that this is only possible if the implementation is done in environments where trust and collegiality shape interactions between line managers and academics. They emphasise the importance of collaboration, flexibility and engagement with the voices of academics in any useful implementation of WAMs (Kenny & Fluck, 2022). The failure to implement WAMs properly will simply perpetuate the very challenges they were designed to address, namely inefficiency, resentment, and staff attrition. We recognise that mechanisms to guide the management of the competing demands on academics’ time are needed, but also that a WAM (as an example of such a mechanism) is best treated as a set of guidelines that line managers need to use with care and respect for differences amongst both the staff members and the students we all serve.

Workload Management in Higher Education: Overview of the South African Context

While most WAMs, locally and internationally, warn against any one-size-fits-all approach and advocates flexibility and respect for context-specific differences, the postgraduate section of any fair WAM at South African universities needs to pay particular attention to difference. The wide range of academic competencies with which both postgraduate students and supervisors enter supervision relationships in South African higher education institutions makes it crucial to steer well clear of making this an exercise in allocating points and counting numbers in any simplistic, generalised manner. Sebola (2023) notes that the “proportion of academic staff with honours, master’s, and doctoral degrees as their

highest qualifications in South Africa's public universities in 2019 was 17.5%, 34.8%, and 47.7%, respectively" (p. 223). Given that an academic needs at least a master's degree to supervise a master's student, and at least a doctoral degree to supervise a doctoral student, these percentages signal a situation where the shortage of suitably qualified supervisors results in academics having to take on supervision responsibilities very shortly after they obtain their own qualifications. A master's or a doctoral qualification obviously will not necessarily mean that an academic has the postgraduate pedagogical skills to be an effective supervisor. In South Africa, an aging academic workforce means that most postgraduate spaces are heavily populated with novice supervisors who are developing their supervisory skills as they engage with students. In her critique of research supervision practices in South Africa, Maistry (2017) describes the local higher education ecosystem, and its impact on novice supervisors as

A sector struggling with a multitude of challenges around transformation, (including racial transformation), the 'new' young academic is confronted with the schizophrenic demands of the institutions in which they work, as they struggle to come to terms with the 'fast tracking' that they have to endure, namely achieving the PhD and simultaneously mastering the research supervision craft (p. 123).

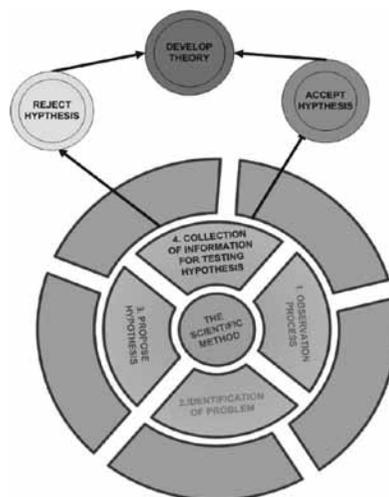
The divergent levels of postgraduate student readiness can also be traced to the severe inequalities that continue to plague all aspects of the South African education landscape, from primary to secondary sectors. In her analysis of postgraduate supervision at South Africa's largest university, Manyike (2017) notes that significant numbers of admitted students are "academically under-prepared for postgraduate studies, and supervisors need to make up for this unpreparedness to graduate studies to ensure successful completion through remedial work at the beginning of the year in workshops" (p. 7). The lack of academic proficiency that is necessary at postgraduate level has many dimensions and, while workshops and other capacity development interventions are helpful, remedial work tends to be an ongoing demand on supervisors' time throughout most supervisory relationships. One of the most prominent challenges relates to language skills where English as the language of instruction is a second, third or even fourth language for the vast majority of students in a country with twelve official languages. Postgraduate success is also heavily reliant on access to technology, and the ability to mobilise that technology effectively, in everything from literature reviews to using referencing software and formatting requirements. In a country with a Gini coefficient of 0.67 (Valodia, 2023), the divergence in access to these technologies in any given cohort of postgraduate students will be acute. The need to respect these differences when one attempts to develop risk resilient WAM guidelines means that one should consider the individual supervisor and candidate profiles when one makes postgraduate work allocation decisions. The WAM guidelines we offer in the rest of this article will thus be shaped by a postgraduate student matrix of competencies as well as a supervisor matrix of competencies.

This article makes a significant contribution to understanding the potential positive use, as well as the risks and challenges, related to the implementation of WAMs in diverse and dynamic higher education institutions. While we focus on the importance of accommodating student and supervisor diversity in South African contexts, universities across the globe are increasingly registering students with widely divergent ranges of academic competencies. Our matrices of competencies will thus be of use to academic line managers in different university spaces. By focusing on postgraduate supervision work allocation dynamics, we offer an in-depth and detailed engagement with the factors that determine the notional hours that any given academic will need to devote to a particular student’s supervision. Our matrices of competencies offer concrete and practical tools that line managers can use in their workload allocation discussions with academics. While the literature warns against a one-size-fits-all approach to workload allocation models in higher education, there is scant guidance on how to avoid such an approach. Our article fills this scholarly gap by providing clear and comprehensive guidelines that are fit for purpose and ready to be used by academic line managers in their postgraduate workload allocation discussions.

Methodology

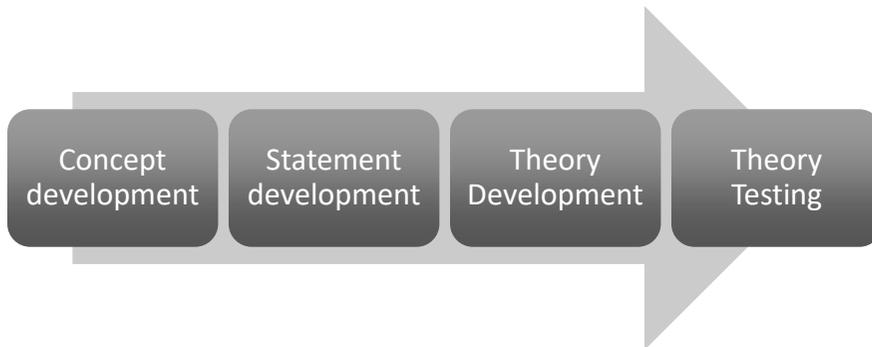
The basis of the current paper and the emerging theorisations involved the hybrid adaptation of two widely utilised theory development frameworks, most notably Walker and Avant (2011)’s “Steps in theory development”, and Razaque et al. (2014)’s “Development process of theory” as represented below:

Figure 1. Diagrammatic representation of theory development process



Source: Reorganized from Razaque et al. (2014)

Figure 2. Diagrammatic representation of theory development process



Source: Reorganized from Walker & Avant (2011)

The two above-cited conceptualisations of the the theory development process within our work broadly centred on a step-by-step progression through (a) clearly articulating the problem under study, and (b) the identification of relevant concepts and factors specified within related literary sources as (a) contributing factors to workload challenges and (b) as contributors to potential solutions.

Source material to guide this exploration was derived from empirical and theoretical literary sources via a preliminary scoping literature review in which the authors identified and assessed existing research and theoretical contributions relevant to workload allocation models in academia. The review was concerned with identifying material that addressed three main areas of interest:

- (1) Determining the status of scholarly debates on workload allocation research and theory;
- (2) Exploring significant variables or factors that shape workload assessment;
- (3) Outlining the key guiding principles in postgraduate workload determination.

As a summative step of the review, the paper proposes the postgraduate student and supervisor matrices of competencies as part of the more substantive presentation of an evidence driven workload allocation model.

Synoptic overview of the data search strategy

The three main areas of interest specified above were used as the basis for developing a focused data search strategy which included both theoretical and empirical data collected from wide-ranging e-resources that included:

- Google Scholar,
- UNISA repository,
- EBSCOhost,
- Ovid,

- PubMed,
- ProQuest,
- ERIC and
- HINARI search engines.

Across each of the above-specified search engines, the following keywords were used individually and also using the Boolean operators and/or to broaden and narrow the results.

- Workload management in academia
- Workload allocation
- Workload assessment
- Workload measurement
- Workload analysis
- Academic workload
- Academic workplace performance
- Faculty workload management

Inclusion and exclusion criteria

Initial application of the above specified search terms resulted in over 331 citations. Close analysis of the initially captured results had limited relevance to university workload management and as such specific inclusion and exclusion criteria were applied to ensure that only the most relevant literary sources were retained for inclusion in the scoping literature review. In this regard, the scoping review included only those citations relating to studies that

- primarily focused on faculty workload management within universities and/or higher education contexts;
- related to workplace performance issues arising from workload considerations;
- were published no more than 10 years ago; and,
- were published in scholarly outlets.

Application of these inclusion and exclusion criteria resulted in 41 empirical and theoretical publications which formed the basis of the scoping review. Between these selected sources, the researchers were able to find theoretical and empirical contributions that focused on (a) clearly articulating the problem under study, and (b) identification of relevant concepts and factors specified within related literary sources as (a) contributing factors to workload challenges and (b) as contributors to potential solutions.

Emergent themes from the review of literature

The review of literature resulted in key emergent themes which are summarised in Table 1 below:

Table 1. Themes emergent from literature review

Themes related to the nature of workload management challenges	Themes, concepts and factors contributing to workload challenges	Themes, concepts and factors acting as potential solutions to workload challenges
<ul style="list-style-type: none"> • Unsustainable workload pressure on supervisory staff. • High learner support needs from students. • Disproportionate existence of novice supervisors by comparison to experienced counterparts. • Ever growing range of roles and responsibilities assigned to academic staff • Growing lack of readiness amongst students. • Inadequate baseline competencies amongst academics • Increasingly complex subject fields to offer supervision within. • Poor university infrastructure to support growing occupational need. 	<ul style="list-style-type: none"> • Exponential growth in student numbers. • Diminishing proportion of experienced supervisory staff. • Limited subject expertise amongst academic learning facilitators. • Poor institutional support • Inadequate training in supervisory competencies particularly in supporting students with exceptional capacitation needs. • Inadequate confidence and competence in wide-ranging research methodologies. • Over reliance on remote support options. 	<ul style="list-style-type: none"> • Training in supervisory skills • Advanced Research methodology training • Development of cornerstone competencies amongst supervising faculty • Widening of repertoire of supervisory modalities being utilised to support students • Best practice coaching of novice supervisors • Intensive methodology training of students • Development of key principles for workload analysis and assessment

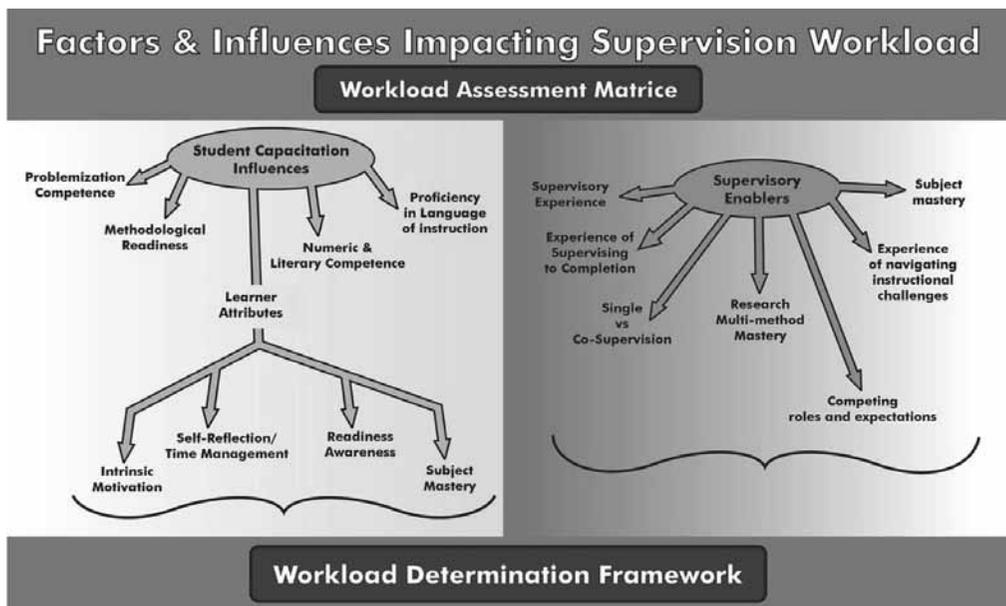
As indicated in Table 1, the themes that emerged from the literature review could be organised into three main clusters, namely: (a) themes related to the nature of workload management challenges; (b) themes, concepts and factors contributing to workload challenges; and (c) themes, concepts and factors acting as potential solutions to workload challenges. All three theme clusters speak to how diverse ranges of competencies, of both students and academics, shape the challenges that complicate workload allocation

decisions in higher education settings. Close, critical engagement with the data represented in Table 1 formed the basis from which we developed the Postgraduate Student and Supervisor Matrices of Competencies.

From our scoping review to theory development: The postgraduate student and supervisor matrices of competencies

As per the data search strategy specified above, the scoping review focussed on two broad “state-of-the-science” factors and influences impacting supervisory practice, namely: (a) student capacitation influences; and (b) supervisory enablers. Figure 3 below provides a diagrammatic summarisation of the factors and influences that were specified within literary sources as (a) determining students’ readiness for research; and (b) articulating contributors to capacitation of supervisors.

Figure 3. Workload Determination Framework for Postgraduate Supervision



As shown above, supervisory workload is described as being a result of the interplay of the “student’s readiness for research” and the supervisors’ ability to navigate the complex competency requirements of their supervisory role. Students’ readiness for research is depicted as a cumulative consideration of a number “student capacitation influences” that include:

- **Problematisation competence:** a student’s ability to identify and scientifically justify the need for research of their chosen phenomena of interest or research problem.

- **Methodological readiness:** students' preexisting competence in key research methodologies across qualitative, quantitative and mixed method research paradigms.
- **Numeric and Literary competence:** a student's mastery of statistical methods and academic writing commensurate with their level of study.
- **Proficiency in the language of instruction:** a student's ability to write clearly and articulate his/her arguments competently in English.
- **Intrinsic motivation:** a student's demonstration of motivation to complete their studies without being closely monitored.
- **Self-reflection/ time management:** a student's demonstration of reflexivity and being able to appropriately allocate time to the respective requirements of their postgraduate journey.
- **Readiness awareness:** a student's ability to understand his/her scholarly strengths and weaknesses.
- **Subject mastery:** a student's ability to demonstrate mastery of the scholarly content relating to their chosen topic area or field of study.

Beyond the contributing competence-based factors that relate to the student, the scoping review gave attention to the factors and influences within the supervisor which may have some impact on their ability to navigate the roles and responsibilities of supervision. Within the supervision assessment matrix, these are identified as supervision enablers and include:

- **Supervisory experience:** The combined influence of the number of years and the number of students that an individual supervisor would have had experience of supporting.
- **Experience of supervising to completion:** The comparative experience that individual supervisors have of supporting students from initial registration to graduation.
- **The existence of single versus co-supervision arrangements:** The extent to which supervisors had the freedom to institute co-supervisory arrangements where they deemed it necessary.
- **Supervisor's mastery of multiple research methodologies:** an assessment of the supervisor's repertoire in relation to their ability to utilise and oversee studies using qualitative, quantitative and mixed methods research.
- **Supervisor's perception of competing roles and responsibilities:** the extent to which a supervisor is able to balance their ongoing workload demands effectively.
- **Supervisors' experience of navigating instructional challenges:** the level of experience individual supervisors had with supporting students with substantial learner support needs.
- **Subject mastery:** the supervisor's level of knowledge specifically of the subject area and topic being studied by the student.

From conceptual framework to praxis: Applying theoretical perspectives to the practice of postgraduate supervision

In this section, we apply the factors and influences derived from our scoping review to describe some of the core competencies that shape the abilities of supervisors and postgraduate students to engage meaningfully in the postgraduate process. When deciding how much time and effort any particular postgraduate student will require of any particular supervisor, there are three distinct yet interdependent entities that need to be considered. The first is the student and their readiness to undertake research, the second is the supervisor and his/her competence in navigating the supervisory journey, and the third is the relationship between any specific student and their supervisor. The efficacy of this relationship will be determined by the interplay of competencies that each student and supervisor bring to the relationship. The uniqueness of each student and supervisor guarantees that the supervisory process will always be unique to those two individuals. In the case of co-supervision scenarios, more complex dynamics come into play. Since pairing novice supervisors with more experienced academics is a common supervisory capacity development strategy, these factors will be considered in the guidelines that are proposed. No student, supervisor or supervisory relationship will demand the same level of input, and any workload allocation framework that does not take account of these differences will most likely prove to be unfit for purpose.

Theory in Motion: An Illustrative Use of the Supervisor Matrix of Competencies

Some of the factors that should be considered when calculating how much time a supervisor will spend on the supervision of a postgraduate student in any given year are listed below:

- The academic's supervision experience. In general, more years of experience equal fewer hours an academic is likely to spend on supervision.
- The number of master's and/or doctoral students the academic has supervised to completion. In general, more students supervised to completion equal fewer hours an academic is likely to spend on supervision.
- The academic's number of years post- master's or post-phd attainment. In general, more years since obtaining her/his highest qualification equal fewer hours an academic is likely to spend on supervision.
- Whether the academic has successfully completed any institutional supervisor training programmes. In general, successful completion of training programmes equals fewer hours an academic is likely to spend on supervision.
- Is this a co-supervision or sole supervision scenario? In general, co-supervision equals fewer hours.

- In the case of co-supervision, is the co-supervisor being mentored by the primary supervisor? If yes, the allocation of hours should allow for the other academic activities that will be taking place in the supervision process. For the experienced supervisor, academic citizenship/ leadership may be taking place in addition to supervision. For the novice co-supervisor, supervisory capacity development will be taking place in addition to supervision.
- Is this a cohort supervision scenario? In general, cohort supervision equals fewer hours per student.
- Is the topic directly or tangentially linked to supervisor's core area of expertise? In general, the further removed from the core area of expertise, the more hours an academic is likely to spend on supervision.

As an illustrative example, the elements that constitute the specific matrices of competencies are represented below, followed by a brief description of how each element will likely affect time allocation. These factors are envisaged as discussion points to guide workload allocation conversations between line managers and supervisors. The subsections for the supervisor and postgraduate student matrix of competencies are accompanied by examples of how these discussions can be documented and quantified, even if the starting point remains the recognition that unique individuals are involved and both competencies and relationships are fluid and dynamic. Despite these caveats, the schematic representation of matrixes could add value to academics' understanding of how their work allocations are determined, and where competencies could benefit from capacity development interventions.

An example of a supervisor matrix of competencies can be found below, followed by an example of a scoring system rubric, and underneath that is a list of additional competencies that could populate the matrix. Line managers would do well to remember that academic voices need to be heard for any work allocation guidelines to serve their purpose meaningfully, and that academics enter workload discussions with their own experiences with students at different levels of study. It would thus be useful to invite potential supervisors to suggest any additional competencies that should be considered and to adjust the matrix accordingly. Such a collaborative approach will facilitate academic participation in the workload allocation decisions, and it will help avoid a top-down sense of tasks being imposed on academics.

*Supervisor matrix of competencies***Table 2. Supervisor Matrix of Competencies**

Supervisor name	Sole or co-supervisor	Student name	Supervisor Score	General Competencies						Research Area Competencies	
				Feedback skills	Time management skills	Research project management skills	Mentorship skills	Expectation management	Conflict resolution	Theoretical expertise	Methodological proficiency
Prof X	Sole	Student Y	3.87	4	3	4	3	5	3	5	4

Table 3. Scoring Rubric for Supervisor Matrix of Competencies

Scoring System		
Score	Skill level	Description
5	Expert	<ul style="list-style-type: none"> Experienced supervisor with excellent throughput rate. Able to mentor novice supervisors. Postgraduate students publish during research project. Needs no monitoring. Needs no training.
4	Proficient	<ul style="list-style-type: none"> Experienced supervisor with demonstrated ability to supervise students to completion. Can function as primary supervisor in co-supervision arrangement with novice supervisor. Needs minimal monitoring. Could benefit from specific training interventions on voluntary basis.
3	Sufficient	<ul style="list-style-type: none"> Basic competencies to supervise. Not able to serve as primary supervisor in mentoring capacity. Requires regular monitoring by departmental M&D Office. Should be required to attend supervisor training interventions in areas scored below 3 in competencies matrix.
2	Does not meet minimum requirements	<ul style="list-style-type: none"> Not able to serve as sole supervisor. Should be paired with supervisor at expert or proficient level. Should be required to attend full Supervisor Training Course.

1	Inadequate	<ul style="list-style-type: none"> • Not able to serve as sole supervisor or as co-supervisor in official capacity. • Should be paired with supervisor at expert or proficient level in mentee capacity. • Should be required to attend full Supervisor Training Course.
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Additional general competencies that can be utilised to the populate the Supervisor Matrix include, for example, the following: Ability to guide academic writing skills development at postgraduate level; Proficiency in use of online pedagogical tools; Ability to foster trust within supervisory relationships; Ability to nurture the development of student's own scholarly voice; Ability to guide students in developing ethical approach to all aspects of research project; Ability to guide students in polishing golden thread of central argument throughout thesis or dissertation; Ability to guide students to attain structural integrity and internal coherence of thesis or dissertation; Ability to guide students to achieve alignment and synthesis between different elements of thesis or dissertation; Ability to encourage students to develop independence in research.

Additional research area competencies that can be utilised to populate the Supervisor Matrix include ones such as: Familiarity with relevant bodies of scholarship; Sufficient familiarity with bodies of scholarship to assist the student with understanding and articulating the originality of the contribution; Understanding of disciplinary requirements, conventions, and expectations in field of student's research project; Proficiency in data analysis techniques in student's field of study; Ability to point student to most important journals in the field.

In order to be deemed a competent supervisor, an academic needs a score of 3 or above in a matrix of competencies that will be populated by the factors above, in addition to any other elements that are deemed to be relevant. If any of these core competencies are lacking, notional hours will need to be allocated to the development of lacking competencies via institutional supervisor training programmes or other modes of capacity development, such as mentoring. Supervisors who are supervising and being trained simultaneously, will need to be accommodated by the WAM guidelines. Notional hours need to be associated with the development of each supervisor competency. This is disaggregated into general competencies and research area competencies. The former can be addressed via more general institutional-level training programmes while the latter should be addressed within departments via discipline specific interventions, which can be done by allowing supervisors time to read/ research around a student's topic. This will be particularly relevant where the topic is only tangentially aligned to the supervisor's area of expertise.

Postgraduate student matrix of competencies

In conjunction with considering the skill-set supervisors bring to the table, the WAM must control for the widely divergent range of academic competencies with which students enter our postgraduate

qualification programmes, particularly in a country as diverse as South Africa. An example of a Postgraduate Student Matrix of Competencies can be found below, followed by an example of a scoring system rubric, and underneath that is a list of additional competencies that could populate the matrix.

Table 4. Postgraduate Student Matrix of Competencies

Student name	Student number	Supervisor name	Student score	Academic Competencies					
				Academic writing skills	Time management skills	Ability to engage critically with secondary sources	Theoretical understanding	Ability to synthesise information	Ability to take ownership of progress
Student Y	12345566	Prof X	3.66	4	3	4	3	5	3

Table 5. Scoring Rubric for Postgraduate Student Matrix of Competencies

Scoring System		
Score	Skill level	Description
5	Excellent	<ul style="list-style-type: none"> • Student with exceptional academic literacy skills • Student able to take majority of ownership for research project. • Student pro-actively initiates troubleshooting discussions with supervisor. • Student and supervisor collaborate in knowledge generation. • Student requires minimal input from supervisor and can integrate input with ease. • Student produces work that can be packaged as academic articles with minimal intervention. • Student already has experience with conference/ seminar presentations of research.
4	Proficient	<ul style="list-style-type: none"> • Student has solid academic literacy skills. • Student benefits from regular interaction with supervisor and integrates supervisor input meaningfully.

		<ul style="list-style-type: none"> • Student able to self-identify skills gaps and asks for guidance to build own capacity. • Student demonstrates capacity to develop academic articles in co-publication with supervisor.
3	Sufficient	<ul style="list-style-type: none"> • Student meets basic requirement for relevant level of postgraduate study. • Student requires significant supervisor intervention. • Student relies on supervisor to point out gaps in skillset and to provide extensive guidance on how to address these gaps. • Student would benefit from attending postgraduate capacity development capacity workshops as recommended by supervisor.
2	Does not meet minimum requirements	<ul style="list-style-type: none"> • Student requires extensive supervisory intervention and only adequately incorporates feedback after multiple drafts. • Student should be required to attend supervisor identified capacity development workshops. • Student should be required to attend institutional Academic Writing short course and present supervisor with certificate of completion.
1	Inadequate	<ul style="list-style-type: none"> • Student lacks basic academic literacy skills. • Department should make a very convincing case for allowing student into their postgraduate programmes. • Department should re-consider supervisory team to take pressure off any individual supervisor to address all the gaps in student's skillset.

Some of the factors related to a student that should be considered when calculating how much time a supervisor will spend on the supervision of a postgraduate student in any given year are articulated below:

- Is the language in which the qualification is being offered the student's first, second, third or further removed from home language? In general, the further removed from the home language, the more time and input will likely be required from the supervisor. There has been a growing trend internationally to attempt to account for tuition language proficiency in supervision WAMs. Given the larger spectrum of language competencies in the South African context, this will need to be considered with even greater care.
- Students generally need to have obtained 60% in the preceding degree to qualify for entrance into our master's and doctoral programmes. With each 10% above the qualifying 60 (either for the honours major or for the master's degree), a certain number of hours can be deducted from the time that a supervisor will likely need to spend on supervision of a specific student.
- Has the student published any articles in peer reviewed academic journals? If a student has demonstrated publication capacity, a certain number of hours can be deducted from the time

that a supervisor will likely need to spend on supervision of a specific student. Here the calculation should take into account whether the student was the sole author or part of a larger group of authors.

- Is the student doing the degree full-time or part-time? Typically, WAMs halve the allocated supervision time for part-time students.
- At what phase of the project is the student? Typically, students will require more input at specific stages of the project. These variations in expected input time will be fairly discipline specific. For instance, in the humanities, the proposal stage and the few months prior to submission will likely be the most demanding on the supervisor's time. In other disciplines, the ethical clearance or data collection stage will be a known stressor on the supervisor's time.

Additional competencies that can be utilised to populate the Postgraduate Student Matrix can also be disaggregated into academic and personal skills, including: Proficiency in use of online tools and learning platforms; Possession of discipline-specific knowledge as related to topic; Possession of some cross-discipline knowledge to demonstrate awareness of scholarly developments in related fields; Ability to access academic sources effectively; Ability to assess scholarly quality of sources; Research skills related to data collection and methodology; Research skills related to data analysis; Academic writing skills; Referencing skills; Understanding of ethics of research; Resilience and flexibility in cases of research challenges; Commitment to project and progress; Time management skills; Ability to work independently; Ability to articulate needs to supervisor and advocate for self to ensure that needs are met.

Discussion and Recommendations

Carefully completed Supervisor and Postgraduate Student Matrices of Competencies can be mobilised to ensure that workload allocation decisions accurately, fairly and transparently reflect the amount of work an academic will need to devote to any particular student that is allocated to them. Vardi (2009) explains that the most commonly used measuring unit in WAMs is time, as quantified by means of contact hours, although also noting that “[c]ontact hours have been criticised for not accounting for the different effort required for different teaching activities, such as repeat tutorials versus lectures presented for the first time” (p. 500). As the preceding matrices have demonstrated, in postgraduate contexts, different amounts of time and effort relate to varying ranges of competencies of supervisors and supervisees. The matrices offer concrete, practical and fit-for-purpose guidelines that academic managers can use to control for different time and effort expenditures in their workload allocation discussions. They provide invaluable tools to counter simplistic equations that assume equality in the workloads of different postgraduate supervision scenarios. These matrices can empower academics to advocate for themselves in workload allocation discussions with line managers. By coming to these

discussions with completed matrices, an academic will be able to demonstrate clearly, and with substantiating reasons, that specific postgraduate students will be more or less time intensive than others. Line managers, in turn, can benefit from such nuanced, individualised and detailed matrices since they will ensure that workload allocation decisions align with the realities of how an academic actually spends her or his time in the postgraduate supervision sphere of their operations. It benefits no one, least of all a line manager who needs to manage workplace morale, to pretend that a supervisor with a score of 2 can function at the same level as one with a score of 4.5. Similarly, acknowledging that a postgraduate student with a score of 2 will require a greater time investment than one with a score of 4.5, enables a line manager to make workload allocation decisions that are informed by reality rather than idealised notions of students' skillsets.

In the examples above, Prof X scored a 3.87 in the Supervisor Matrix of Competencies, while Student Y scored a 3.66 in the Postgraduate Student Matrix of Competencies. These scores will shape the unique supervisory relationship that will result from a pairing of Prof X and Student Y, and they will determine the number of hours that Prof X will need to allocate to the supervision to achieve a successful outcome. This will be very different from a scenario where Prof X scored a 3 and is paired with Student Y who scored 2. In academic workload allocation profiles, supervisors have certain numbers of master's and doctoral students assigned to them, with little or no disaggregation of the specificities in terms of actual time that will be needed for supervisory activities. In measuring workload, departments tend to assume that all supervisors and all postgraduate students are equal and involve equal amounts of work. This is simply not accurate, and these faulty assumptions result in highly skewed postgraduate workload allocations and severe mismeasurements of supervisory work. Given the realities of South African higher education context explained above, many supervisors and postgraduate students will enter supervisory relationships with scores below 3. Ignoring this reality will not serve equitable workload allocation decisions, academic morale, the best interests of our students, or the imperative to produce higher numbers of master's and doctoral graduates within tightly prescribed timeframes. It is thus crucial to engage in a careful assessment of the scores supervisors and postgraduate students attain on their respective competencies matrices when line managers have workload allocation discussions with academics. This will allow line managers to avoid obviously problematic allocations, such as pairing a supervisor with a score of 2 with a student with a score of 2. In a department with significant supervisory capacity challenges, a co-supervision arrangement with a supervisor with a 4 or 5 and a co-supervisor with a 2, and a student with a 2 or 3, for instance, might be feasible. In such a scenario, the proficient supervisor will be spending time on both supervision and supervisory capacity development or mentoring activities. If one measures the work of such a supervisor without recognising the additional labour of capacity development, one runs the risk of senior academics simply refusing to co-supervise with novice supervisors. This will have an obvious deleterious impact on supervisory capacity development. Similarly, if one pretends that a student with a score of 5 demands the same input as a student with a score of 2, one runs the risk of supervisors refusing to supervise certain students. This

will have a significant impact on universities' ability to offer equal access to education and it will undermine the "commitment towards social justice praxis", which Van der Walt et al. (2014, p. 842) regard as a core function of higher education institutions. While managers are, in theory, able to allocate students and co-supervisors unilaterally, such approaches will exacerbate the toxic workplace environments that are sketched in the introductory sections of this article.

Substantive acknowledgement of differences and real recognition of the time demands associated with such differences offer line managers the best chance of meeting the needs of supervisors and students while also minimising resentment and mismeasuring academic labour. The competencies of supervisors and students will always be dynamic and subject to change. Workload allocation is an annual exercise, and the fluidity of competencies should be taken into account in each new workload allocation discussion. This will require supervisors and postgraduate students to complete the relevant matrices of competencies on an annual basis. If supervisory capacity development interventions and postgraduate learning are functioning optimally in a department, the scores should improve over the course of any given supervisory relationship, and these changes should be factored into a new year's workload allocation decisions. For instance, with Prof X and Student Y, the scores might improve to a 4 for either or both by the third year of supervision. In such a case, the line manager can reasonably assume that Prof X will need to spend less time on Student Y's supervision than she needed to do in the first year of supervision. This will free up time for Prof X that can be allocated to other activities, such as mentoring novice supervisors, or developing any of her other key performance areas. This article has outlined the challenges facing line managers making workload allocation decisions in postgraduate supervision contexts as well as the dynamics that must be factored into these decisions. A robust, risk resilient set of workload allocation guidelines will assist line managers with mitigating the risks of making poorly informed supervisory allocations.

While the article has provided comprehensive postgraduate workload allocation guidelines, the flexibility that is a prerequisite for their successful implementation may not always be possible in all scenarios. Some line managers and academics may not be able or willing to accommodate such flexibility, and our suggestions will thus not work for them. Another reality is that these discussions will take time out of the schedules of managers and academics who are often already heavily burdened and for whom time is a scarce resource. Although we argue that this will be time well spent, the initial temporal investment may not be one that all stakeholders are willing or able to make. Finally, our proposed WAM guidelines speak to postgraduate workload allocation decisions, which is just one part of most academics' daily work routines. We recognise that, even if these guidelines are well implemented and result in sound postgraduate allocations, problematic workload allocation decisions in the rest of an academic's workload will still result in a compromised process in terms of overall satisfaction with workload allocation as a whole.

Conclusion

In conclusion, the recommended guidelines for discussing postgraduate workload allocation with potential supervisors are listed below:

- Supervisory workload allocation decisions should result from a collaborative and collegial conversation between line managers and academics.
- These conversations should take place in a spirit of fairness, transparency, and respect for academic voices.
- Supervisory workload allocation decisions should prioritise scholarly excellence (which can only be sustained in environments where academics have time to devote to their own research trajectories), the best interests of the students, and institutional supervisory capacity development.
- Supervisory workload allocation decisions must recognise the multifaceted nature of the supervisory relationship, where activities often extend beyond the supervision of students. Such activities often include mentoring novice co-supervisors (which should be factored into other key performance areas of an academic's workload allocation, such as academic citizenship).
- These conversations should start from the recognition that all supervisors and all postgraduate students do not enter supervisor relationships with equal skillsets.
- In order to measure the individual skillsets for which workload allocation decisions need to control, supervisors and postgraduate students should complete the Supervisor and Postgraduate Matrices of Competencies at the start of each academic year.
- The scores that each supervisor and each postgraduate student attain on these matrices in any given year should shape the understanding of how much time a specific student's supervision will require of a specific supervisor in that year, with the recognition that this will likely change from year to year.
- Departments and institutions need to take responsibility for the academics they decide to employ and the postgraduate students they choose to accept into their programmes. This responsibility should be operationalised by offering departmental and institutional level capacity development interventions for postgraduate students and supervisors. The scores on individual items on the Supervisor and Postgraduate Student Matrices of Competencies will clearly signal where institutions need to target resources to develop gaps in supervisor and student skillsets.
- Supervisors are primarily appointed for their disciplinary expertise and it is a wasteful use of resources to expect them to spend significant amounts of time on remedial academic writing

activities. Given the range of English writing proficiencies in South Africa, institutions should offer extensive academic writing programmes that may be accessed by all postgraduate students.

By incorporating these guidelines in their workload allocation discussions with academics, line managers can enhance the risk resilience of their task allocation processes and decisions. The resentment, low morale and staff attrition that are associated with unacknowledged workloads and overburdened personnel can be pre-empted through the utilisation of these guidelines as they offer avenues towards transparency, fairness and realistic expectations in academic workload management in postgraduate spaces.

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