

Enhancing the Quality of Postgraduate Student Supervision at a Selected University of Technology

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Abstract: *Postgraduate student supervision plays a critical role in ensuring student success, research productivity, and timely completion of qualifications. However, universities of technology often face challenges related to supervisory capacity, increasing postgraduate enrolments, varying levels of supervisor experience, and evolving research demands. This study explores strategies for enhancing the quality of postgraduate student supervision at a University of Technology. The research adopted a qualitative research methodology, incorporating surveys and interviews with postgraduate students, supervisors, and postgraduate administrators to identify key challenges and effective supervisory practices. Findings revealed that inadequate supervisor training, inconsistent communication, unclear expectations, and limited institutional support negatively affected the supervision process. Conversely, structured supervisor development programmes, regular supervisor-student engagement, clear supervision guidelines, and institutional monitoring mechanisms were found to contribute positively to student satisfaction and academic progress. The study further highlights the importance of fostering collaborative supervisory relationships, strengthening research support systems, and promoting continuous professional development for supervisors. Based on the findings, a framework for enhancing postgraduate student supervision is proposed, focusing on capacity building, quality assurance, and student-centred supervision practices. The study contributes to the growing body of knowledge on postgraduate education and offers practical recommendations for improving supervision quality and postgraduate research outcomes in universities of technology.*

Keywords: *Postgraduate Student Supervision, Supervision Quality, Universities Of Technology, Research Supervision, Postgraduate Education, Supervisor Development, Student Success.*

1. Introduction

Postgraduate education is widely recognised as a cornerstone of knowledge generation, innovation, and socio-economic development. Universities play a critical role in developing advanced research skills, producing new knowledge, and preparing graduates for academic, professional, and industry leadership positions. Within this context, effective postgraduate student supervision is fundamental to ensuring high-quality research outputs, timely degree completion, student satisfaction, and overall academic success. The supervisor serves as a mentor, advisor, facilitator, and evaluator, guiding students through the complex processes of research design, data collection, analysis, and scholarly dissemination. Universities of Technology (UoTs) have a distinctive mandate that combines applied research, technological innovation, and industry engagement. As postgraduate enrolments continue to increase, these institutions face growing pressure to strengthen their supervisory capacity while maintaining high standards of academic quality. The expansion of postgraduate programmes has created

challenges such as increased supervisor workloads, varying levels of supervisory expertise, inadequate institutional support structures, and difficulties in maintaining effective communication between supervisors and students. These challenges can negatively affect student progression, research productivity, and completion rates [1].

High-quality supervision is characterised by clear expectations, regular communication, constructive feedback, mutual respect, and a supportive academic environment. Effective supervisory relationships contribute significantly to students' academic development, research competence, confidence, and motivation. Conversely, poor supervision practices may lead to delays in research progress, student dissatisfaction, attrition, and lower research output. Consequently, higher education institutions are increasingly recognising the need to establish robust supervisory frameworks and professional development initiatives that support both supervisors and postgraduate students. Recent developments in higher education have further highlighted the need for continuous improvement in postgraduate supervision practices. Advances in digital technologies, increased research collaboration, interdisciplinary studies, and changing student demographics require supervisors to adopt new approaches to mentoring and academic support. Institutions must therefore ensure that supervisors possess not only subject expertise but also the pedagogical, interpersonal, and management skills necessary for effective supervision. Furthermore, institutional policies and quality assurance mechanisms play a crucial role in promoting accountability and consistency in supervisory practices [2].

Despite the acknowledged importance of postgraduate supervision, many universities of technology continue to encounter difficulties in achieving optimal supervision outcomes. There remains a need for evidence-based strategies that address institutional, supervisory, and student-related challenges. Understanding the factors that influence the quality of supervision is essential for developing interventions that enhance the postgraduate experience and improve research performance.

This study investigated ways of enhancing the quality of postgraduate student supervision at a University of Technology. The research seeks to identify the key challenges affecting supervision, examine effective supervisory practices, and propose strategies that can strengthen supervisory capacity and improve postgraduate research outcomes. The findings are expected to contribute to the growing body of knowledge on postgraduate education and provide practical recommendations for institutional leaders, supervisors, and policymakers committed to improving postgraduate student success.

2. Problem Statement

Postgraduate student supervision is a critical determinant of student success, research quality, and timely degree completion. Universities of Technology are increasingly expected to produce high-quality research outputs, foster innovation, and contribute to national development through postgraduate education. However, the rapid growth in postgraduate enrolments has placed significant pressure on supervisory capacity, often resulting in high student-to-supervisor ratios, inconsistent supervision practices, delays in research completion, and varying levels of student satisfaction [3].

Despite institutional efforts to strengthen postgraduate education, many postgraduate students continue to experience challenges such as inadequate supervisory support, infrequent communication, delayed feedback, and unclear expectations regarding research progress. Similarly, supervisors often face challenges related to increased workloads, limited training in supervision practices, and insufficient institutional support mechanisms. These factors can negatively influence student progression, research productivity, completion rates, and the overall quality of postgraduate education.

While universities have implemented policies and quality assurance systems to improve supervision, the effectiveness of these interventions remains inconsistent across disciplines and institutions. At Universities of Technology in particular, there is a growing need for evidence-based approaches that address the unique demands of applied and technology-oriented research environments.

Consequently, there is a need to investigate the factors affecting the quality of postgraduate student supervision and to identify strategies that can enhance supervisory practices and postgraduate research outcomes. Therefore, this study seeks to examine the challenges and opportunities associated with postgraduate student supervision at a University of Technology and to propose strategies for enhancing the quality and effectiveness of the supervision process [4].

3. Research Gap

The literature on postgraduate supervision has extensively explored supervisory relationships, student experiences, supervisor competencies, and factors influencing postgraduate success. However, several gaps remain evident. First, much of the existing research has been conducted in traditional research-intensive universities, with limited attention given to Universities of Technology, which operate within unique contexts characterised by applied research, industry engagement, and professional training. Consequently, findings from traditional universities may not be fully applicable to Universities of Technology. Second, previous studies have largely focused on identifying challenges associated with postgraduate supervision, such as communication difficulties, delayed feedback, and supervisory workloads. Comparatively fewer studies have investigated comprehensive institutional strategies and quality enhancement mechanisms aimed at improving supervision outcomes within Universities of Technology. Third, there is limited empirical evidence on how institutional support systems, supervisor development programmes, technological tools, and quality assurance frameworks collectively contribute to enhancing postgraduate supervision quality. Existing studies tend to examine these factors in isolation rather than adopting an integrated approach. Finally, in the context of developing countries, research on effective supervision practices remains relatively scarce, particularly regarding how Universities of Technology can strengthen supervisory capacity while responding to increasing postgraduate enrolments and evolving research demands [5].

4. Theoretical Framework

This study is anchored in Lee's Conceptual Framework of Research Supervision and supported by Social Constructivist Theory. These frameworks provide a comprehensive understanding of the supervisory process by highlighting the roles of supervisors, students, and the institutional environment in achieving successful postgraduate outcomes [6].

4.1. Social Constructivist Theory

Social Constructivist Theory, primarily associated with Vygotsky, posits that learning occurs through social interaction and collaboration. Knowledge is constructed through engagement with others, particularly more experienced individuals who provide guidance and support [7]. The theory emphasises that postgraduate learning is not an isolated activity but a collaborative process in which students gradually develop into independent researchers through continuous interaction with supervisors and peers.

5. Research Aim

To investigate factors influencing the quality of postgraduate student supervision and develop strategies for enhancing supervision practices at a University of Technology.

Research Objectives

- To examine the current state of postgraduate student supervision at a University of Technology.
- To identify the challenges affecting the quality of postgraduate student supervision from the perspectives of both supervisors and postgraduate students.

- To evaluate the effectiveness of existing institutional support mechanisms and supervision practices in promoting postgraduate student success.
- To determine the factors that contribute to effective postgraduate student supervision at a University of Technology.
- To propose strategies and a framework for enhancing the quality of postgraduate student supervision and improving postgraduate research outcomes.

5.1. Research Questions

5.2. Main Research Question

- How can the quality of postgraduate student supervision be enhanced at a University of Technology?

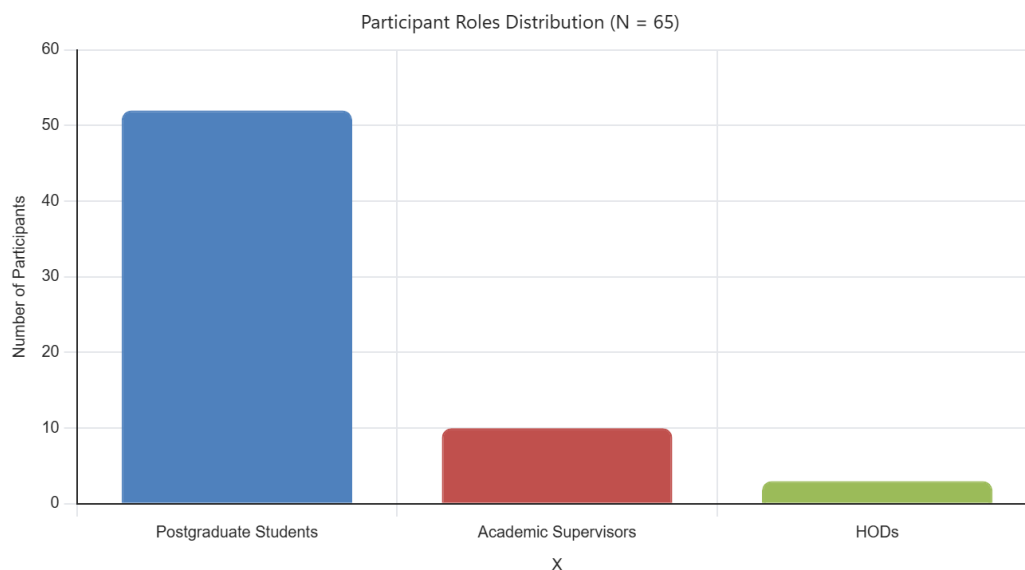
5.3. Sub-Research Questions

- What is the status of postgraduate student supervision at a University of Technology?
 - What challenges affect the quality and effectiveness of postgraduate student supervision?
1. How effective are existing institutional support systems and supervision practices in facilitating postgraduate student success?
 2. Which factors contribute to effective postgraduate student supervision?
 3. What strategies can be implemented to enhance the quality of postgraduate student supervision and improve research outcomes?

6. Research Methodology

This study adopted a qualitative single-case study design to investigate the quality of postgraduate student supervision and the implementation of supervision practices at a selected University of Technology (UoT) in Gauteng, South Africa. A case study approach was deemed appropriate because it facilitates an in-depth exploration of a contemporary phenomenon within its real-life context, particularly when the boundaries between the phenomenon and its context are not clearly defined [8]. The design enabled the researcher to examine institutional supervision practices, support mechanisms, and stakeholders' experiences within the specific context of postgraduate education.

6.1. Sampling



The study involved three categories of participants who play key roles in the postgraduate supervision process:

- **Postgraduate engineering students (n = 52)** enrolled in master's programmes and who had completed at least six months of supervision.
- **Academic supervisors (n = 10)** who were actively supervising one or more postgraduate students.
- **Heads of Department (HODs) (n = 3)** responsible for overseeing postgraduate programmes and ensuring compliance with institutional supervision policies.

6.2. Data Analysis

The study employed thematic analysis to analyse the qualitative data collected from postgraduate engineering students, academic supervisors, and Heads of Department (HODs). Thematic analysis was selected because it provides a systematic and flexible approach for identifying, analysing, and interpreting patterns of meaning within qualitative data. The method enabled the researcher to explore participants' experiences, perceptions, and views regarding the quality of postgraduate student supervision at the selected University of Technology. Data obtained from interviews and open-ended responses were first transcribed verbatim and reviewed repeatedly to ensure familiarity with the content [9].

The analysis followed the six stages of thematic analysis below:

1. **Data Familiarisation**
The researcher read and re-read interview transcripts and field notes to gain a comprehensive understanding of the data and identify preliminary patterns.
2. **Generation of Initial Codes**
Meaningful units of data were systematically coded. Similar expressions and experiences shared by participants were assigned common codes.
3. **Searching for Themes**
Related codes were grouped into broader categories to identify emerging themes associated with postgraduate supervision quality.
4. **Reviewing Themes**
Emerging themes were reviewed and refined to ensure consistency with the coded extracts and the overall dataset.
5. **Defining and Naming Themes**
Each theme was clearly defined to capture its central meaning and relevance to the study objectives.
6. **Producing the Report**
The final themes were interpreted and presented using direct participant quotations to support the findings and enhance credibility.

The analysis generated several key themes, including:

- Quality of supervisor-student communication.
- Supervisor availability and accessibility.
- Timeliness and quality of feedback.
- Institutional support for postgraduate supervision.
- Supervisor workload and supervisory capacity.
- Research skills development and mentoring.
- Awareness and implementation of supervision policies.
- Strategies for enhancing supervision quality.

To enhance the trustworthiness of the findings, the study employed data triangulation by comparing perspectives from postgraduate students, supervisors, and HODs. Member checking and peer review of coding and thematic development were also undertaken to improve credibility, dependability, and confirmability of the findings [10].

7. Ethical Considerations

Ethical clearance for this study was obtained from the Research Ethics Committee of the selected University of Technology prior to the commencement of data collection. The study was conducted in accordance with the ethical principles of respect for persons, beneficence, non-maleficence, and justice, ensuring that the rights, dignity, and welfare of all participants were protected throughout the research process. Participation in the study was entirely voluntary. All participants were provided with an information sheet explaining the purpose of the study, the nature of their involvement, the expected duration of participation, and their rights as research participants. Written informed consent was obtained from all participants before data collection commenced. Participants were informed that they could withdraw from the study at any stage without penalty or negative consequences [11].

8. Study Limitations

Although this study provides valuable insights into enhancing the quality of postgraduate student supervision at a University of Technology, several limitations should be acknowledged. First, the study was conducted at a single University of Technology in Gauteng, South Africa. Consequently, the findings may reflect the unique institutional context, policies, and supervision practices of the selected institution [12]. As a result, the findings cannot be statistically generalised to all Universities of Technology or higher education institutions in South Africa. Second, the study employed a qualitative case study design, which focuses on obtaining rich and detailed descriptions of participants' experiences rather than producing findings that are representative of a larger population. While the approach provided in-depth insights into postgraduate supervision practices, it limits the extent to which the findings can be generalised beyond the study context. Third, the study relied on self-reported data from postgraduate students, academic supervisors, and Heads of Department. Participants' responses may have been influenced by personal experiences, perceptions, and potential recall bias. Some participants may also have been reluctant to discuss sensitive issues related to supervision practices, despite assurances of confidentiality and anonymity. Fourth, the participant sample was drawn primarily from the engineering discipline, which may not fully reflect the supervision experiences of postgraduate students and supervisors in other academic fields. Different disciplines may have distinct supervision models, research cultures, and student support needs that were not captured in this study. Fifth, time and resource constraints limited the study to a specific period of data collection. A longitudinal study following postgraduate students and supervisors over the duration of the research journey may have provided deeper insights into how supervisory relationships evolve and influence student outcomes over time [13].

9. Conclusion

The study found that positive supervisor-student relationships, regular engagement, timely feedback, structured supervision processes, and supportive institutional environments contribute significantly to student satisfaction, research progress, and completion rates. Furthermore, institutional support structures such as supervisor development programmes, clear supervision guidelines, monitoring systems, and research support services were identified as critical factors in strengthening supervision quality. Drawing on Lee's Conceptual Framework of Research Supervision and Social Constructivist Theory, the study highlights the importance of balancing academic guidance, mentorship, research capacity development, and collaborative learning within the supervision process. Effective supervision extends beyond research management and requires the development of supportive relationships that facilitate student growth, independence, and scholarly identity formation.

10.Recommendations

Based on the findings of the study, the following recommendations are proposed to enhance the quality of postgraduate student supervision at Universities of Technology:

10.1. Strengthen Supervisor Training and Professional Development

Universities should implement continuous supervisor development programmes that equip supervisors with the skills required for effective postgraduate supervision. Training should focus on supervisory best practices, student mentoring, research ethics, conflict resolution, feedback provision, and postgraduate policy implementation. Regular workshops and seminars can ensure that supervisors remain updated on emerging supervision approaches and institutional expectations.

10.2. Establish Clear Supervision Guidelines and Expectations

The institution should develop and communicate comprehensive supervision guidelines that clearly outline the roles and responsibilities of supervisors and students. These guidelines should include expected meeting frequencies, feedback turnaround times, supervision milestones, and dispute resolution procedures. Clear expectations can reduce misunderstandings and promote accountability among all stakeholders.

10.3. Improve Supervisor-Student Communication

Regular and structured communication between supervisors and postgraduate students should be encouraged. Formal supervision schedules, progress meetings, and documented action plans should be established to facilitate effective engagement. Institutions should also promote the use of digital platforms to support communication, particularly where face-to-face interactions are limited.

10.4. Enhance Institutional Support Systems

Universities should strengthen institutional structures that support postgraduate supervision, including postgraduate offices, research support centres, academic writing units, and statistical consultation services. These support systems can assist students in addressing research-related challenges and reduce excessive dependence on supervisors for non-supervisory matters.

10.5. Monitor and Evaluate Supervision Quality

A formal supervision monitoring and evaluation framework should be implemented to assess the effectiveness of supervision practices. Regular student feedback surveys, supervision performance reviews, and progress-tracking systems can help identify challenges early and facilitate timely interventions. Quality assurance mechanisms should be integrated into institutional postgraduate management systems.

10.6. Manage Supervisor Workload

Institutions should ensure equitable allocation of postgraduate students among supervisors to prevent excessive supervision workloads. Supervisory capacity should be monitored regularly, and additional qualified supervisors should be recruited where necessary. Reasonable workload distribution will enable supervisors to provide adequate support and timely feedback to students.

10.7. Promote Collaborative and Co-Supervision Models

The use of co-supervision and interdisciplinary supervision models should be encouraged, particularly in engineering and technology-related disciplines. Co-supervision enables the sharing of expertise, reduces supervision burdens, and provides students with access to broader academic support and diverse research perspectives.

10.8. Strengthen Student Research Capacity

Universities should provide structured training programmes that develop postgraduate students' research competencies. These programmes should cover research methodology, academic writing, data analysis, research ethics, project management, and scholarly publishing. Improved student preparedness can enhance research quality and facilitate smoother supervisory relationships.

10.9. Increase Awareness of Supervision Policies

The institution should ensure that all supervisors, Heads of Department, and postgraduate students are familiar with postgraduate supervision policies and procedures. Policy awareness workshops and orientation sessions should be conducted regularly to promote consistent implementation and compliance across departments.

10.10. Develop a Postgraduate Supervision Framework

The University of Technology should develop an institutional postgraduate supervision framework that integrates:

- Supervisor training and development.
- Supervision quality assurance mechanisms.
- Student support services.
- Research capacity development initiatives.
- Monitoring and evaluation processes.

Such a framework would provide a structured and sustainable approach to enhancing postgraduate supervision quality and improving postgraduate research outcomes.

11. Recommendation for Future Research

Future studies should extend the investigation to multiple Universities of Technology and other higher education institutions to enable comparative analysis of supervision practices. Quantitative and mixed-methods studies could also be conducted to examine the relationship between supervision quality, student satisfaction, research productivity, and postgraduate completion rates.

These recommendations are expected to strengthen postgraduate supervision practices, improve student experiences, enhance research productivity, and contribute to higher postgraduate completion rates at Universities of Technology.

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