



Fostering innovation in higher education: the symbiotic relationship between postgraduate research and supervision

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Abstract

This paper explores the interconnectedness of postgraduate research and supervision in South African higher education, highlighting its impact on innovation, teaching, and learning. Effective supervision is crucial for fostering critical thinking, problem-solving, and intellectual curiosity. If done properly, effective supervision can potentially lead to groundbreaking discoveries and enriched academic landscapes. However, challenges like poor communication and moral dilemmas can hinder the research supervision process, emphasising the need for clear roles and a strong working relationship between students and supervisors. Drawing from Social Constructivism and a university-funded study, this paper argues that acknowledging and cultivating this symbiotic relationship is crucial for driving progress in research, teaching, and social justice agendas. The findings, based on insights from novice and seasoned research supervisors and their students, contribute to the literature on research supervision and its role in unleashing student potential. This paper is purely theoretical and it aims to enhance the quality of postgraduate research and its impact on higher education, ultimately strengthening institutions as centres of learning and innovation.

Keywords: Discoveries; Interdisciplinary; Mentorship; Partnership; Student; Supervisor.

Introduction

In the pursuit of knowledge and innovation, postgraduate research and supervision play a vital role in higher education. As the backbone of research in universities, postgraduate studies drive the production of new knowledge, inventions, and social impact. Effective postgraduate supervision is crucial in fostering expertise, critical thinking, and problem-solving skills, thereby ultimately contributing to a nation's socioeconomic growth. However, despite its importance, postgraduate supervision faces inherent challenges, including inconsistent standards, complex supervisor roles, and ethical dilemmas. This paper explores the symbiotic relationship between postgraduate research and supervision, highlighting its significance in catalysing innovation, teaching, and learning in higher education. This study aims to address the challenges and opportunities in postgraduate

research and supervision, by examining key aspects such as social justice, ethics, supervision styles, and future agency. The goal is to strengthen the foundation of research in universities and their impact on society. This paper draws on work done in 2023 as part of a study of a university capacity development grant-funded postgraduate diploma in higher education. It draws mainly from experiences drawn from a formerly historically disadvantaged rural university and a university of technology in South Africa.

Background

The pursuit of innovation in higher education is a pressing concern in today's rapidly evolving world. As institutions of higher learning, universities are expected to foster creative thinking, cutting-edge research, and innovative practices that prepare students for an increasingly complex and interconnected world. At the heart of

this endeavour lies the symbiotic relationship between postgraduate research and supervision.

Postgraduate research represents a critical component of academic inquiry, driving innovation and advancing knowledge in various fields. Supervision, on the other hand, plays a vital role in shaping the research journey of postgraduate students, influencing the quality and impact of their research. The relationship between postgraduate research and supervision is intricate, with each component informing and enriching the other.

Effective supervision can inspire and empower postgraduate students to push boundaries, challenge assumptions, and explore new ideas. Conversely, postgraduate research can inform and enhance supervisory practices, fostering a culture of innovation and collaboration. This symbiotic relationship has far-reaching implications for higher education, influencing not only the research output but also the teaching and learning experience.

However, fostering innovation in higher education is fraught with challenges. Supervisors must navigate complex power dynamics, balance guidance with autonomy, and address the diverse needs of postgraduate students. Moreover, institutional constraints, such as resource limitations and bureaucratic hurdles, can stifle innovation and hinder the research process. Despite these challenges, the potential benefits of fostering innovation in higher education are immense. Universities can attract top talent, secure research funding, and drive economic growth, by cultivating a culture of innovation. Moreover, innovative research can address pressing global challenges, improve lives, and contribute to a more sustainable future. As such, it is essential to prioritize the symbiotic relationship between postgraduate research and supervision, recognising its transformative potential for higher education and society at large.

Reflections of a First-Time Research Supervisor

Reflecting on my postgraduate research journey, I appreciate the unique experience of being supervised by a first-time research supervisor. While they may have lacked

experience, they brought enthusiasm, creativity, and a willingness to learn alongside me. This symbiotic relationship allowed us to navigate the research process together, sharing discoveries and challenges. My supervisor's fresh perspective and open-mindedness encouraged me to explore innovative ideas and approaches. Their ability to balance guidance with autonomy empowered me to take ownership of my research, developing a sense of agency and confidence. Through our collaboration, I witnessed my supervisor grow into their role, refining their supervisory skills and expertise. This mutual growth and learning experience has been invaluable, fostering a deep appreciation for the importance of effective supervision in postgraduate research. While there were moments of uncertainty, our shared commitment to innovation and learning created a supportive environment that enabled us to overcome obstacles. I am grateful for the opportunity to have been part of this symbiotic relationship, which has not only shaped my research but also prepared me for future collaborations and academic endeavours.

Reflections of a Postgraduate Student

As a postgraduate student, I was initially intimidated by the prospect of conducting original research under the guidance of a supervisor. However, I quickly discovered that this symbiotic relationship was a collaborative and transformative experience. My supervisor's guidance and expertise helped me navigate the research process, while also allowing me the autonomy to explore my ideas and interests. Through our discussions and debates, I saw my research evolve and improve, and I gained confidence in my ability to contribute meaningfully to my field. This experience taught me the value of perseverance, critical thinking, and creativity in research. I also learned the importance of effective communication and collaboration in achieving research goals. Overall, this experience has been instrumental in shaping my research identity and preparing me for a future in academia.

Reflections of a Seasoned Research Supervisor

As a seasoned research supervisor, I have had the privilege of guiding numerous postgraduate students through their research

journeys. Over the years, I have come to realize that the symbiotic relationship between postgraduate research and supervision is the cornerstone of fostering innovation in higher education. I have seen how this relationship can spark creativity, drive innovation, and produce groundbreaking research. My role has evolved from merely providing guidance to becoming a facilitator, mentor, and collaborator. I have learned to create a supportive environment that encourages students to take risks, challenge assumptions, and explore new ideas. I have also come to appreciate the importance of empathy, understanding, and flexibility in supervision. Each student brings a unique perspective and experience, and it is essential to adapt my approach to meet their individual needs. This symbiotic relationship has not only enhanced my supervisory skills but also reinvigorated my research passion and creativity.

Reflections of a postgraduate student supervised by a seasoned research supervisor

Reflecting on my postgraduate research journey, I am grateful for the opportunity to have been supervised by a seasoned research supervisor. Their expertise, guidance, and mentorship have been instrumental in shaping my research identity and fostering innovation in my work. Through our collaborative efforts, I have learned the value of critical thinking, creativity, and resilience in research. My supervisor's ability to balance guidance with autonomy has allowed me to take ownership of my research, explore new ideas, and develop a unique perspective. Their willingness to listen, adapt, and learn has created a supportive environment that has enabled me to grow and thrive. I have witnessed firsthand how this symbiotic relationship can drive progress, produce meaningful research, and impact society. My supervisor's influence has extended beyond my research, inspiring me to become a future academic leader and innovator. I am confident that the skills, knowledge, and networks gained during my postgraduate journey will empower me to make a positive impact in my field. I am grateful for the opportunity to have been part of this symbiotic relationship, which has been a transformative experience that will shape my future endeavours.

Theoretical Framework

This study is grounded in Social Constructivism theory. This theory emphasizes the social and cultural aspects of knowledge construction. The theory posits that knowledge is actively constructed through social interactions and dialogue (Vygotsky, 1978). In the context of postgraduate research and supervision, Social Constructivism highlights the significance of the supervisory relationship in supporting the co-construction of knowledge between the student and supervisor (Vygotsky & Cole, 2018).

This research proceeds by briefly examining insights it draws from four principles of Social Constructivism. To begin with, Social Constructivism promotes collaborative learning. The supervisory process is a collaborative endeavour where both parties contribute their perspectives, experiences, and expertise to jointly create knowledge (Kinchin, 2012). This provides an important lens critical for understanding the roles of students and supervisors or promoters in the research promotion engagement. Collaboration is central as it ensures recognition of the different experiences, expertise and perspectives of the students and supervisors that enhance the supervisory processing. The collaboration levels differ in line with the kind and level of study.

Social Constructivism thrives in particular social and cultural contexts. Learning is located within particular social and cultural contexts, and the supervisory relationship offers a social setting for knowledge construction (Manathunga, 2014). This principle speaks to disciplinary uniqueness within the social and cultural context in which students and supervisors operate. The supervisor as the disciplinary expert has the responsibility of properly onboarding the students into the norms of the context of operation. Mastering the social and cultural context defines whether the students succeed or not.

Dialogue and negotiation are a key principle of Social Constructivism. Students and supervisors engage in ongoing dialogue, reflection, and negotiation, facilitating the growth of understanding and the creation of new knowledge (Juma & Poole, 2017). The point is that research supervision thrives in a context

characterised by two-way communication. Through engagement, the student puts across his/her perspectives and in return, the supervisor does the same. There exists the weighing of views, the giving of motivation for whatever position one is taking. The prevailing spirit is that of striving for the best within the situation the student and promoter find themselves. Dialogue and negotiation ensure an improved understanding of the topic at hand.

Critical evaluation is a key tenet of Social Constructivism. Students and supervisors continuously exchange ideas, question assumptions, and critically evaluate research findings (Tynjälä, 2013). This continued critical evaluation accounts for the improvement of ideas from the conceptualisation of the study to its finalisation. The journey is defined by much evaluation of submissions mainly initiated by the students. The supervisor's critical evaluation encourages the students to explore some areas they might not have imagined. This reflective enterprise is cardinal for groundbreaking research. Students and supervisors need to be trained and experienced in asking appropriate questions on whatever submission is at hand as this leads to improvement in such work.

The Social Constructivism theoretical framework underpins the analysis of the symbiotic relationship between postgraduate research and supervision, highlighting the importance of a collaborative and supportive supervisory relationship in fostering innovation, teaching, and learning in higher education. This research submits that students and supervisors stand to benefit much upon investing their energies in understanding these tenets of Social Constructivism that could enhance the research supervision process.

Literature review

African perspectives of research in teaching Postgraduate research and supervision are critical components of higher education, yet they face numerous challenges that can impact the quality of supervision and research outcomes. The trend has been that many academics undertake supervision without formal training, leading to negative influences on the research process (van Rensburg et al., 2016). This research established

that the trend in higher education has been that upon attainment of a postgraduate qualification, academics in many institutions have been allocated students to supervise without them having received formal training for research supervision. The assumption is mainly that during his/her journey as a postgraduate student, one has mastered the supervision tactics and skills of his/her supervisor. This speaks to the need to have institutions invest in supervisor capacity-building initiatives. The supervisory relationship is crucial, with evidence showing that a positive relationship between supervisor and scholar is a key success factor (Orellana et al., 2016).

Challenges in postgraduate supervision include supervisory and student-related factors, such as lack of experience, heavy academic workloads, and poor communication (Gohar & Qouta, 2021; Assakran, 2016; El-Deeb, 2016). These challenges can lead to delayed completion or non-completion of research projects. Targeted postgraduate supervision workshops, short courses and formal qualifications like the module 'postgraduate research supervision and research ethics' are making a much-needed contribution towards the capacitation of prospective and existing postgraduate supervisors.

In addition to these challenges, postgraduate research and supervision have critical roles in advancing the social justice agenda. This involves addressing inequalities, promoting inclusivity, and advancing social change through research (Rispel, 2023). Supervisors play a vital role in ensuring that research participants' perspectives are heard and valued and that students adopt inclusive research processes (Lee, 2019). The social justice agenda in postgraduate research and supervision is crucial for promoting equity, diversity, and inclusion in academia and society. By acknowledging and addressing power imbalances and systemic obstacles (Cooksey & McDonald, 2019), supervisors and researchers can create a more just and equitable environment for all. This approach fosters fair access to research opportunities for underrepresented groups. It encourages research topics and methodologies that address pressing social issues. The social justice agenda develops critical thinking and examination of social

inequalities and injustices. It conducts research with practical implications for marginalized communities. The social justice agenda informs policy and challenges oppressive systems. It further improves the well-being of marginalized populations.

Adopting a social justice lens in postgraduate supervision recognizes the potential of research to drive positive social change (McNiff, 2016). It empowers students to become active agents of change. It further develops researchers who are sensitive to social injustices and equipped to address them. The social justice lens contributes to dismantling inequalities and promoting social justice. Postgraduate research and supervision can become a powerful tool for creating a more just and equitable society by embracing the social justice agenda.

Overall, the literature highlights the complexities and challenges of postgraduate research and supervision, as well as the critical role they play in advancing social justice and promoting equity, inclusivity, and social change. Academic institutions can contribute to a more equitable and socially responsive research landscape by addressing these challenges and incorporating a social justice lens.

Ethics and Student-Supervisor Roles

Ethics play a vital role in postgraduate research and supervision, extending beyond mere compliance with guidelines to encompass the conduct of students and supervisors and their professional relationships (Basic, 2021). The student-supervisor dynamic can significantly impact the research process, underscoring the need for integrity, responsible conduct, and protection of human subjects (Bless, 2018). This research reckons that students and supervisors should focus on key ethical considerations which include the need to adhere to these ethical principles and guidelines to make sure that they produce credible research. There is a need for clear institutional policies on conduct and ethical behaviour. In this regard, the supervisors need to perform their gatekeeper role by ensuring compliance and adherence to ethics as specified by the discipline. Ethical considerations pay attention to the joint obligation of students and supervisors to maintain

ethical standards during the execution of the research. The student's duty to conduct ethical research, including informed permission and data integrity is paramount and has to be adhered to at all costs. The supervisor has to have instruments in place to ensure that this is observed. In addition, it is the supervisors' responsibility to guide students through ethical challenges and promote an environment valuing integrity and ethical behaviour. The Council on Higher Education (CHE) in South Africa offers frameworks and recommendations or guidelines for research ethics, by highlighting the significance of ethical behaviour in research and the duties of both students and supervisors (CHE, 2017). This is vital especially when dealing with vulnerable groups, these principles seek to guarantee that research is performed ethically, with adequate concern for the wellbeing and dignity of participants.

In higher education, maintaining ethical standards throughout the research process is a joint obligation of the student and the supervisor. Students have a duty to conduct ethical research, which includes getting informed permission, guaranteeing data integrity, and abiding by the ethical standards unique to their field of study (Barrow, Brannan & Khandhar, 2023). They stress the need for supervisors to provide adequate guidance to students in addressing ethical challenges and navigating cultural sensitivities. Supervisors, on the other hand, have a responsibility to help students through ethical quandaries, ensure that ethical review procedures are followed, and promote an environment that values integrity and ethical behaviour. Supervisors or promoters execute gatekeeper roles which are requisite in the nurturing of the students to become ethical researchers.

By addressing these ethical considerations, postgraduate research and supervision can foster the development of ethical researchers who uphold principles of justice, respect, and beneficence, particularly when working with vulnerable populations.

Supervision Styles, Practices and Processes

Exploring diverse supervision styles, practices, and processes is crucial for enhancing the quality of the supervisory relationship and optimising the

learning experience for postgraduate students. Effective supervision fosters innovation in higher education by promoting productive and supportive relationships, leading to successful research outcomes.

It is vital to explore various supervision styles, practices and processes to enhance the quality of the supervisory relationship and optimize the learning experience for students. Furthermore, there are different approaches to supervision, such as the mentorship model or the co-creation model, that allow students to understand different research supervision dynamics and expectations involved. It emphasizes effective communication, constructive feedback, and collaborative problem-solving. By focusing on supervision practices, students and supervisors are equipped with the necessary skills to establish productive and supportive relationships, leading to successful research outcomes. Thus, supervision styles, practices, and processes play an important role in ensuring effective postgraduate research and successful completion of higher education programs.

Furthermore, research supervision in higher education encompasses various styles, practices, and processes that shape the nature of the student-supervisor relationship and impact the quality of research outcomes. Sidhu, Kaur, Fook and Yunus (2013) are of an understanding that there is recognition of the need for diverse and flexible supervision approaches to accommodate the unique needs and backgrounds of postgraduate students. Different supervision styles, such as directive, facilitative, and transformative, are recognised to provide guidance and support throughout the research process.

Briefly, according to Wichmann-Hansen and Herrmann (2017), directive supervision is characterised by a more structured and hands-on approach, with supervisors providing explicit instructions and guidance to students. On the other hand, facilitative supervision, emphasizes a collaborative and supportive relationship, where supervisors act as facilitators, assisting students in developing their research skills and independent thinking (Foong, Nor & Nolan, 2018). In early research, Lee (2007) claims that transformative

supervision takes a more holistic approach by focusing not only on academic development but also on personal and professional growth, empowering students to become independent researchers. At the end of the day, the aim is to impart supervision treats and skills to the student that is being supervised. In other words, the students should become supervisors at a later stage.

Furthermore, Rispel (2023) discussed the role of transformative supervision in empowering students and enabling their personal growth. They emphasized the need for supervisors to engage in critical conversations, challenge assumptions, and promote students' self-reflection and critical thinking. This study established that supervisors who employ various styles stand to unlock diverse student potentials as they are not rigid in their approaches to students of different learning styles. In South Africa, the Higher Education Quality Committee (HEQC) of the Council on Higher Education (CHE) has provided guidelines on good practices for research supervision (CHE, 2017). These guidelines emphasize the importance of creating a supportive and respectful supervisory relationship, promoting clear communication, and ensuring that the student's rights and responsibilities are upheld. The CHE guidelines also stress the need for ongoing professional development for supervisors to enhance their supervisory skills and keep up with evolving practices (CHE, 2017).

In addition, Wulf (2019) explored the experiences of postgraduate students and identified the need for a student-centred approach to supervision that recognizes students' individuality and fosters their autonomy. They highlighted the importance of effective communication, regular feedback, and the creation of a supportive and inclusive environment. Thus, supervision styles, practices, and processes in higher education play a crucial role in supporting postgraduate students' research journey. The diversity of supervision styles allows for tailored approaches that accommodate students' individual needs and preferences. The guidelines provided by the CHE underscore the importance of a supportive and respectful supervisory relationship. Ongoing research and professional development for supervisors

contributes to the continuous improvement of supervision practices in South African higher education.

This research reckons that various supervision styles, such as mentorship, co-creation, directive, facilitative, and transformative, accommodate students' unique needs and backgrounds. Effective communication, constructive feedback, and collaborative problem-solving are essential for successful supervision. Supervision practices, such as student-centred approaches, recognize individuality and foster autonomy. Guidelines from the Higher Education Quality Committee (HEQC) emphasize supportive and respectful supervisory relationships, clear communication, and ongoing professional development for supervisors. Diverse supervision styles unlock student potential and promote personal and professional growth. Therefore, by embracing diverse supervision styles, practices, and processes, higher education institutions can foster innovation, enhance postgraduate throughput, and empower students to become independent researchers and professionals.

Finance and Research Throughput

Finance plays a vital role in postgraduate research, significantly influencing productivity and research throughput. Financial challenges faced by postgraduate students can hinder research progress, emphasizing the need for clear guidance on accessing funding opportunities and managing financial resources effectively. Institutions must address financial barriers to promote access, retention, and successful completion of postgraduate studies.

Funding in higher education remains a challenge to many deserving students. The #fees-must fall movement unlocked some funding in higher education. The #FeesMustFall movement focused on the financial struggles of historically disadvantaged black students in South Africa (Raghuram, Breines & Gunter, (2020: 95). Free quality education in higher education is still another aspect that came as a result of #FMF. The #FeesMustFall movement had a serious impact on the undergraduate level. Postgraduate students are still facing challenges concerning funding. Scholarships for postgraduate students are

extremely limited depending also on the discipline of study. Thus, postgraduate students have limited options when it comes to funding.

Financing mechanisms play a crucial role in supporting and enhancing postgraduate throughput in higher education, particularly in South Africa because it is a developing country. Adequate funding is vital to address financial barriers and promote access, retention, and successful completion of postgraduate studies. For example, students may have the desire to enrol for a postgraduate program but without funding, he/she might not go through with it.

In South Africa, several financing mechanisms have been implemented to support postgraduate education and improve throughput rates. The National Research Foundation (NRF) is a key funding agency that provides scholarships, grants, and fellowships for postgraduate students in South African higher education (NRF, 2020). These funding opportunities aim to attract talented students, particularly from disadvantaged backgrounds, and support them throughout their postgraduate journey. It is also important to note that NRF has limited funding in terms of discipline. NRF cannot accommodate all postgraduate students in all South African higher education institutions. The NRF offers various funding programs, such as the Thuthuka Funding Instrument, the Scarce Skills Development Fund, and the South African Research Chairs Initiative, which provide financial support for postgraduate students' tuition fees, living expenses, research costs, and conference attendance (NRF, 2020). These funding mechanisms alleviate financial burdens and enable students to focus on their studies, ultimately enhancing postgraduate throughput.

In addition, universities in South Africa often establish internal funding mechanisms to support postgraduate students. These may include institutional scholarships, bursaries, or research grants (Herman, 2011). For instance, the University of Limpopo provides all postgraduate students with an R10000 Waiver bursary to register for postgraduate studies. In Cape Town, the University of Cape Town has the MasterCard Foundation Scholars Programme, which provides

comprehensive scholarships to academically talented yet economically disadvantaged students (University of Cape Town, 2021). Such initiatives contribute to increased postgraduate throughput by addressing financial constraints and fostering inclusive participation.

Furthermore, collaborations between universities (local and international) and external organisations may lead to innovative funding models. Luruli (2014) claim that industry partnerships, research consortia, and public-private collaborations offer funding opportunities for postgraduate students, particularly in areas aligned with national priorities and socio-economic development. Such partnerships require taking into consideration the current South African economic condition. These partnerships not only provide financial resources but also offer valuable research opportunities, mentorship, and access to industry expertise. Herman (2011) highlights the significance of financial support in reducing attrition rates and increasing postgraduate completion rates.

The study emphasized the need for sustainable funding models that go beyond mere tuition and address living expenses and research costs. Van der Westhuizen and Blignaut (2016) discuss the role of industry partnerships in funding postgraduate education, by highlighting their potential to bridge the gap between academia, and industry and promote applied research. The supervisor who can source different kinds of research funding is important as this provision provides the much-needed financial aid that ensures students' progress with their research work.

The key points that emanate from finance and research are that there are limited funding opportunities for postgraduate qualifications and financial struggles impact research progress and throughput. In addition, institutions should provide clear guidance on funding and financial management. Also, financing mechanisms, such as NRF (NRF, 2020) and internal funding, support postgraduate education. Collaborations between universities and external organisations offer innovative funding models that continue to help postgraduate students. Sustainable funding models addressing living expenses and research costs are

essential. Industry partnerships bridge the gap between academia and industry, promoting applied research.

Future Agency

Our urgency lies in fostering innovation in higher education through the symbiotic relationship between postgraduate research and supervision. As future supervisors, we must empower postgraduate students to shape their research journey and career trajectories (Lee, 2019), promoting student autonomy, self-direction, and agentic scholarship. We must equip students with the skills and knowledge necessary for future success, providing guidance on career development, academic publishing (De Lange, Pillay & Chikoko, 2011), and networking opportunities. Our role is to unlock students' research potential, enhance throughput, and nurture independent researchers and professionals. We must provide mentorship and guidance beyond degree completion, supporting students in building professional networks, identifying career opportunities, and developing transferable skills (Almusaed & Almssad, 2020). By fostering future agency, we aim to positively impact students' career prospects and professional development, contributing to a culture of innovation in higher education. The urgency lies in the need to prepare students for an ever-changing world, where innovation and adaptability are key. By prioritizing this symbiotic relationship, we can drive progress, advance knowledge, and shape the future of higher education.

Conclusion

In conclusion, the symbiotic relationship between postgraduate research and supervision is the cornerstone of fostering innovation in higher education. By recognizing and nurturing this interdependence, we can unlock the full potential of postgraduate studies, driving groundbreaking discoveries and advancing knowledge. Effective supervision, built on strong relationships, is vital for shaping research direction, methodology, and quality. As we navigate the complexities of higher education, prioritizing the analysis of supervisor-student relationships is crucial for enhancing the teaching and learning experience. By doing so, we can cultivate a culture of innovation, empowering

the next generation of researchers, scholars, and professionals to push boundaries, challenge assumptions, and contribute meaningfully to the academic community and beyond. Ultimately, this synergy has the power to transform higher education, driving progress, and creating a brighter future for all

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