



1. Introduction

Several authors (Armstrong and Shanker 1983; Lopatto 2004; Howitt *et al.* 2010; Reynolds and Thompson 2011; Council on Higher Education 2013; Spronken-Smith *et al.* 2013) allude to undergraduate research being the bedrock of postgraduate research, particularly in terms of ensuring that there is a supply of future researchers to be recruited and trained for a more demanding postgraduate trajectory. They suggest that undergraduate research can be measured in terms of three broad categories, namely: institutional context; nature and quality of supervision; and characteristics of the research student. While a vast body of literature exists on the students' experiences of postgraduate research (Buttery *et al.* 2005; Lee 2008; Council on Higher Education 2009; Bitzer and Albertyn 2011; Lee 2012), less evidence exists about developing the students' experiences of engaging with undergraduate research. This is significant in the context of the increasing proportion of undergraduate students from previously disadvantaged backgrounds with limited experience of undertaking independent research work (South African Survey of Student Engagement 2010). Arguably, the research project at an undergraduate level is more likely to be the first time a student is expected to adopt an autonomous role as a researcher, which is different from their previous experiences where their work is driven mainly by their lecturer. The challenge of framing a research idea and the successive re-drafting is truly new for undergraduate students, especially as they are expected to make the transition to an independent mode of study.

2. Aim of the study

This study therefore assessed epistemological access in terms of developing students' experiences of undergraduate research. It is worth noting that this study responds to the key strategic drivers of the Durban University of Technology (DUT) that is to be a student-centred and an engaged institution by seeking new knowledge through its research and teaching. In particular, the study seeks to understand the student experience and to build research into the undergraduate curriculum (Durban University of Technology 2014).

3. Literature Review

Research scholars (Wadee *et al.* 2010; Lee 2012; Boehe 2014; Azila-Gbettor *et al.* 2015; Woolderink *et al.* 2015) postulated that the supervisor's personality, knowledge, skills, communication, ability to provide good-quality or content-related feedback, mentoring and coaching skills are the major facets contributing to successful supervision. Based on several key contributions (Pearson and Kayrooz 2004; Lee 2008; Mainhard *et al.* 2009; Wadee *et al.* 2010; Boehe 2014), the way in which a supervisor interacts with the student is characterised as the style of supervision. This often hinges between mentoring and coaching. Supervisors adopt a mentoring role when they provide academic and psychosocial support. Coaching, by contrast, is when supervisors use a holistic approach to enable students to work independently in terms of understanding the epistemological demands of their discipline, as well as to enable them to become tolerant of obstacles in the research process.



The quality of supervision and the relationship between student and supervisor are considered to be amongst the most important issues in any research supervision trajectory. This is supported by Woolderink *et al.* (2015) who argued that good quality supervision increases motivation, facilitates research progress, enhances confidence and professional development. They further elaborated that students are more likely to be motivated if their supervisor is flexible, involved, empathetic, open, a good listener and is responsive in terms of using a range of pedagogical approaches and skills to teach research. Woolderink *et al.* (2015) also asserted that students who are involved in research need to claim ownership by being accountable for their own research and receptive to constructive feedback. Their argument is supported by Azila-Gbetteo *et al.* (2015: 193), who found that students lack of commitment and motivation to write increases the challenge of undergraduate research. Hence, they advise that supervision must entail helping students to exercise autonomy in planning and executing their own work, as well as preparing them to deal with the uncertainty and complexity of research. Ultimately, supervisors need to guide students in their thinking in order to lead to successful research outcomes.

Furthermore, Woolderink *et al.* (2015) mooted that supervisors also experience doubts and difficulties in their relationship with students conducting research. This is particularly acute for new and inexperienced supervisors who lack supervision skills and are aware of the increasing gap between their own knowledge, skills and competencies and the level expected by their students. After all, and as indicated by Woolderink *et al.* (2015), students expect supervisors to be knowledgeable, have expertise on the content, have methodological skills, and to have an extensive network with other reputable researchers. Arguably, receiving good quality research supervision has also been associated with the development of writing skills and the ability to self-assess the quality of research. The inevitable power difference between the student and the supervisor is also known to hinder students' development in research. It is reasonable to assume that will be noticeable at an undergraduate level as there is a greater tendency for students to depend on the supervisor's judgement, feedback, availability and approval of work. Hence, affective factors such as direct and explicit communication, and appreciation of mutual openness and trust are important in developing students' experiences of research. According to Spronken-Smith *et al.* (2013: 368), supplementing this kind of support with research supervision classes, including workshops and seminars, will explicitly link teaching and research. As a result students will be progressively supported in developing their knowledge of research, as well as developing their abilities to conduct research and manage their experiences of the research process.

Additionally, and although reported from a coursework master's research perspective, another issue identified by Drennan and Clarke (2009) that leads to the poor integration of students into the field of research is the part-time mode of attendance. This was pertinent to the study as all research participants were part-time students. Other interventions, such as integrating research into the design and teaching of the undergraduate curriculum; using group supervision to facilitate the



development of dialogue between supervisor and student; and the inclusion of student-led seminars and workshops in the timetable, helps to facilitate students engagement into the university's research community. Ultimately, this enhances students' integration into the research culture of the department, and the university, overall.

4. Research Methodology

A case study research design within a qualitative framework was used to capture and describe the students' experiences. A focus group interview was conducted with students (n=10) registered for the subject Project 401, which is part of the Degree of Bachelor of Technology (B Tech) in Quality within the Operations and Quality Management programme, Faculty of Management Sciences (DUT). In particular, the study involved students who were part of the Strengthening Health Care Systems project in 2015.

Ethical clearance and permission to conduct the study was obtained from DUTs Institutional Research Ethics Committee (*IREC Number: 102/15*). Informed consent was obtained from the participants prior to commencement of the interviews. The focus group interview was audio recorded, and anonymity and confidentiality were maintained by using pseudonyms. Interview data were inductively analysed using the principles of thematic analysis. Students' feedback on research training workshops, together with their research output, maintained the trustworthiness of the data.

5. Findings and Discussion

There were two recurring themes in this study, namely: the various teaching methods helped develop students' understandings of research (**Figure 1**); and the positive attributes of the supervisors contributed to a constructive and effective learning environment (**Figure 2**).



Figure 1: The various teaching practices helped develop student' understanding of research.

Figure 2: Positive attributes of the supervisors contributed to a constructive learning milieu.



Undergraduate research is the first level at which students' access and acquire knowledge on the various research discourses, particularly towards becoming a researcher. Students positively conveyed that *"...teaching is like the theory part and the supervising is like the practical."* Essentially, the various teaching methods enabled students to acquire their learners that is the 'know-why' knowledge to access and acquire the research discourse. Supervision, by contrast, is the license to apply the 'know-how' knowledge of research. Equally important, students declared that *"the lecturer showed support for all the students' during data collection by accompanying everyone to their different facilities, which is just caring"*. Another point deserving mention is that *"...she encouraged us and said, no, you can do it... even over e-mails she encourages us to still carry on when I wanted to give up."* They also prominently emphasized that the lecturer was *"...always available ... going to the extent of setting all these devices and technology up so that they can assist the student, that just shows me that the person is approachable."* In terms of good supervision, she encouraged us *"... to push our boundaries and raise the standards..."*. Evidently, students' active interest and engagement with their individual research projects was significantly shaped by the positive attributes of their research supervisors. These findings are consistent with Azila-Gbettor *et al.* (2015) and Woolderink *et al.* (2015).

Interestingly, students recommended that the teaching styles presented in **Figure 1** *"...be introduced in diploma years as it will greatly prepare the student for what to expect at a B-Tech level and will also motivate them to further their studies to a postgraduate level."* This adds support to the Quality Enhancement project that aims to move DUT to become a student centred university through the transformation of teaching and learning and the promotion of quality enhancement (Sattar and Cooke 2012; Durban University of Technology 2014). Some of the students also critically pointed out that having joint supervisors was discouraging *"...because one was with you 100% of the time and while the other was there 50% of the time..."*. This will be considered in the future supervision of undergraduate research projects. Finally, students' unanimously expressed their gratitude to their *"...supervisor for her continuous commitment and encouragement and the training that she given us all and all the efforts that she's made...you've actually opened our eyes to a whole new world of reading reports and understanding that stuff"*.

6. Conclusion

The improved understandings of students' reported experiences have positively impacted on the development of two undergraduate modules for the new four year Bachelor of Health Sciences degree in Dental Technology. Particularly, the modules Introduction to the Principles and Practices of Research (*Level 3*) and Fundamental Principles and Practices of Research Design and Methodology (*Level 4*). Further research to legitimise students' experiences of undergraduate research is yet to be conducted through the sociological lens of the Legitimation Code Theory (Maton 2014), specifically the dimension of Semantics. This includes additional data collection from the *B Tech: Dental Technology* students within the Faculty of Health Sciences.



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