A Critical Realist Study into the Emergence and Absence of Academic Success among Bachelor of Emergency Medical Care Students

by

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Abstract

This critical realist thesis explores academic success in the four-year Bachelor of Emergency Medical Care degree in South Africa. The Bachelor of Emergency Medical Care degree is a relatively new degree that is offered at four universities in South Africa. In view of the existing shortage of paramedics both in South Africa and on the African continent, an understanding of the factors that play a role in academic success may lead to an increase in the number of emergency care providers. Accordingly, this study was conceptualised to explore the reasons why academic success is either evident or absent among Bachelor of Emergency Medical Care students.

The study utilised a sequential, explanatory, mixed methods research design. The quantitative phase consisted of an online survey that was disseminated to Bachelor of Emergency Medical Care students in South Africa with the aim of gaining an insight into their socio-cultural history. Continuous and categorical variables were described using basic descriptive statistics. The Pearson's chi-square and Fisher's exact test were used to test associations between the various survey variables and repeating a year. A p-value of less than 0.05 was considered to be statistically significant.

During the qualitative phase focus groups were held with students while semi-structured interviews were conducted with lecturing staff members. The aim of the qualitative approach was to explore the causal powers and generative mechanisms that give rise to or enable the emergence or absence of academic success among Bachelor of Emergency Medical Care students. Thematic analysis was used to analyse results from the focus groups and semi-structured interviews. A critical realist concept of the laminated system was also used to explore the themes that emerged.

A total of 176 participants (43%) from an available sample of 408 students responded to the survey. Not repeating a year was significantly associated with two important variables, namely, the possession of a pre-existing emergency care qualification and not being a white student. The qualitative results revealed that the following interactive generative mechanisms played a role in the lack of academic success. These were namely, biological, socioeconomic, socio-cultural, normative, psycho-social and psychological factors while the following interactive generative mechanisms facilitated the emergence of academic success – psychological, psycho-social, normative and socioeconomic factors.

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Table of Contents

List of Figures Page No.

List of Tables Page No.

CHAPTER ONE

ORIENTATION TO THE STUDY

1.1 Setting the Scene

The focus of this thesis is academic success in the four-year, Bachelor of Emergency Medical Care (BEMC) degree in South Africa. This chapter provides a background to the concept of academic success in the BEMC, summarises the ontological and epistemological stance upon which this work is based and defines the research problem addressed in this thesis, the research question and sub-questions. In addition, it sketches the background to emergency care education and training in South Africa and concludes by providing an outline of the thesis.

Using a critical realist approach, the thesis explores the causal mechanisms that may have given rise to either the emergence or absence of academic success in the BEMC degree. This phenomenon has not been studied before within the South African context. The theoretical, ontological and epistemological stance of this work is embedded in critical realism – a philosophy of science that asserts that reality is stratified, and that the world consists of generative mechanisms and causal powers that cause the events we see and experience. The use of critical realism to explore the thesis's core research question was unique. Critical realism uses specific terminology, for example "emergence" and "absence", which both have causal and ontological significance in critical realism. Accordingly, the understanding of these terms may differ from their understanding in their everyday occurrence.

1.2 Background

The four-year BEMC degree is a relatively new undergraduate programme for prospective paramedics. It is offered at the following four South African universities, namely, the Cape Peninsula University of Technology, the Durban University of Technology, the Nelson Mandela University and the University of Johannesburg. The BEMC was recurriculated from the Bachelor of Technology and National Diploma in Emergency Medical Care. Given the existing shortage of paramedics in South Africa, the academic success of BEMC students is extremely important as high failure and dropout rates impact adversely on the paramedic workforce in the country, especially in view of the high number of paramedics who are leaving the country to pursue employment abroad.[1,2] On 1 March 2017, there were 3 209 Advanced

Life Support (ALS) providers on the Paramedic and Emergency Care Practitioner registers of the Health Professions Council of South Africa's Professional Board for Emergency Care.[3] Based on the population estimates of Statistics South Africa, this equates to approximately one paramedic for every 16 828 people.[4] However, in view of the number of registered paramedics who are working outside South Africa,[1] the exact number of practising paramedics working in South Africa is likely to be lower than this estimate.

1.3 Deconstructing the concept of Academic Success

In essence, academic success refers to *passing a given course*.[5] It may be further defined as a *favourable or desirable student outcome*.[6] Killen and Naidoo define academic success as the completion of the undergraduate degree within the minimum required time.[7,8] The South African Department of Higher Education (DHET) uses *success rates* as a crude measure for throughput by dividing the fulltime equivalent passes for each course category by the fulltime equivalent enrolments for each category of courses.[9] In other words, the Department of Higher Education measures success rate by calculating the number of credits that are passed for a given subject/module and dividing it by the number of students enrolled for the subject/module in question.

However, these definitions of academic success focus only on the epistemological or cognitive dimensions of academic success – that is, completing the degree in question within the minimum required time. Thus, these definitions fail to consider the student's agency and lived realities (in other words, ontology) thereby undermining the student's role in understanding and creating new knowledge.[10] Ontological assumptions have a direct impact on the construction of the learning contexts and process. [10] For example, a lecturer may explain a concept such as aerodynamics by using an aeroplane as an illustration. Although the lecturer may have good intentions, the reality for some students in the class may be that they have never had the opportunity to fly on an aeroplane. Thus, using the concept of an aeroplane in this context may render both the learning context and the learning process ineffective because the lecturer's epistemology is incongruent with the students' ontology.

In critical realism, agency is synonymous with causality and to cause is to absent[a].[11] Bhaskar uses the term transformative praxis which refers to the capacity of practical human agency to change one's circumstances.[12] Furthermore, agency is 'intentional'. For example, a student with a poor English background who purposefully attends academic writing classes is using their agency to improve their poor academic writing abilities.

Based on the definitions above, I proposed the following critical realist definition of academic success for the purpose of this thesis, namely, *the emergence of student transformative praxis to absent both epistemological and ontological absences*[b] *through intentional agency to complete an undergraduate degree in the minimum time*. Emergence in critical realism means two or more properties, each with its own causal powers, which combine to form a new entity.[13] The new entity is not reducible to that from which it emerged and the new entity is greater than the sum of its parts.[14] In other words, my definition suggests that there should be an emergence of purposeful student agency to enable the transformative praxis from an unwanted situation (lack of academic writing abilities) to a wanted situation (learning new knowledge and completing the degree in the minimum time). This definition improves on the popular definitions because it considers both the students' epistemology and ontology in academic success, thus recognising student agency.

Box 1. Critical realist definition of academic success for the purpose of this thesis

Academic success: the emergence of student transformative praxis to absent both epistemological and ontological absences through intentional agency to complete an undergraduate degree in the minimum time

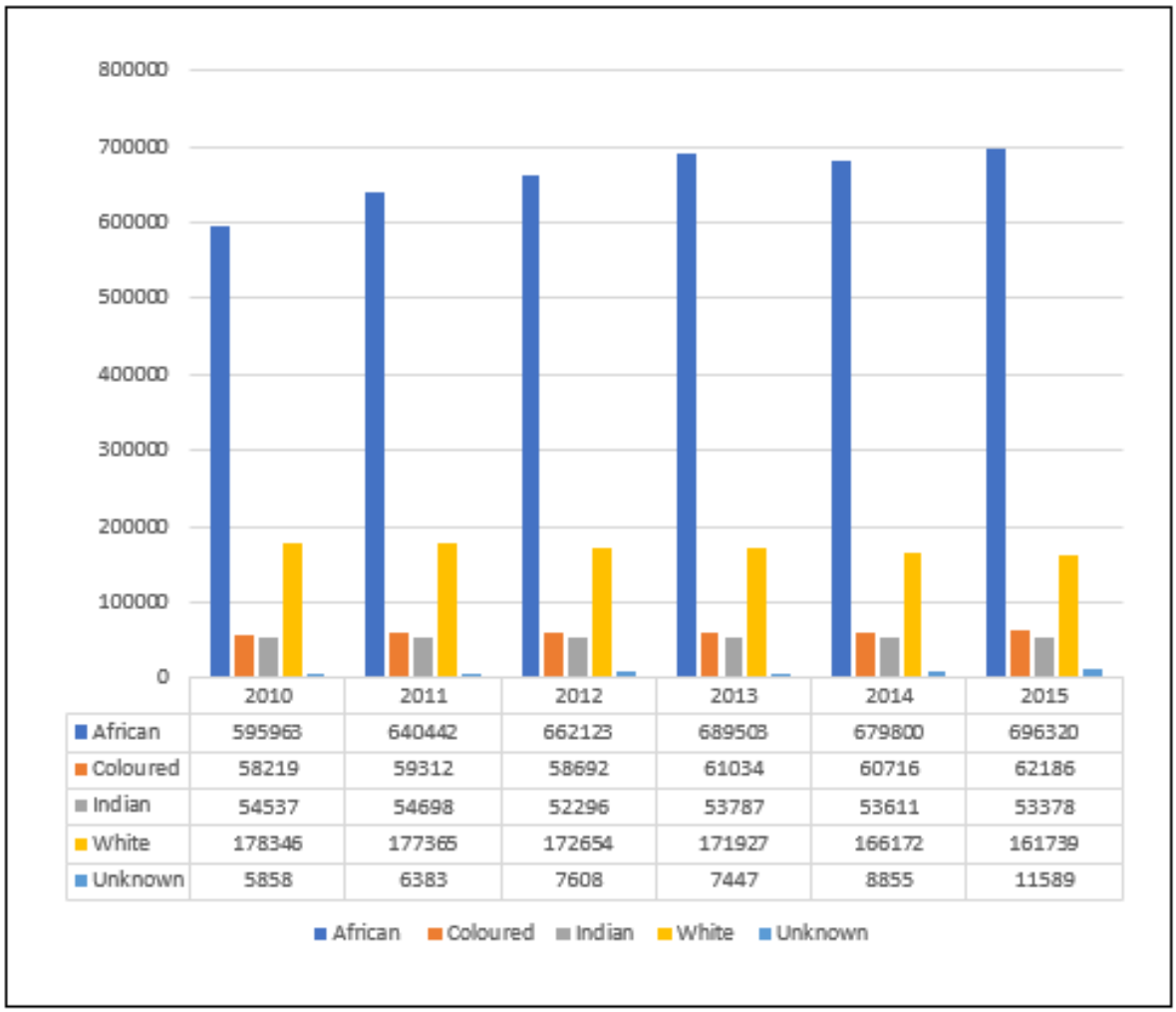
1.4 Academic Success in South Africa

Student enrolment in the South African higher education system has grown significantly since the advent of democracy in South Africa, from 425 000 in 1994 to 985 212 in 2015.[15] In addition, there has been an increase in the distribution of African student enrolments from

[a] To absent is to remove or change something when doing/acting. The concept of absence is further discussed in Chapter 2.

[b] Absences are 'undesirable things' that act as constraints or the simple non-existence of an entity.[48]

43% in 1998 to 71% in 2015 compared to 6% coloured, 5% Indian and 16% white.[15] The headcount enrolment by race from 2010 to 2015 is illustrated in Figure 1.1 below.



	2010	2011	2012	2013	2014	2015
African	595963	640442	662123	689503	679800	696320
Coloured	58219	59312	58692	61034	60716	62186
Indian	54537	54698	52296	53787	53611	53378
White	178346	177365	172654	171927	166172	161739
Unknown	5858	6383	7608	7447	8855	11589

Figure 1.1. Public higher education student headcount enrolment by race from 2010 to 2015 [15]

Figure 1.1 depicts student enrolment numbers by race from 2010 to 2015 which reveals a steady increase in student numbers from 2010 to 2013. Despite the increase of African student enrolments, Scott, Yeld and Hendry quote a disappointing statistic in relation to student success.[16] Only 30% of the first-time entering cohort admitted to South African higher education institutions in the year 2000 had graduated by 2004[16], with 56% leaving the original institutions at which they had enrolled without graduating, while 14% were still in the system.[16] Of further concern is the fact that African students performed worse than their

white counterparts. Thus, the positive gains in terms of African student enrolments appear to have been negated by the success (or rather lack thereof) figures (see Figure 1.2).

As mentioned above, DHET measures success rates by working out the fulltime equivalent (FTE) passes for each course category divided by the FTE enrolments for each category of courses. The average success rates for students enrolled for undergraduate contact courses in the public higher education system in 2015 was 83,1%.[15] It is worth noting that the success rates for African students (81,3%) was 8% lower than those of White students (89,4%), Coloured students (84,1%) and Indian/Asian students (87%), with the African academic success rates at 81,3% being below the total average of 83,1%.[15] The percentage distribution of average undergraduate success rates in public HEIs, by contact education programme and population group, in 2015 is illustrated in Figure 1.2 below.

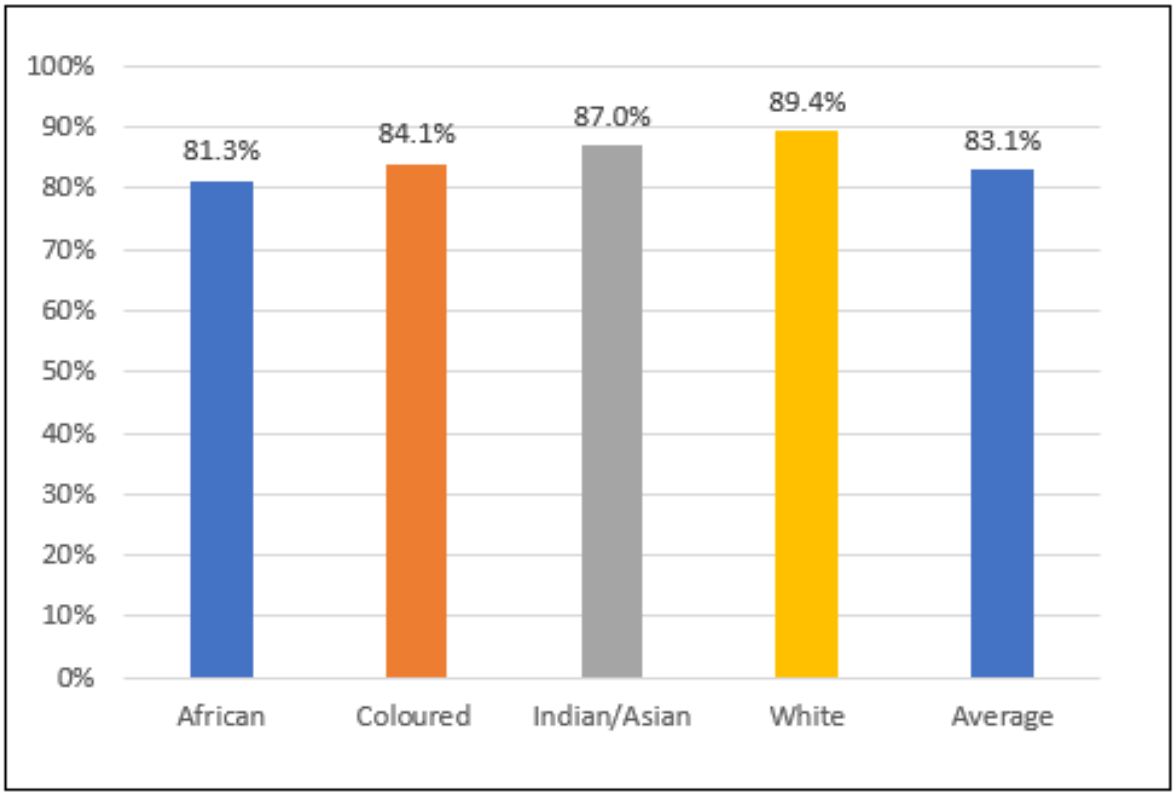
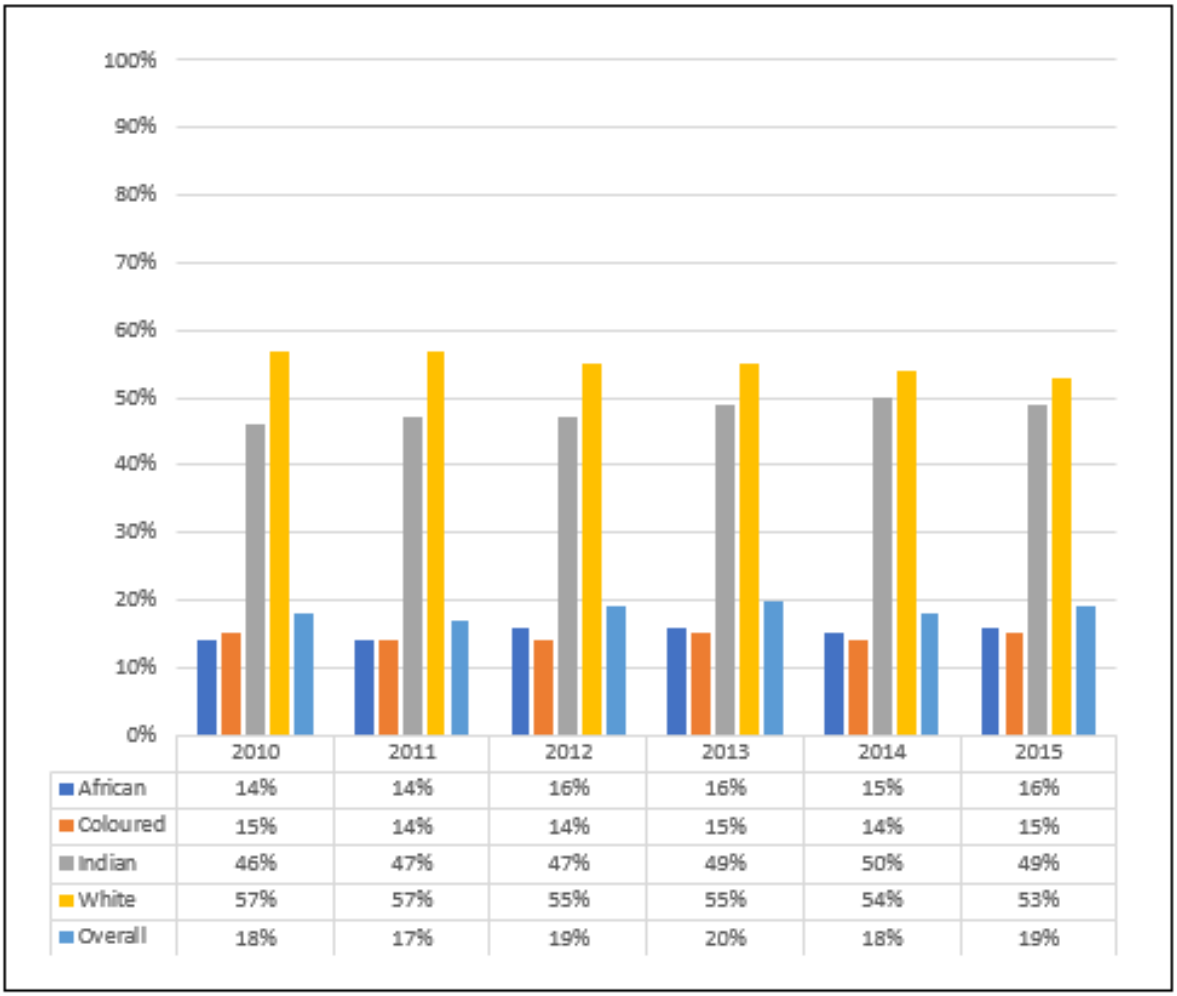


Figure 1.2. Proportionate distribution of average undergraduate success rates in public higher education institutions, by contact education programme and population group, in 2015[17]

Racial inequity is evident in the participation rate (defined as the total headcount enrolments as a percentage of the total population in the 20–24 age group). Figure 1.3 below depicts a disappointing picture as, despite the fact that in 2015 African students represented 71% of the student enrolment, the African participation rate was 16% compared to 53% for Whites.[15]



	2010	2011	2012	2013	2014	2015
African	14%	14%	16%	16%	15%	16%
Coloured	15%	14%	14%	15%	14%	15%
Indian	46%	47%	47%	49%	50%	49%
White	57%	57%	55%	55%	54%	53%
Overall	18%	17%	19%	20%	18%	19%

Figure 1.3. Public higher education participation rates by race from 2010 to 2015.[15]

The number of graduates divided by the student enrolment headcount for a particular year is known as the graduation rate.[9] The Statistics on Post-School Education and Training in South Africa makes a clear distinction between the graduation rates of contact and distance programmes, given that students enrolled in the latter programmes take longer to complete their studies compared to those enrolled in the former programmes.[9] The 2015 graduation rate for undergraduate contact programmes was 25% compared to those for distance programmes at 15%.[17]

On the other hand, these quantitative statistics do not provide a comprehensive understanding of the complex set of mechanisms at play that influence academic success, nor do they provide any understanding of the quality of the students' academic experiences in the South African public higher education system. According to the 2010 Council of Higher Education (CHE) report: "Quantitative measures of throughput fail to reflect the intricacies of social conditions and the teaching and learning process".[18] Cohort studies that measure throughput are confounded in that they do not take into account students who have changed courses or moved to different institutions. Although students may drop out of a particular programme, they may nevertheless be successful in another programme which the quantitative data has not taken into account. There is also the contention that students who have completed a year or two at university without graduating have attained certain competencies during this period and thus should not be considered as failures.[18]

1.5 Rationale for the Research

Africa is facing a substantial burden of excessive deaths prior to arrival at health care institutions.[19,20] It is believed that this is primarily due to the lack of African prehospital emergency care systems.[21] Essentially, the lack of skilled emergency care providers can be seen as one of the barriers in developing sustainable prehospital emergency care systems.[22] Against this backdrop, the World Health Organization has called for the development of formal emergency care systems in Africa in order to reduce morbidity and mortality.[23]

There is a paucity of research on the issue of academic success in prehospital emergency care programmes, including the more recent BEMC degree. The fact that the BEMC degree commenced as recently in 2011 may account for the lack of research about the programme. Academic success has, however, been studied in other allied health disciplines such as nursing and medicine.[24,25] These studies have indicated that there are various factors associated with either academic success or the lack thereof in other health sciences disciplines. These include, but are not limited to, gender, ethnicity, age, country of origin, previous degree, wrong career choice, commitment and motivation to study the particular course.[25–28]

An understanding of the factors that lead to academic success (or the lack thereof) is important for various reasons. Firstly, there is a dire shortage of paramedics and improving academic success in this field may likewise improve provider numbers on a national scale and perhaps even on the African continent. Secondly, given the differences between medical and

paramedic training, the results of this thesis may present additional features not highlighted in previous studies and that are characteristic specifically of the paramedic student group.

The success rates of the new BEMC offered at South African universities are not known and thus this study sought to fill this gap. Having lectured at two of the universities that offer the BEMC, I witnessed students from both advantaged and disadvantaged backgrounds become unsuccessful. This sparked an interest for the study to explore the causal mechanisms[c] that generate the emergence or absence of academic success in the BEMC programme.

1.6 Emergency Care Education and Training in South Africa

While this thesis focuses on the BEMC degree, there are various other emergency care programmes offered among various South African emergency care training institutions. These are mentioned in Chapters 5, 6 and 7 where their role in academic success in the BEMC degree is described. Certain students had completed other emergency care programmes prior to enrolling for the BEMC, which is currently the reference standard undergraduate programme in the emergency care profession in South Africa. This section discusses the background to emergency care education and training in South Africa in order to provide context for the study.

The provision of emergency medical care has seen rapid progress over the last two decades from unequipped, box type ambulances manned by untrained personnel to the provision of aeromedical services with highly trained emergency care providers.[29] Emergency medical treatment is a basic human right which is enshrined in section 27(3) of the Constitution of the Republic of South Africa.[30] The Act of the Union in 1910 assigned the responsibility for health care in South Africa to the then four provincial governments. However, the mandate in respect of providing an ambulance service was placed under local government authority. In the interest of saving costs, firefighting and ambulance services were combined into the Fire and Ambulance Service. However, challenges arose as the lack of medical control and support resulted in poor equipment and low training standards.[31]

The responsibility for the provision of the ambulance services was changed in the 1970s in terms of section 16 of the Health Act of 1977 with the responsibility for ambulance services

[c] Causal mechanisms are potentialities that may or may not be exercised or which may be exercised without being actualised/realised.[11]

being placed under the authority of the provincial health departments. The 1980s saw the establishment of provincial ambulance training colleges and the introduction of the two-week Basic Ambulance Certificate. A four-week Ambulance Medical Assistant course was also introduced during this time, followed by the Ambulance Medical Assistant II course. These courses were later changed to the Basic Ambulance Assistant, Ambulance Emergency Assistant and the Critical Care Assistant courses. However, there were no national norms and standards for emergency care providers and each province had its own scope of practice, curricula and standards of training. This led to frustration among emergency care providers as their qualifications were called into question in other provinces due to the differing scopes of practice.[31]

The Professional Board for Emergency Care was established on 10 January 1992, allowing emergency care practitioners to register with the then South African Medical and Dental Council (now Health Professions Council of South Africa).[32] The establishment of a professional board resulted in a national scope of practice being published in 15 April 1994.[32] In addition, registers for paramedics, basic ambulance assistants and ambulance emergency assistants were established while the accreditation of training institutions became the mandate of the professional board. After completing four weeks of training, a candidate may qualify as a basic ambulance assistant. The scope of practice is limited to basic airway and trauma management, nitrous oxide, medical oxygen and oral glucose administration. After 1000 experiential hours, a basic ambulance assistant may enrol for the Ambulance Emergency Assistant course which lasts twelve weeks. Together with the basic ambulance assistant capabilities, the ambulance emergency assistant may also perform needle chest decompression, needle cricothyroidotomy and manual defibrillation, initiate intravenous access and administer 50% dextrose, oral aspirin and B_2 agonists for asthma. The ambulance emergency assistant is eligible to enter the four-month Critical Care Assistant course after a further 1000 experiential hours.[33]

Five months of experiential learning have been added to the Critical Care Assistant course which is now nine months in duration. The critical care assistant paramedic is placed on the same Paramedic register as a graduate who has completed the three-year National Diploma. The scope of practice in this register is much broader than that of the ambulance emergency assistant practitioner. Added to this register is the administration of morphine sulphate,

benzodiazepines to terminate seizures or sedation, lignocaine and amiodarone hydrochloride for anti-arrhythmia management, adrenaline and advanced airway management methods for the critically ill or injured patient.[33]

The short courses were not aligned to the South African National Qualifications Framework, thus prompting the introduction of the three-year National Diploma in Emergency Medical Care in 1987 at the then Natal Technikon (now Durban University of Technology).[34] Twelve rescue modules were added to the curriculum. The National Diploma graduates have a more extensive theoretical foundation than a critical care assistant and are exposed to theoretical subjects other than emergency care, thus making them well-rounded practitioners.[31]

The Bachelor of Technology in Emergency Medical Care (BTech EMC) was introduced in 2001.[33] This programme was offered on a part-time basis over two years upon completion of the three-year National Diploma. The BTech graduate is registered as an Emergency Care Practitioner with the Professional Board for Emergency Care. At the time of the introduction of the BTech programme, there was no difference in the scope of practice between the Paramedic and the Emergency Care Practitioner registers. However, this changed in 2009 with practitioners registered in the Emergency Care Practitioner category being given additional drugs in their scope for thrombolysis and rapid sequence induction.[33]

The malalignment of the short courses prompted a review and revision of the emergency care education and training in South Africa. This revision resulted in the National Emergency Care Education and Training Policy which is in line with the Higher Education Qualifications Sub-Framework of South Africa. There are three programmes in the aforementioned policy, namely, the one-year 120-credit Higher Certificate, the two-year 240-credit diploma and the four-year 480 credit professional degree in Emergency Medical Care. After completion of the four-year bachelor degree, students may then go onto postgraduate programmes, i.e. masters and doctorate in Emergency Medical Care.

The South African National Department of Health and the Professional Board for Emergency Care undertook the review and restructuring of the short courses to ensure compliance with the requirements of the SAQA Act (Act 58 of 1995). The Professional Board for Emergency Care reviewed and recurriculated the short courses into a 240 credit National Qualifications Framework 5 mid-level worker qualification which was compliant with the National Qualifications Framework and registered with SAQA. Graduates are referred to as emergency

care technicians and have their own register with the Professional Board for Emergency Care.[34]

The three-year National Diploma and the BTech EMC were recurriculated into the now four-year year, 480-credit professional bachelor of Emergency Medical Care degree.[33] Upon completion of this degree, the BEMC graduate is eligible to practise on the Emergency Care Practitioner register with the Professional Board for Emergency Care, similar to a BTech graduate.

In summary, emergency care education and training in South Africa has undergone several changes over the last few decades from short course training to formal higher education qualifications. The short courses have been realigned to comply with the legislative requirements of the Republic of South Africa. However, the Honourable Minister of Health has signed regulations which bring an end to the emergency care short courses – Basic Ambulance Assistant and Critical Care Assistant – by February 2018 and the Ambulance Emergency Assistant by February 2020. These will be replaced by the one-year Higher Certificate and two-year Diploma in Emergency Medical Care which will be aligned to National Qualifications Framework and Higher Education Qualifications Sub-framework.

1.7 Problems associated with Short Course Training

The focus of short course training is on skills training and competence but not on promoting life-long learning as envisaged in the National Qualifications Framework. The emphasis is on managing a particular condition within the defined scope of practice as regulated by the Professional Board for Emergency Care. Wheelahan and Moodie argue that competency based training provides students with only "contextually specific elements of theory that are relevant to the particular context, so that the emphasis is on elements of content rather than the system of meaning".[35] For example, if the patient wheezes, it is probably asthma and therefore nebulisation would be the preferred treatment of choice. In other words, a student who has undergone competency-based training may find it challenging to manage a wheezing patient who is not asthmatic.

In order to illustrate the above, I have included statements from two students who had successfully completed the Critical Care Assistant short course training and were now in their fourth year of the BEMC degree in 2016:

I must be very honest, the CCA programme made me completely capable and able to function comfortably and independently with a patient. But, having now done this course, I see the shortcomings within the CCA course, and I feel much more grounded theoretically and stronger with a greater understanding of many things. Because, yes, you cover a lot of things on the CCA course, pathologies and diseases etcetera, and how it works, but there isn't that much time invested in theory, compared to this course. Initially you would think that it is unnecessary. It is unnecessary but, standing in the fourth-year shoes, it actually becomes clear why all of that had to be done in order for you to stand here now and be able to – this is now my personal opinion, now how I can argue/not argue something, but now I can risk versus benefit for any patient at any given time, where the CCA is very clinically driven; you know you need to do that, you see that. You do take the risk into account, you do take the benefit into account, but it is not complete. Student Sheba[d]

Bad in the sense of – look, we were taught to monkey see, monkey do. However, I wanted to change that, I really wanted to think. Student Alicia

Student Sheba conceded that although the Critical Care Assistant programme had enabled her to feel comfortable working with patients, the BEMC had given her a greater theoretical understanding of many things. She could now "*do risk versus benefit for any patient at any given time"*. This illustrates the ability of the BEMC to instil critical thinking and clinical decision-making skills compared to the Critical Care Assistant programme. To further illustrate the competency-based approach of the short course training, Student Sheba acknowledged that the Critical Care Assistant programme "*is very clinically driven*" while Student Alicia stated that it was "*bad in the sense of – look, we were taught monkey see, monkey do"*. The latter may be attributed to the shorter time devoted to theoretical understanding in the Critical Care Assistant programme as Student Ayesha stated that *"there isn't much time invested in theoretical scriptures"* in reference to the Critical Care Assistant programme.

1.8 Research Question

Why is academic success emergent or absent in BEMC students?

[d] Both Sheba and Alicia are fictitious names

1.8.1 Research Sub-questions

1. What is the sociocultural history of students registered for a bachelor degree in Emergency Medical Care (BEMC) in South Africa?
2. How does the students' epistemology and ontology generate the absence of academic success in the BEMC programme?
3. How does the students' epistemology and ontology enable the emergence of academic success of students in the BEMC programme?

1.9 Thesis Roadmap

Chapter Two: Critical Realism

This chapter discusses the philosophical orientation of the study, namely, critical realism. I tried to keep the discussion simple by providing examples that would be easy to follow while maintaining academic rigour.

Chapter Three – Theoretical Perspectives

This chapter provides a brief background to the history of higher education in South Africa. The chapter then goes on to discuss the factors that result in the emergence or absence of academic success in South Africa.

Chapter Four – Research and Methodology

This chapter describes the research design and methodology used in the study. It also explains my insider position as a researcher.

Chapter Five – Quantitative Results

This chapter presents the quantitative results of this study.

Chapter Six – Absence of Academic Success

This chapter presents and explores the qualitative findings in respect of the absence of academic success in the BEMC programme. The chapter seeks to answer the second research sub-question: How does the students' epistemology and ontology generate the absence of academic success in the BEMC programme?

Chapter Seven – Absenting Absences: The Emergence of Academic Success

This penultimate chapter presents and explores the qualitative findings in relation to the emergence of academic success in the BEMC programme. The chapter seeks to answer the third research sub-question: How does the students' epistemology and ontology enable the emergence of academic success in the BEMC programme?

Chapter Eight – Looking Back and Ahead

This is the final chapter of the thesis and concludes the main findings of the study. The chapter then discusses how the thesis has contributed new knowledge to the existing body of knowledge. This is followed by recommendations and possibilities for future research. The chapter concludes by providing a critique of the research study.

1.10 Looking Back and Ahead

This chapter introduced the study by discussing the philosophical orientation of the study. The notion of academic success was deconstructed and a critical realist definition of academic success provided. The chapter also discussed higher education and academic success in South Africa. Despite increased student enrolment figures since 1994, African students still perform worse when compared to other racial groups. The chapter also highlighted that, as is evident in the participation rate, higher education in South Africa is still characterised by racial inequity. This was followed by a discussion on the background of emergency care education in South Africa. The chapter concluded by stating the research question and sub-questions that the study was seeking to investigate. The next chapter unpacks critical realism.

CHAPTER TWO

CRITICAL REALISM

2.1 Introduction

This chapter aims to explore some of the concepts of critical realism. Critical realism is a philosophy of science that has substantial implications for conducting research. This chapter aims to describe critical realism while using examples that are easy to follow.

2.2 Critical Realism

Critical realism was developed in 1975 by the Indo-British philosopher, Roy Bhaskar.[36] Bhaskar originally referred to his work as either transcendental realism or critical naturalism, but this was later contracted to critical realism.[36] This philosophy arose as a result of Bhaskar's dissatisfaction with positivism which was, and arguably still is, the dominant philosophy underlying research. Positivism is based on empirical realism which is based on the assumption that what is observed in the world is all that exists, i.e. the world is a closed system. This is referred to as a monovalent actualist (no depth) ontology.[37] A monovalent actualist ontology implies that the world consists of a single ontological domain in which all things are observable.[38] Monovalent means having one value i.e. a positive world view which does not accommodate the negative (absence). Critical realism, on the other hand, recognises both the positive and the negative. According to actualist ontology, that which is invisible cannot be said to exist in the world as observation is the key criterion for existence. Therefore, cultural, psychological and religious beliefs are viewed with suspicion by positivists, if not totally denied. Explanatory laws or theories in positivism attempt to account for the observed phenomena instead of understanding that which is causing the observed phenomena.[13]

Bhaskar argues that the world is comprised of objects with real and concrete structures and causal powers by virtue of their internal composition.[39] The word *power* is a term designated what something is able to do.[40] For example, a school principal possesses the causal power to expel students. Accordingly, objects with causal powers interact with other objects using their causal powers to generate events which may be observed by the researcher. Furthermore, Bhaskar asserts that, for natural scientific inquiry to be possible, the world ought to consist of concrete, causal mechanisms.[38] It is, therefore, the responsibility of the

researcher to describe the causal mechanisms which have caused the observed phenomenon/a.[38]

The basis for Bhaskar's assertions is that he makes a clear distinction between epistemology (that which is known) and ontology (that which is).[38] Positivists tend to conflate the two with Bhaskar terming this the *epistemic fallacy*.[38] Conflating the two means that that which is known (epistemology) is said to be reality (ontology). Thus, because causal powers are not observable, they are said not to exist in terms of positivism.[38]

2.2.1 Stratified Depth Ontology

The consequence of Bhaskar's argument is an emergent, stratified, depth ontology which differentiates between the world and our experience of it i.e. this ontology is stratified into domains of the *real*, the *actual* and the *empirical*. The domain of the real contains generative mechanisms and causal powers or enduring entities, be they social structures e.g. (family) or else physical (organisms) or conceptual (theories or ideas).[41] Sayer makes the point that there is further stratification in the real domain where causal powers at one level (e.g., chemical reactions) may be seen as having been generated by those of a lower level (atomic valency).[41] According to critical realism, these mechanisms and entities with enduring properties may or may not be observable, they exist irrespective of our understanding of their nature and they have the power to behave in a particular way. These mechanisms or entities are structures that consist of particular components which possess causal emergent powers which, when activated or released, act as generative mechanisms to shape the actual occurrence in the world. Although these entities may not be empirically observable, they have powers which they may not exercise at a specific time (a specific stimulant may be needed to trigger them). These powers may also be exercised but not become apparent due to the compensation of some other generative mechanism.[41]

The actual domain refers to the actual events or phenomena that emerge (what happens if and when the causal powers are triggered) and that are generated by the mechanisms within the domain of the real. The domain of experience is the empirical domain. While we may be able to see, feel and hear (i.e. experience) things at this level, some generative mechanisms may not be observable. Observability may give us a false sense of confidence about what we think exists but it must be remembered that existence, in itself, does not depend on being observed.[41] In light of the above, Danermark et al. argue that research should aim to

"investigate and identify relationships and non-relationships, respectively, between what we experience, what actually happens, and the underlying mechanisms that produce the events in the worlds".[13] Bhaskar's depth ontology is illustrated in Figure 2.1.

	Domain of Real	Domain of Actual	Domain of Empirical
Mechanisms	✓		
Events	✓	✓	
Experiences	✓	✓	✓

Figure 2.1: Bhaskar's depiction of the depth ontology [39]

2.2.2 Retroduction

Critical realism uses the conceptual tool of retroduction to move from a surface phenomenon where we experience reality in the empirical domain from an event/s that has emerged from the actual domain, to the deeper domain of the real with its causal powers and generative mechanisms. Mingers et al. describe retroduction as follows:

> *We take some unexplained phenomenon and propose hypothetical mechanisms that, if they existed, would generate or cause that which is to be explained. So, we move from experiences in the empirical domain to possible structures in the real domain. This does not, of itself, prove that the mechanism exists, and we may have competing explanations, so the next step is to work toward eliminating some explanations and supporting others.*[42]

However, the description of retroduction by Mingers et al. has omitted the critical step of the actual domain.[42] The reality that is experienced at the empirical level has emerged in the actual domain. As a result, it is not possible for one to move from the domain of experiences (empirical) to the domain of the real with its causal powers during retroduction by skipping the actual domain. Sayer asserts that "merely knowing that 'C' has generally been followed by 'E' is not enough: we want to understand the continuous process by which 'C' produced 'E'.[43] This is an essential step in the methodology of critical realism, namely, moving from a

description of the empirical events to the level of the actual, where the phenomenon or event emerged, to the level of the real with its causal mechanisms which may be non-observable and may have caused the event to occur. Danermark et al. concede that retroduction is not induction, deduction or abduction, which are formal modes of inference.[13] They do, however, note a resemblance in that retroduction is "a thought operation through which we can move from knowledge of one thing to knowledge of something else".[13] The knowledge of one thing in this context is the experiences in the empirical domain but, through retroduction, one may acquire the knowledge of the causal mechanisms that have resulted in the emergence of the phenomenon in the actual domain.

Figure 2.2 portrays how retroduction may be utilised in the context of academia by investigating the lack of academic success of a student. The figure illustrates the process of retroduction through the three ontological domains of critical realism where a student has failed the year at university and how it is possible to reach the level of the real by using retroduction.

In this scenario the student failed the year due to generative mechanisms occurring at the *real* level, which the lecturer and student could not see or experience. The lecturer is able to experience the event at the *actual* level only when the student fails. The student experiences the negative emotions associated with failing at university at the *empirical* level. The *causal powers* occurring at the *real* level appear to be (i) both parents are unemployed, resulting in a lack of funds for transport to campus and (ii) the lack of appropriate study space because the student is living with several people in one shack, which is not a conducive learning environment. The lack of financial resources means the student cannot afford to buy textbooks and does not have access to a computer to do work or assignments at home. According to critical realism, any discovery of knowledge or explanation is fallible and extendable as knowledge grows and, therefore, these causal mechanisms may not be the only causes of the student's failure.[42]

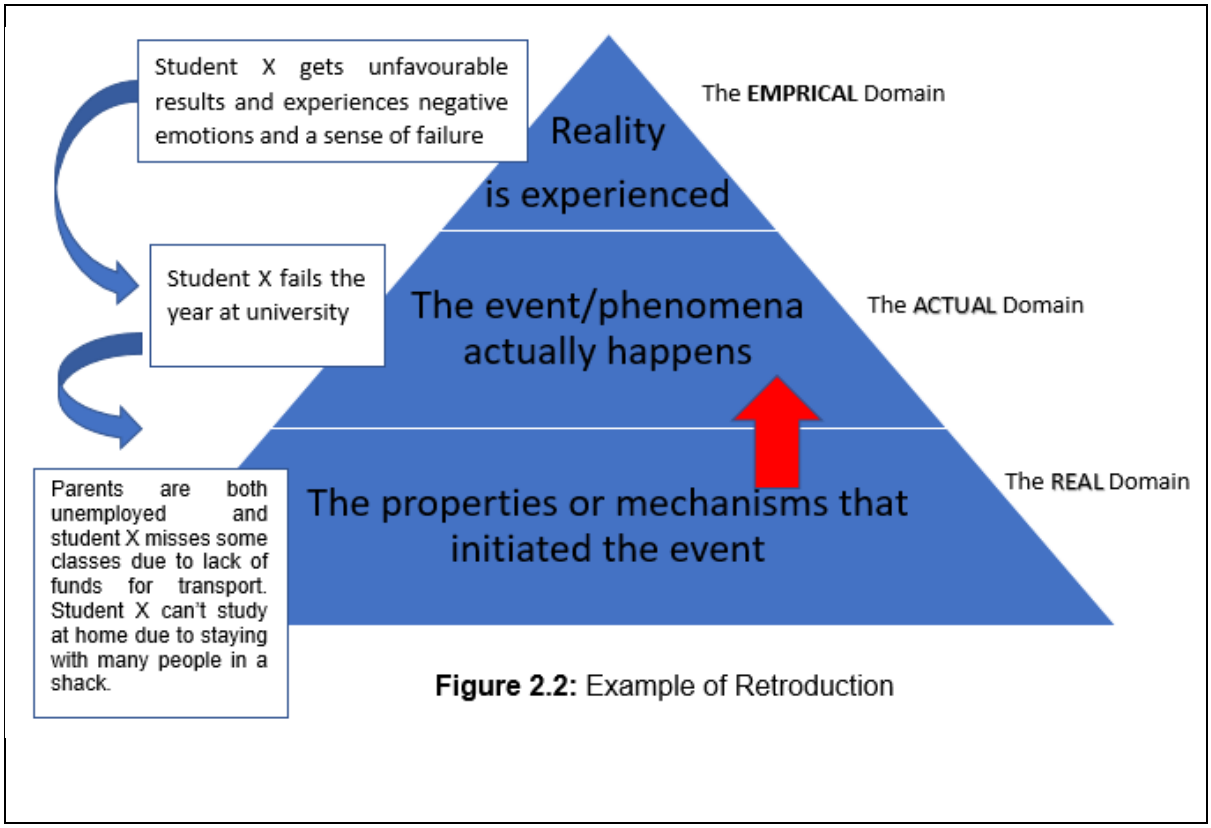


Figure 2.2: Example of retroduction

2.2.3 Epistemology in Critical Realism

Bhaskar asserts that there are two features of knowledge[38] and refers to these two dimensions as the 'central paradox' of science:

> *[T]hat men in their social activity produce knowledge which is a social product much like any other, which is no more independent of its production and the men who produce it than motor cars, armchairs or books, which has its own craftsmen, technicians, publicists, standards and skills and which is no less subject to change than any other commodity. This is one side of "knowledge". The other is that knowledge is 'of' things which are not produced by men at all: the specific gravity of mercury, the process of electrolysis, the mechanism of light propagation. None of these "objects of knowledge" depend upon human activity. If men ceased to exist sound would continue to travel and heavy bodies fall to the earth in exactly the same way, though ex hypothesi there would be no-one to know it.*[39]

The first feature of knowledge is the transitive dimension which consists of the raw materials of science which are changing and extendable as knowledge grows. This type of knowledge is

something that we learn and come to know and understand. The example of cardiopulmonary resuscitation is used to illustrate the transitive (changing) objects of knowledge.[37] Cardiopulmonary resuscitation has undergone several changes since 2000 to 2015. What appears to be best practice in the management of a patient in cardiac arrest changes every five years as the American Heart Association updates the cardiopulmonary resuscitation guidelines based on the latest available evidence. In the 2000 AHA guidelines, three stacked shocks, followed by a compression to a ventilation ratio of 15:2, were recommended for persons with cardiac arrest and presenting with ventricular fibrillation or pulseless ventricular tachycardia.[44] The recommended approach was Airway, Breathing then Circulation (A-B-C). However, for the same patient in 2015, one shock only is recommended, followed by a compression to a ventilation ratio of 30:2. The approach has since been changed to Circulation first, followed by Airway and Breathing (C-A-B).[45] This example illustrates the transitive (changing) description of knowledge in terms of which cardiopulmonary resuscitation has evolved over the years through science. This cardiopulmonary resuscitation example demonstrates that knowledge is a social product of science produced through human agency and is thus fallible. It must, however, be pointed out that Sayer emphasises that the "admission that all knowledge is fallible does not mean that all knowledge is equally fallible".[43] This fallibilist view gives rise to the concept of judgemental rationality which is clarified later.

Unlike the transitive dimension of knowledge, the intransitive dimension of knowledge is not a by-product of social activity through human agency and occurs independent of human representation of it. These objects of knowledge are real structures and mechanisms that generate phenomena and knowledge but function independently of our knowledge and our experience.[38] Bhaskar cites the following examples of these, namely, gravity, the process of electrolysis and light propagation. Indeed, if human beings ceased to exist in the world, light would still travel, objects would still fall due to gravity, metal would still conduct electricity and sodium would still combine with chloride to create salt. This is because these objects of knowledge were simply discovered by humans and are not produced through social activity by human agency. Therefore, the intransitive objects of knowledge are unchanging. However, because intransitive objects of knowledge occur independently of us, this does not mean that they are unknowable as scientists may know something about them already.[38]

2.2.4 Relationship between Ontology and Epistemology and the Epistemic Fallacy

It was mentioned earlier that ontology is distinct from epistemology in critical realism. In other words, statements about ontology (being) cannot be reduced to, or analysed, in terms of statements about knowledge.[39] It is thus not possible to transpose questions about being into epistemological terms. In other words, something may exist without being known. When ontology (being) and epistemology (knowing) are conflated, this is termed the 'epistemic fallacy'.[38]

We may realise that there is imminent danger present when we see people screaming and running away. The epistemic fallacy would assume that danger does not exist without seeing people running and screaming. In other words, the existence of danger (ontology) has been conflated with the knowledge (epistemology) of people running and screaming. i.e. danger would not be present (exist) if people were not running and screaming. One may deduce from this explanation that the existence (being) of something does not equate to knowing. This is in stark contrast to positivism in terms of which there has to be some knowledge (through observation) in order for something to exist.

As mentioned earlier, in critical realism the transitive dimension of knowledge is a result of social activity through human agency and, therefore, humans have to exist prior to the construction of any knowledge about being. It may be seen from this that ontology is greater than epistemology as it exists prior to knowledge. The equivalent of the epistemic fallacy in relation to this dialogue is the *ontic fallacy*, which reduces knowledge into being. An example of the ontic fallacy would be to say that knowledge of people screaming and running away is danger.

2.2.5 Epistemic Relativism

Critical realism also holds that our beliefs are historically and socially located – *epistemic relativism.*[38] This is to say that our beliefs and/or knowledge claims are relative in terms of our social, economic and geo-historical context. Archer et al. concur with this assertion and state that "all our judgments are socially and historically situated and are conditioned by our circumstances, what we know at the time and by the prevailing criteria of evaluation".[46] As a result, our judgements will always be fallible. Epistemic relativism thus implies that human beings all perceive the world differently and our experience of the world varies according to

our socioeconomic situation and geographical location. However, timing changes people's experience of the world. For example, a person who died in the 1950s would not have experienced the use of the internet as would someone born in the 21st century who may have been exposed to it at a relatively young age. Sayer adds that "the world can only be known under particular descriptions, in terms of available discourses, though it does not follow from this that no description or explanation is better than another".[41]

2.2.6 Judgemental Rationality

The preceding discussion leads to another concept that is consistent with epistemic relativism, namely, *judgemental rationality*. According to this concept, some judgements are better than others.[41] Archer et al. state that judgemental rationality means:

> *… that we can publicly discuss our claims about reality as we think it is and marshal better or worse arguments on behalf of those claims. By comparatively evaluating the existing arguments, we can arrive at reasoned, though provisional, judgments about what reality is objectively like: about what belongs to that reality and what does not.*[46]

In other words, some accounts of the world are more truth apt than others. This completes Bhaskar's three concepts of the holy trinity of critical realism, namely, the necessity of ontological depth, epistemic relativism and judgemental rationality.

2.3 Causation in Critical Realism

The supposition of a deeper level in critical realism where the entities and powers may or may not be discernible has significant methodological implications. Critical realist research makes use of observations of empirical events and tries to identify the causal mechanisms that have given rise to the perceived event(s). The critical realist concept of causality thus refutes David Hume's notion of constant conjunction (cause and effect).[38,41] This implies that the critical realist interpretation of causality is not a constant conjunction of events (e.g. if X is triggered, then Y will occur). On the other hand, in terms of the Humean causal laws, the assumption is that there is always a connection between events X and Y and there cannot be a natural force/mechanism that has resulted in event X producing event Y.[39]

The possible criticisms, for example, conceptual and empirical criticisms, of the Humean causal laws are now briefly discussed. Firstly, when one says event X is always followed by event Y, there is no discernible cause.[38,41] However, such constant conjunctions of events are

not causes or explanations but are themselves caused by something which needs to be explained. For example, an intruder jumps over the fence of a yard where a dog is present, and the dog barks each time an intruder jumps over the fence. This constant conjunction of events and the Humean causal law would suggest that (i) the intruder is causing the dog to bark and (ii) that there is nothing more going on here that warrants further investigation.[14] For the critical realist, the fact that the dog is barking at the intruder is not a causal explanation but merely a phenomenon that warrants an explanation. Sayer asserts that explanation in critical realism is not dependent on finding the succession of events but is, instead, dependent on identifying generative mechanisms and understanding, namely, (i) how these mechanisms work (ii) if they are activated and (iii) under what conditions.[41]

Secondly, an empirical critique of the Humean concept of causality is that there are no exceptionless regularities.[14] Even the constant regularity of a dog barking when it sees an intruder may suddenly stop should the intruder be someone with whom the dog is familiar. It is thus clear from the above examples that event X is not always followed by event Y. Nevertheless, natural scientists in a laboratory may occasionally replicate a constant succession of events with a significant degree of reliability. They do this by creating what Bhaskar terms a closed system in an experiment.[39] A closed system refers to an experiment being set up in such a way that one mechanism alone operates in order to observe a constant conjunction of events. In other words, there are no external forces/mechanisms acting upon the experiment.[14,38,40] Bhaskar argues that the universe is an open system and no system is ever perfectly closed.[38] The implication of Bhaskar's argument is that there may never truly be a constant conjunction of events in the natural/social world as it is an open system. Collier posed a pertinent question regarding the closed system:

> *What if experimental results only tell us what happens under experimental conditions? If they don't tell us how things happen in the open system of nature at all, then they lack all epistemic value, and are no more than interesting tricks.*[40]

Since this constant succession of events that is uncovered by natural scientists in the closed system is not always applicable in the open world, scientists would have to identify the causal mechanisms that have produced the event/s, while always bearing in mind the critical realist caveat that knowledge is fallible.[41] It is also important to note that, although causal mechanisms may be activated, they may not give rise to a particular event/phenomenon due

to another casual mechanism that is present which 'cancels out' the other causal mechanism.[41] It is clear from the latter that causal mechanisms do not always operate despite being triggered and also that, even if they are triggered, prevailing conditions may determine whether they will operate. Even if they do operate, their actual effects are dependent on other conditions.[13]

2.4 Four-planar Social Being

The transformational model of social activity is a model of transformative praxis that illustrates the relationship between social structure and agency which are both mutually constitutive.[11] "Social structures are things like languages, economies and political forms."[47] Bhaskar argues that the social structure may either repress or empower human agency while the latter has the ability either to change the structure or to reproduce it.[48] In other words, social structures are unable to exist without human intentional activity.[47] For example, a BEMC student is situated within a social structure, the university and the Emergency Medical Care Department. Within this structure, there are lecturers and other students who may motivate a student, thus enabling his/her agency. The ability of human agency to change the social structure was illustrated in the #FeesMustFall[e] campaign which resulted in no fee increases for the 2016 academic year in public higher education institutions in South Africa.[49]

Bhaskar elaborated on the transformational model of social activity by introducing the four-planar social being as a means to understand social life.[48] The four-planar social being

> *…presupposes that every event in social life has to be understood in terms of four dimensions. In terms of our natural exchanges, our material transactions with nature; in terms of our social interactions with others; then in terms our relationships with the social structure.*[47]

For example, a student may come from a disadvantaged background and have attended a rural school with parents who are unable to speak English (plane d). The student may experience a communication barrier at university that might exclude him from epistemological access (plane C). At plane [b], the student may engage with other students (agents) who may empower him and promote his self-confidence. Lastly, at plane [a], the student may acquire a transformed sense of agency which may lead him to exercise his

[e] #FeesMustFall was a student led protest movement that began in October 2015 which was an outcry against the increasing fees in higher education in South Africa.

agency to pass his degree despite his past experiences. I now turn to Bhaskar's theorems of human agency.

2.5 Bhaskar's Five Theorems of Human Agency

Bhaskar formulated five theorems concerning human agency.[47,50] Firstly, intentionality is irreducible.[47,50] In other words, there is no action without intention. "If it's not intentional, that is, it's not informed by consciousness in some way, then it's not an action but a mere piece of behaviour."[47] An example of this would be screaming at someone who has stood on one's toes. The screaming would not necessarily have been informed by consciousness and would thus be a mere behavioural action.

The second feature is that agency is irreducible. Bhaskar asserts that "there's no way that we can't not act."[50] In other words, we have no choice but to exercise our agency. Bhaskar argues that, even if one chooses to abstain from exercising agency, this is still a choice and thus an action.[47] Thus, every decision that one takes, whether the student chooses to study or not, is a choice and an action, thereby exercising agency.

The third feature is that "all social action, everything we do, has to be captured in terms of all four planes of social being".[50] In other words, agency has to be considered in terms of the material transactions with nature, our social interaction with other agents, our relationship with social structure and the subjectivity of the agent.

The fourth feature is that "whatever we do at some point, at some level, we must just do it spontaneously".[47] Bhaskar asserts that the world would be without action if there were a lack of basic, spontaneous action and that "the more well-versed you are in a form of behaviour, in the practice, the more capable you are of acting spontaneously".[47,50] An example of the fourth theorem would be driving a car. The more one drives a car, the more spontaneous the process becomes. However, the fourth theorem comes with a caveat in that, because our actions are spontaneous, we would need to change ourselves (self-change) to see any change in the social world. For example, if society wanted to reduce the number of road traffic accidents, then the drivers would need to change their driving behaviour.

The fifth feature is that "anything we do will immediately affect all planes of social being".[47] In other words, our agency affects other human beings – plane [b], at plane [a], the natural environment is affected, thereby reproducing or transforming it – plane [c]. Thus, through

our agency, we may either reproduce the social structure (i.e. conform to the norm) or else transform the social structure, thus resulting in some change. Accordingly, society may be changed only through our actions and thus should our actions be suboptimal or wrong, we would need to change ourselves.[47]

Another important and complex concept of critical realism, namely, emergence, is discussed next.

2.6 Emergence

Emergence in critical realism refers to two or more constituents which give rise to new phenomena.[41] It is important to note that the emergent entity[f] is not the same as its constituents as it cannot be reduced to these constituents.[41] Elder-Vass defines an emergent property as a "thing (entity or whole) that can have properties or capabilities that are not possessed by its parts".[14] Bhaskar suggests a more complex definition of emergence by describing emergence as:

> *A relationship between two terms such that one term diachronically (changing through time) or perhaps synchronically (at a particular period) arises out of the other, but is capable of reacting back on the first and is in any event causally and taxonomically irreducible to it.*[48]

An example of an emergent property would be soup, which consists of ingredients such as carrots, meat, spices and water. The soup emerges diachronically (over a period of two hours) because of heat that acts as one of the generative mechanisms in the production of the soup. It is then not possible to reduce the soup to carrots, meat or water and the soup is greater than the sum of its parts. Another example is water, which consists of water and hydrogen molecules. When the two molecules combine, water emerges. However, it is not possible to reduce water either to the hydrogen or oxygen, i.e. one cannot say "water is oxygen". One cannot wash the dishes or fight a fire with oxygen and/or hydrogen as separate entities. This last statement is supported by Danermark et al., who assert that objects have 'emergent powers' due to a combination of the properties of underlying strata with their own specific structures, forces, powers and mechanisms.[13] Oxygen is highly flammable although it is one

[f] Elder-Vass defines an entity as an object or thing such as an atom, molecule, cell, tree, human individual, business corporation and army.

of the properties of water and yet the water may be used to fight fires. This highlights the emergent powers of water as an emergent property.

2.7 Absence

Bhaskar introduced the concept of absence in the book *Dialectic: The Pulse of Freedom*.[48] In this book, he argues against Parmenides' ontological monovalence (mono meaning one and valence meaning value, i.e. one value) that states that "being is and non-being is not".[37] Instead, Bhaskar argues that non-being exists.[48] Furthermore, Bhaskar asserts that non-being has ontological priority over being, i.e. negativity always comes before positivity.[48] This argument is based on the notion that absence is the main category of/for thinking being-becoming.[11]

Dialectic may be defined as "the absenting of CONSTRAINTS on absenting absences or ills (which may be regarded as constraints)".[11] Thus, dialectical critical realism is a process of change which represents the unfolding of being which Bhaskar describes in his MELD schema. The MELD schema is described below:

Box 2. The MELD schema

(1M) The First or Prime Moment – *Non-identity.* This refers to the ontology of structure, change and emergence.
(2E) The Second Edge – *Negativity*. The emphasis here is on absence and negativity.
(3L) The Third Level – *Totality*. Phenomena are seen in their totality
(4D) The Fourth Dimension – *Transformative agency.*[48]

The cardinal points of absence in dialectic critical realism are absence exists (1M); changes are absentings (2E); ills may be seen as absences, which act as constraints (3L); and empowered praxis is absenting agency which may remove remediable ills (4D).[11] In other words, absence exists, absence is brought about by change, ills (undesirable things) act as constraints as they are seen as absences and exercising one's will power acts as an agency to remove ills that can be changed. Bhaskar makes the assertion that, in as much as these ills,

absences and constraints are (i) unwanted, (ii) unnecessary and/or (iii) remediable or removable, they should be transformatively negated, i.e. absented.[48]

The following example may be used to explain the critical realist concept of absence. The inability to communicate in English for a student is a constraint, which Bhaskar understands as an absence. It may be argued that this absence of language understanding and communication is a constraint on the student's ability to understand the work and participate in academic discussions in the classroom. However, in order for the student to overcome the absence, the student needs to (i) possess the knowledge to act in his/her own real interests (ii) be able to access the skill, resources and opportunities required to do so and (iii) be disposed to so act.[48] In other words, the person needs to possess the self-determination to overcome the constraint, which Bhaskar refers to as the empowered praxis.[48] The student may seek help from the academic writing centre which is the empowered praxis. The student then undergoes tutorial sessions to absent the unwanted constraint. The student is then able to participate in academic discussions and write well due to the tutorial sessions that have absented the constraint and absence. In *Dialectic: The Pulse of Freedom*, Bhaskar aims to reaffirm negativity and argues for the importance of the following concepts, namely, 'real negation', 'transformative negation' and 'radical negation'. [48]

Real negation is the most basic of the three and denotes a real presence of an absence (i.e. including non-existence) in some determinate space-time region, e.g. death or simple non-existence. Among other things, it suggests the empty, the hidden, desire, lack and need.[48] For example, if someone is missing, the friends or siblings are left with the presence of the absence of that missing person.

Transformative negation refers to the transformation of something – property or state of affairs.[48] An example of transformative negation would be a lack of rainfall which results in severe water shortages of up to 60%. The water reservoirs now have a transformative absence of 60%.

Radical negation refers to the self-transformation or overcoming of a being or condition.[48] Radical negation consists of a fourfold polysemy (multiple meanings) of its own, namely, (i) auto-subversion, (ii) self-transformation, (iii) self-realisation and (iv) self-overcoming. [11] An example of radical negation would be a patient who is suffering from cancer (auto-subversion) who then subsequently decides to obtain help from an oncologist (self-

transformation). Through the chemotherapy, the patient realises that he/she can defeat the cancer and survive (self-realisation). The chemotherapy eventually absents the ill/cancer (self-overcoming).

2.8 Critique of Critical Realism

Kemp critiques critical realism by arguing that ontological claims have legitimacy only if they derived from research that is empirically successful.[51] In other words, ontological arguments cannot be made from reason alone, for example God exists, they need to be derived from some knowledge source. However, Kemp further claims that realist ontological claims do not have this basis.

Cruickshank had an issue with critical realism in that it "attempts to use its ontological argument as the condition of possibility of social science precludes the full development of such a problem-solving approach to the positive development of knowledge".[52] In other words, Cruikshank suggests that critical realism restricts the full discovery of knowledge by using its stratified depth reality, that is, the correct causal explanations are based on the stratified depth ontology. This implies that one needs to define reality prior to any empirical explanation and thus the correct definitions of reality become the condition of possibility of social science. However, Cruikshank's argument is incorrect as critical realism does not advocate such a problem-solving approach to social science.

Wilber critiques critical realism by claiming that ontology is inseparable from epistemology, i.e. the latter is not grounded in ontology.[53] He asserts that the two concepts are mutually interactive and complementary aspects of the whole. He further adds that it is not possible for them to be separated from each other as they are "an inseparable infinitely interconnected universe".[53] He believes that connecting them does not mean committing an epistemic or ontic fallacy as they co-evolve concurrently. This claim is based on the notion that he views reality as composed of holons – wholes that are parts of other parts of other wholes (an atom is part of a whole molecule and a molecule is part of a whole cell). Atoms come into being at the same time that they know each other.[53] However, Wilber's critique commits the epistemic fallacy because atoms had causal effects before our knowledge of them and will continue to have causal effects even if one does not understand them. Responding to Wilber's comments, Bhaskar maintained that one may clearly see why it is vital to differentiate between the transitive and intransitive dimensions of knowledge.[54]

While there are criticisms against critical realism like any other meta-theory, I found it to be fit-for-purpose for this study. Critical realism offered me theoretical tools to work with the complex world of academic success that is an open system. The critical realist stratified depth ontology helped me to identify causal mechanisms that influence the emergence of academic success in the BEMC programme. Using critical realism also helped me to identify absences related to academic success as highlighted in Chapter Six.

2.9 Looking Back and Ahead

Critical realism is a complex philosophy which may provide a sound basis for empirical research as the researcher may use the stratified depth ontology to uncover the generative mechanisms and causal powers operating at the real level. However, like all philosophical approaches, it cannot be said to be the most suitable solution to all research. To be a critical realist, one is required to agree to its basic assumptions that there is a reality which is independent of our representation of that reality. Secondly, the actual events are created by causal mechanisms originating from the real domain which we experience in the empirical domain.

It is hoped that this chapter has contributed to a greater level of understanding about critical realism and its related concepts by citing easy examples to follow, thereby making critical realism and its related concepts accessible to a wider audience of researchers than may otherwise have been the case. The next chapter focuses on existing literature on academic success in the context of higher education in South Africa.

CHAPTER THREE

THEORETICAL PERSPECTIVES

"Information is like Love, it changes everything" Tim Dunne.

3.1 Introduction

While the previous chapter was concerned with the philosophical orientation of the study, this chapter provides some theoretical perspectives of the study. The chapter begins with the history of higher education in South Africa. It focuses first on apartheid and its influence on education today. It then provides an account of education post-democracy (1994) and the processes which were put in place to eradicate the higher education apartheid policies. A discussion then follows on the factors that promote the emergence and absence of academic success in higher education.

It was deemed important to provide a background to higher education in South Africa in the interests of understanding how the harm of the apartheid system is still affecting higher education 24 years post-democracy. The adverse effects of apartheid include, but are not limited to, the poor curriculum, poor socioeconomic conditions and poor infrastructure in schools with some learners studying in the open or in mud schools as depicted in Figure 3.1. At the time of the study there were over 500 unsafe schools in the Eastern Cape alone, predominantly in the rural areas.[55,56] Thus, this overview of higher education in South Africa provides the reader with context as some of the research participants also referred to the apartheid legacies which were playing a role on the academic success of students taking the BEMC degree.

Figure 3.1: A mud school in the Eastern Cape, South Africa [57] Source: http://www.thenewage.co.za/mud-schools-must-fall/

3.2 Historical Overview of Higher Education in South Africa

The Afrikaner-dominated National Party came to power in South Africa in 1948.[58] Prior to this, English had been the medium of instruction at most black schools because it was regarded as the more superior language in the country. However, the National Party (or apartheid) government saw Afrikaans as a way of achieving legitimacy and eliminating British dominance and influence. [58] The apartheid government then started to impose Afrikaans instead of English as the medium of instruction in black schools between the 1950s and 1970s.[58]

The ideological vision of apartheid or *separate but equal development* eventually gave rise to the enactment of the Universities Extension Act in 1959.[59] The purpose of the act was to (i) ensure that the white higher education institutions served the socioeconomic needs of white South Africans and (ii) to establish submissive institutions for black South Africans who would study in their respective homelands.[60] These black homelands (see Figure 3.2 below) were

established under the Bantu Authority Act, Act 68 of 1951 which separated black people into their respective ethnic groups.[61]

The apartheid government declared four of the homelands as independent.[61] These were the Republics of Transkei in 1976, Bophuthatswana in 1977, Venda in 1979 and Ciskei in 1981 (also called the TBVC countries).[61] However, the international community regarded these homelands as creations of apartheid aimed at segregating the citizens of the country.[62] Figure 3.2 presents the map of South Africa under apartheid.

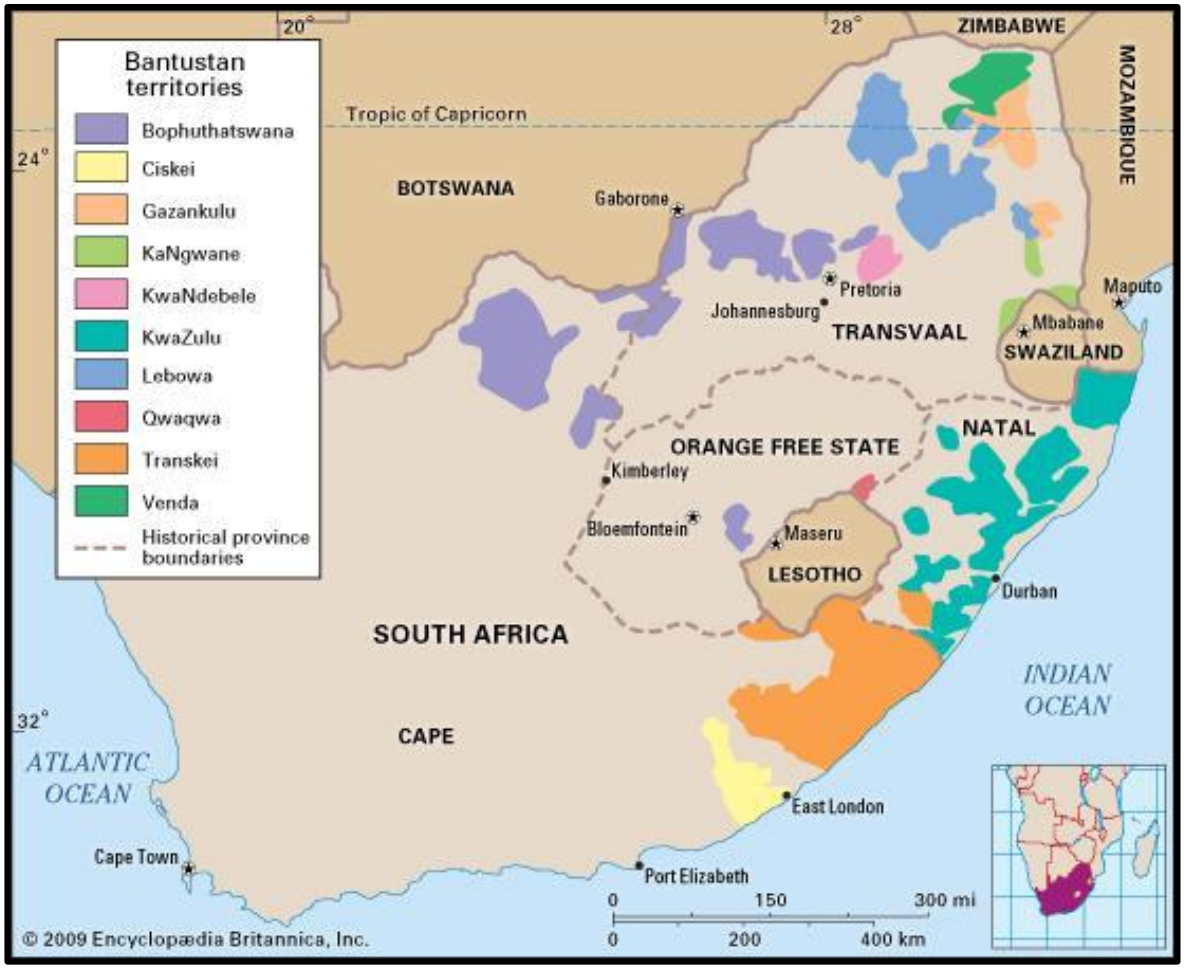


Figure 3.2: Map of the South African provinces during apartheid - Source: https://media1.britannica.com/eb-media/67/129967-004-ABF3A3EE.jpg

A new constitution in 1984 further segregated Africans by dividing the national parliament into three chambers. The House of Assembly was designated for White voters, the House of Representatives was designated for Coloured voters and the House of Delegates for Indian voters. Although Africans comprised over 70% of the population of the Republic of South Africa, they were not represented in parliament.[63] The three parliamentary houses in the Republic of South Africa constituted an *own affairs* and a *general affairs,* which was to prove significant as education was segregated along the lines of the two *affairs*. Own affairs related to cultural and value frameworks for Whites, Indians and Coloureds while general affairs related to the same framework across all racial communities. Thus, in terms of the 1984 constitution, education for Whites, Indians and Coloureds was considered as an 'own affair'.[63] In other words, the respective Houses of Assembly were responsible for education.

Education for Whites came under the National Education Department and the Department of Education while education for Coloureds and Indians was under Culture.[62] Education for Africans was considered to be a general affair and confusingly fell under the Department of Education and Training. Resources and finances were shared (unequally) between the various departments, with Whites enjoying a bigger share of the government subsidy compared to the other groups.[62] As late as 1993, the apartheid government provided R4 504 for a white student in education, R3 625 for an Indian student, R2 855 for a coloured student and R1 532 for an African student.[64] By 1985, in the Republic of South Africa, six higher education institutions were for Africans only (excluding the seven institutions located in the four independent homelands, two were for Indians only, two were for Coloureds only and 19 were for Whites only (see Table 3.1 below). [62]

The government ensured that each institution was prohibited from enrolling a student from another race. An exception was made if the student could prove that the programme for which he/she wished to enrol was unavailable at all the institutions designated for his/her race group. However, the institution in question was required to make an application to the education department to which the institution was accountable before accepting a student from a different race group.[62]

Table 3.1. Number of public higher education institutions in South Africa (1990–1994)[62]

Responsible authority	Universities	Technikons[g]	Total Institutions
House of Assembly (Whites)	11	8	19
House of Representatives (Coloureds[h])	1	1	2
House of Delegates (Indians)	1	1	2
Department of Education and Training (Africans)	4	2	6
Republic of Transkei	1	1	2
Republic of Bophuthatswana	1	1	2
Republic of Venda	1	0	1
Republic of Ciskei	1	1	2
Total	21	15	36

In addition to the racially divided higher education system, the apartheid government further divided the system into universities and technikons.[65] The government believed the essence of a university was *science* and that of a technikon *technology*. The term science was used to define "all scholarly activities in which knowledge for the sake of knowledge is studied and technology was defined as activities concerned with the applications of knowledge".[62] This distinct separation implied that a university could not become involved in technology while a Technikon could not become involved in generating new knowledge.[60] Table 3.2 below presents a classification of public universities pre-1994.

[g] Technikons were higher education institutions which focused on the application of knowledge

[h] Coloureds is a South African term that refers to mixed race.

Table 3.2. Classification of public universities and technikons by race and historical advantage/disadvantage[62]

Categories	Higher Education Institutions	Historically advantaged/disadvantaged
Historically black universities: RSA	University of Durban-Westville	Historically disadvantaged
	Medunsa University	
	University of the North	
	Vista University	
	University of the Western Cape	
	University of Zululand	
Historically black universities: TBVC	University of Fort Hare	Historically disadvantaged
	North West University	
	University of Transkei	
	Venda University	
Historically black technikons: RSA	ML Sultan Technikon	Historically disadvantaged
	Mangosuthu Technikon	
	Technikon Northern Transvaal	
	Peninsula Technikon	
Historically black technikons: TBVC	Border Technikon	Historically disadvantaged
	Eastern Cape Technikon	
	North West Technikon	
Historically white (Afrikaans) universities: RSA	University of the Orange Free State	Historically advantaged
	University of Port Elizabeth	
	University of Pretoria	
	Potchefstroom University	

	Rand Afrikaans University	
	University of Stellenbosch	
Historically white (English) universities: RSA	University of Cape Town	Historically advantaged
	University of Natal	
	Rhodes University	
	University of the Witwatersrand	
Historically white technikons: RSA	Cape Technicon	Historically advantaged
	Free State Technikon	
	Natal Technikon	
	Port Elizabeth Technikon	
	Pretoria Technikon	
	Vaal Triangle Technikon	
	Technicon Witwatersrand	
Distance education universities and technikons	University of South Africa	Historically advantaged
	Technicon South Africa	

RSA, Republic of South Africa; TBVC, Transkei, Bophuthatswana, Venda, Ciskei

Table 3.2. highlights that there were four universities and four technikons only in the TBVC countries and thus there were fewer higher education institutions for Black individuals compared to the other race groups. White people were more privileged than Black people with more higher education institutions from which to choose. There few institutions for Black people were designed for the needs of the TBVC states and the ethnic characteristics of the Black people.[66] This was made clear by Prime Minister Verwoerd when he stated that "it was the policy of his Department that Bantu[i] education should have its own roots entirely in Native areas … The Bantu must be guided to serve their own community in all respects".[67] Despite the fact that students were permitted to attend any university post-apartheid,

[i] Bantu is a term that was used by the Apartheid government to refer to African people

section 3.4 addresses some of the generative mechanisms that continue to impact on the academic success of university students post-apartheid.

3.3 Higher Education in South Africa post-1994

Transforming education post-1994 was a key focus of the new government.[68] One of the key focus areas was equity and redress in the field of higher education. The principle of equity in the Education White Paper referred to fair opportunities for all to enter and succeed in higher education.[68] However, Morrow argues that "mere formal physical access to institutions which distribute knowledge is different from, and not sufficient condition for, epistemological access, which is about learning how to become a successful participant in an academic practice".[69] Morrow's argument is illustrated in the fact that, despite the increase in African student enrolment from 49% in 1995 to 71% in 2015, only 81% of African students were successful in 2015 compared to 89% White students.[15,70]

The first step in transforming the education system involved establishing a new National Qualifications Framework, which was based on a system of credits for the learning outcomes achieved.[60] The aim of the National Qualifications Framework was twofold, namely, to open up the system by recognising the prior knowledge/experience of individuals whose career paths had been compromised by being denied admission to further education and training and, secondly, to promote lifelong learning which would enable learners to adapt from one learning context to another.[63]

The second step involved replacing the old schooling system with outcomes-based education. In addition, education and training was divided into three main categories, i.e.: General Education and Training, Further Education and Training, and Higher Education and Training.[63] The third step involved the Ministry of Higher Education appointing a National Working Group to:

> *…investigate and advise the Minister on appropriate arrangements for consolidating the provision of higher education on a regional basis through establishing new institutional and organisational forms, including the feasibility of reducing the number of higher education institutions.*

Following the work of the National Working Group, there was a restructuring and merger of various institutions from 36 to 21, resulting in 11 universities, six universities of technology

(established through the merger of technikons) and four comprehensive universities (established through the merger of a university and a technikon).[60] However, the government was adamant that decreasing the number of institutions would not imply a decrease in student enrolments as the former institutions would all still exist, albeit under different names.[60]

Finally, the Education Department changed the financing model for higher education. The previous funding system had differentiated between universities and technikons. The new funding model was based on a consultation between the Ministry of Education and the higher education institutions on the institutions' rolling plans. Institutions submitted three year rolling plans to determine public funding and thus they could not increase their subsidy income without prior approval from the Ministry of Education.[65]

Although the African student enrolment has increased by almost 20% in the past two decades, African students are continuing to perform poorly compared to the other racial groups, thus suggesting that inequality post-apartheid still exists. Although access to higher education has been widened through the recognition of prior learning, challenges still exist as the application process is cumbersome, thus discouraging potential applicants.[33] Language differences may also pose a problem if application forms and communication are not translated. The merger of higher education institutions was envisaged to strengthen the historically disadvantaged institutions by increasing research outputs and programme offerings. Unfortunately, African students are still choosing to study at the historically advantaged institutions, thus leaving the historically disadvantaged institutions struggling to attract students.[49,71] A lack of students results in less funding from the Department of Higher Education and Training as the subsidy is calculated on the enrolment planning which occurs in a three-year cycle in consultation with the Department of Higher Education and Training, thus limiting the opportunity of institutions to increase their number of students, income and subsidies.[71]

3.4 Factors Resulting in the Emergence and Absence of Academic Success

There are complex factors that lead to academic success in the public higher education system. The Rural Education Access Programme commissioned a study in 2008. This study, which was conducted in five higher education institutions in South Africa, explored the factors

that impact on the success of disadvantaged students in the higher education system.[72] The key features disadvantaging students included the following:

- Geography (particularly students from rural areas)
- Financial resources (in conjunction with geographic disadvantage)
- Schooling (this relates to students who have attended low performance and under-resourced schools)
- Language (where the language tuition of the higher education institution is the second or third language of the student)
- Other socio-cultural factors that may hinder adequate student preparation and their effective participation in tertiary studies. [72]

These features are discussed later in this chapter.

3.4.1 Finances

Jones et al. found that a rural background often had a negative impact on academic success and that insufficient financial resources were one of the main reasons for student dropout. [72] The impact of these factors was found to be greater for African and Coloured students compared to White and Indian students. Letseka et al. found similar results in their study and concluded that poverty was the most significant factor that had to be attended to in order to address student dropout rates.[73] Some students with insufficient financial resources have to attend classes hungry while some who live at some distance from the university/technikon are unable to afford transport to class, thus missing classes.[71,72] In 1999 the government introduced the National Student Financial Aid Scheme to address the lack of financial resources of underprivileged students.[72] However, despite the government intervention, the National Student Financial Aid Scheme allocations are limited with certain students not meeting the criteria for funding, a term called the “missing middle”. In certain instances, the amount allocated to students is insufficient to address the students’ needs.[72] It is also worth noting that the drop-out rates are higher among the non-National Student Financial Aid Scheme funded students while the National Student Financial Aid Scheme funded students tend to achieve greater academic success compared to the non-National Student Financial Aid Scheme funded students.[74]

However, although students from poor backgrounds may receive financial support from the National Student Financial Aid Scheme, they often still face financial challenges as the money is released only after registration. Universities require an application fee that disadvantaged students might not have at their disposal. This is even more of a problem if they wish to apply to more than one institution with access to tertiary study being hindered by an inability to pay the initial, annual registration fee. Another challenge arises when students apply late and are not able to access the National Student Financial Aid Scheme or any other financial aid scheme. These underprivileged students are then excluded from registering in the following year due to outstanding fees from the previous year(s).

Coming from an underprivileged setting, students may not have prior access to information about the university processes in respect of registration and financial aid.[72] In addition, once a student has registered, there may be other financial obstacles that may impact adversely on their ability to participate effectively in the classroom. These obstacles may include finding affordable accommodation in an unfamiliar environment, paying for meals and transport and, in some cases, for textbooks and equipment with limited funds and an inadequate knowledge of how to manage such funds. It is for these reasons that students are often forced to seek additional income by taking up a part-time or full-time job in order to cope financially.[73]

Jones et al. observed that the underprivileged students are often not only concerned about their finances but also those of their families at home.[72] They found that this affects the students' ability to concentrate in class, thus leading to poor academic results. Jones et al. state that:

> *Sufficient financial resources, that enable students to live above mere survival mode, and fully engage both academically and in campus life, can thus be considered a vital underpinning condition for academic and social integration, and ultimately student success.*[72]

This highlights the importance of sufficient financial resources as a vital catalyst for academic achievement. While funding may not ensure academic success, it is evident that, without it, the possibility of academic success is often seriously compromised. Without sufficient funding, students are unable to buy the food required to function at a high cognitive thinking level and they are unable to afford transport to attend class, thus missing lessons.

3.4.2 Student Integration into Higher Education

The social integration of students into higher education has been cited as one of the important factors contributing to academic success.[75,76] Students who live in residence have been found to demonstrate higher levels of social integration compared to students living in private accommodation with students living in residences often forming friendships more quickly than their counterparts in private accommodation. [18,72] In addition, they are able to access campus resources such as the library and information technology centre more easily. Nevertheless, residence life is not without its challenges as some students report that peer pressure appears to be stronger in the residences, thus distracting certain students.[72]

First-year students often feel alienated when they first arrive in an unfamiliar environment.[77] This is often worse for students from a rural background as they may not know anyone on campus compared to students from the same town and who may know a few friends and thus adjust more easily to campus life.[72] The urban and institutional culture of students from towns/cities is also different to that of students from a rural background and this makes the transition to university somewhat challenging.[78] This transition in university is often a challenge as students tend to find the university academic standards and workload significantly higher than at school. [77] First-generation university students (students who are the first in their immediate families to attend university) are most at risk of academic under-performance and dropout as they have little or no family support from which to draw some insights into higher education.[78]

3.4.3 The Articulation Gap

Scott et al. posit that the lack of academic preparedness for undergraduate programmes is one of the reasons for the poor student performance in higher education in South Africa.[16] They attribute this to the inequalities in the schooling system that were created by the apartheid government to deny Black people good, quality education.[16,79] Prime Minister Hendrik Verwoerd maintained that:

> *…there is no place for the Bantu in the European community above the level of certain forms of labour … What is the use of teaching the Bantu child mathematics when it cannot use it in practice? That is quite absurd. Education must train people in accordance with their opportunities in life, according to the sphere in which they live.*[67]

Although apartheid in South Africa ended 24 years ago, the unjust schooling education system still manifests in higher education.[78] The lack of quality education in the historically disadvantaged schools has resulted in the 'articulation gap' – that is, the mismatch between the exit level from high school and the entry level into university.[80] [81]

Some students struggle to make the transition from a high school environment to a higher education system as they are inadequately prepared in high school. This applies particularly to students from rural and township schools.[16,72,82] Certain students from impoverished areas lack the range of academic skills often required to cope at university as a result of their poor schooling background.[83] The Council on Higher Education outlines the following range of academic skills required in higher education:

1. Making meaning from what is read
2. Understanding and interpreting conceptual and metaphorical language
3. Identifying and tracking academic argument
4. Following discourse structure in text
5. Making inferences about and extrapolating from what is read
6. Demonstrating familiarity with and understanding of the conventions of visual and multimode literacies, such as reading and interpreting graphs, pictures, flow charts and diagrams
7. Coping with basic numeracy.[81]

The change from a fixed schooling system to a university system characterised by free time and independence is a difficult transition to make for certain students and often leads to academic underperformance.[72] Students tend to use the default study skills and learning strategies that they acquired as a result of the teaching styles and assessment methods to which they were exposed at school. However, these study skills from school are often less appropriate in higher education which is characterised by more independent teaching and learning styles.[84]

The transition from high school to university should ideally begin in grade nine when students select the correct subjects that are in line with the admission criteria for the programmes for which they wish to enrol at university. However, some students have no access to information

about the respective programmes and admission criteria at universities.[72,82] To compound the problem, Open Days are often held at the respective universities but prospective applicants who are unable to travel miss out on important information that may well have changed the course of their lives. Wilson-Strydom makes use of the humpback bridge metaphor to reflect on the gap between high school and higher education, stating that the school-leaver is often not able see across the humpback bridge to the university.[85] She points out:

> *Many students braving the gap between school and university are first-generation students who do not have family members that attended university; are unable to see over the humpback bridge and so must surmise an understanding of the unknown university world.*[85]

Academic ability remains one of the determinants of academic success.[84] Students who lack the academic ability to study at university often lack the necessary academic skills required to be successful in their studies. Age has also been cited as an important determinant of academic success as older students are often more focused, they have more life experience and they know what they want compared to their younger counterparts. [86] However, older students also often have to overcome domestic challenges such as taking care of the family – an additional source stress.[86]

It is often argued that the under-preparedness of students for higher education should not be viewed solely as the fault of the student.[72,87] The rationale behind this argument is that the universities themselves appear to be underprepared for the type of students that they enrol. [72,87] Drawing from the work of Bourdieu, Thomas et al. argue that the curricula and pedagogy need to be adapted to suit the needs of the students.[88] Bourdieu established that the working class students were less successful, not because they were less intelligent than the middle-class students, but because the curriculum was "biased in favour of those things with which middle-class students were already ex-curricularly familiar".[89] In other words, the curriculum in higher education institutions favours the knowledge possessed by the social dominant groups (i.e. White, middle-class students); thus placing students from poorer backgrounds at a disadvantage.[90]

3.4.4 Linguistic Challenges

In addition to, and to an extent linked to the articulation gap, are linguistic challenges often experienced by students in higher education. As mentioned earlier, under the previous

government South African universities were divided according to race. White universities were also further divided according to language; English or Afrikaans. [91] The language of instruction in South African higher education institutions is thus still either English, or Afrikaans and this may create a barrier for students from a rural background or township schools and who are unable to speak English or Afrikaans. However, White Afrikaans-speaking students also confront language challenges when writing or working in English.[81]

In order to address the language difficulties of disadvantaged students, the South African government enacted the Language Policy for Higher Education in 2002 to promote multilingual education.[92] The aim of the policy was to ensure equity of access and success in higher education. In the South African context multilingual education refers to the use of two or more languages as modes of teaching and learning.[91]

There are various methods cited in the literature that seek to promote multilingualism at South African universities. Paxton used multilingual concept glossaries for economics students.[93] In the same study, code switching (mixing languages) was used by both tutors and students to explore ideas and facilitate understanding.[93] Van der Walt et al. argue that code switching is a valuable resource for teaching and learning which educators should endeavour to introduce in the curriculum.[94] In the interests of promoting multilingualism, the Department of Emergency Medical Sciences at the Cape Peninsula University of Technology fosters multilingualism by ensuring that students learn one additional language, either Afrikaans or Xhosa. Thus, the students learn the linguistic skills that will be essential in their communicating with patients and colleagues of a different race. However, Van der Walt, Pillay and Yu argue that the Language Policy for Higher Education provides a limited interpretation of multilingualism in South African universities.[95,96] In other words, it fails to provide concrete proposals for implementation. On the other hand, Madiba's research at the University of Cape Town highlights the institution's commitment to multilingualism through its language policy.[91]

Although some South African universities have introduced African languages into the educational domain and the Black middle class appears to support the advancement of their African languages in principle they, nevertheless, actively prefer to use English.[97–99] Communicating in English for some Black people is a form of cultural capital which signifies upward mobility.[98]

Firstly, language may be a barrier to academic success as it may constitute a verbal communicative barrier by decreasing the student's confidence in the classroom to engage in class discussions, ask questions during lectures and defend and sustain an argument.[82]

Secondly, a written communication barrier may arise due to language. In order to submit assignments, students need to critically engage with the academic literature that is usually in English and be able to write clear and logical essays. Furthermore, effective studying requires the students to register and note down the main points of a lecture.[72] Students whose first language is not English are often unfamiliar with the language structure and the academic grammar and this may lead to little or no understanding of the content lecture. Thirdly, in addition to being challenged by the English language, students entering higher education are also confronted by numerous discourses related to the various subjects or disciplines.[82] Lastly, the lack of language confidence often discourages the students from seeking assistance from their lecturers, thus resulting in the poor academic performance of these students as they feel unable to seek help due to their lack of language confidence. [72]

3.4.5 Relationship between Matriculation Scores and Academic Success

The selection of students continues to be a complex issue at universities. In the main, selection is based primarily on academic merit (i.e. matriculation[j] scores).[100] With the increasing number of applicants, academic departments have had to implement more stringent selection processes while also taking equity and redress into consideration. There is an implicit assumption that a student is capable of successfully completing a qualification if the student has met the minimum entrance requirements for admission into an academic programme.[101]

Naidoo et al. sought to determine whether matriculation scores were a reliable indicator of academic success in an undergraduate occupational therapy programme.[8] They found that students with lower matriculation scores took longer to complete their studies compared to those with higher matriculation scores. However, other factors that may have contributed at the time to completing the degree were not investigated. Similarly, Kridiotis et al. sought to identify the selection criteria which predicted academic success among 130 first year students in a radiography programme.[102] They discovered that the only significant predictor of

[j] Final year of high school

academic success was the matriculation score, with 71.5% of 130 first year radiography - students attaining academic success.

A study by Naidoo et al.[k] used the area, type of schooling, matriculation point scores (admission point scores) and matriculation subject choices as variables to determine academic success in first year in the School of Health Sciences.[103] The study found that students who had obtained higher marks for Mathematics, Life Sciences/Biology and Physical Sciences had progressed at a higher rate compared to those with lower marks in these subjects at the end of the first academic year. Similarly, students who had attained marks in English also progressed at a higher rate. The study also found an association between Life Sciences/Biology as a matriculation subject and academic success in the disciplines of Occupational Therapy, Pharmacy and Physiotherapy. Mathematics was correlated only with first year success in Pharmacy. The combined data revealed an association between admission point scores and progression to second year ($r = .167$, $p < 0.001$). However, it was evident that each programme in Health Sciences is unique and that there was no single finding across all the disciplines. It is for this reason that Naidoo et al. caution against using admission point scores alone as a predictor of academic success as there are multiple factors involved in determining academic success.[103]

In a similar study with contrasting results, Mashige et al. conducted an exploratory study investigating the relationship between National Senior Certificate results and the academic success of 84 first-year Bachelor of Optometry students.[104] Only students who had written the National Senior Certificate were considered for the study. Mashige et al. found no correlation between the NSC admission point scores and either the first semester marks or the overall first year marks. In addition, the added language subject as a matriculation subject was adversely correlated with all first-year optometry modules. They also found weak correlations between students' matriculation scores and the first-year optometry modules. In contrast to the study by Naidoo et al., Mashige et al. sampled 84 students from one Health Science programme while Naidoo et al. had sampled 713 students across various Health Science programmes.[103,104] Naidoo et al. also acknowledge the uniqueness of each Health

[k] Please note that this Naidoo is a different author to the one mentioned in the previous paragraph.

Science programme and that this, together with the sample size, appear to have resulted in the contrasting results found by the two studies.[103,104]

As opposed to matriculation scores as a predictor of academic success, Huysamen found first-year performance to be a more valid predictor of academic success in the subsequent years of studies.[83] An even more interesting finding in Huysamen's study was that the African students' second year performance outweighed the first-year performance as a predictor of the following years' performance. Kowitlawakul et al. also found that the first semester results were the most consistent outcome indicator for student success in their study.[105] This phenomenon is known as the late blooming hypothesis. In terms of this hypothesis, despite coming from a disadvantaged background, the marks of African students from historically disadvantaged schools gradually improve as they progress in their studies.[106] The rationale behind the hypothesis is that the academic performance of African students gradually draws level with that of students from historically advantaged white schools as they adjust to university life, acquire a better understanding of the academic and discipline specific discourse, make use of academic support services and develop better study methods. [83]

3.4.6 The Role of Motivation in Academic Success

Although a qualification in South Africa is regarded as an ordinary developmental task it may, nevertheless, be a momentous task for some students who come from a poor socioeconomic background.[107] These students often have to work harder than their peers and be highly motivated in order to succeed academically. Motivation is a complex psychological phenomenon. It is defined as being moved by something because it is inherently interesting or satisfying (intrinsic motivation) or performing an activity in order to attain some reward or separable outcome (extrinsic motivation).[108,109]

Deci and Ryan's self-determination theory postulates that people have three innate psychological needs that underpin a comprehensive psychology, namely, competence, relatedness and autonomy.[110] These needs are seen as universal necessities that are required for the optimal growth and psychological health for all individuals. These needs are not learnt but, instead, they are an inherent aspect of humanity and promote optimal functioning and well-being. They are also considered to be an essential component of understanding the rationale behind why individuals pursue goals.[111] In addition, all three of these psychological

needs are required for optimal psychological health. In other words, there will be significant negative consequences if one of the needs is thwarted.[111]

In terms of self-determination theory, the three needs (competence, relatedness and autonomy) are defined as follows. The need for *competence* is concerned with the innate desire to seek mastery and be effective when dealing with the task at hand. *Relatedness* is concerned with the need to feel connected to, interact with and experience caring for other people. This need is directed at the feeling of belonging. *Autonomy* is the need to be a causal agent in one's own life and to experience volition while acting in harmony with one's integrated self. However, to be autonomous does not mean to be independent of others but, instead, it refers to exercising intentional agency in one's life.[112] However, unlike Bandura and Eccles and Wigfield who consider motivation to be a one dimensional concept, self-determination theory suggests that motivation is a two-dimensional concept comprising intrinsic and extrinsic motivation.[113,114]

According to Vansteenkiste et al., intrinsic motivation represents the ideal type of motivation because it is fully autonomous and has also been associated with (i) adaptive metacognitive strategies such as planning and time management, (ii) increased will and determination, (iii) greater intention to persist and (iv) greater effective perseverance.[115] Intrinsic motivation has also been found to produce positive academic outcomes and to promote a greater conceptual understanding of the learning material than may otherwise have been the case.[116] In other words, in critical realist terms, student transformative praxis is more likely to emerge in intrinsic motivation to absent absences, thereby leading to positive academic outcomes.

However, self-determination theory also suggests that higher levels of motivation do not necessarily yield more positive outcomes as there are other factors that may affect the outcomes.[56,57] In other words, these higher levels of motivation are not necessarily linked directly to the emergence of positive outcomes because the emergence (or not) of an outcome is directly linked to the generative mechanisms and causal powers in the real domain, which may or may not be activated. For example, a student who is intrinsically motivated may also be unable to concentrate in class due to personal circumstances, thus resulting in poor academic performance.

Choosing the right course to study is one of the key determinants of academic success as students often drop out due to a mismatch between their expectations or interests and the

course. In general, compared to their counterparts who do not enjoy a course, students who enjoy a course are more motivated and are thus more likely to succeed.[72]

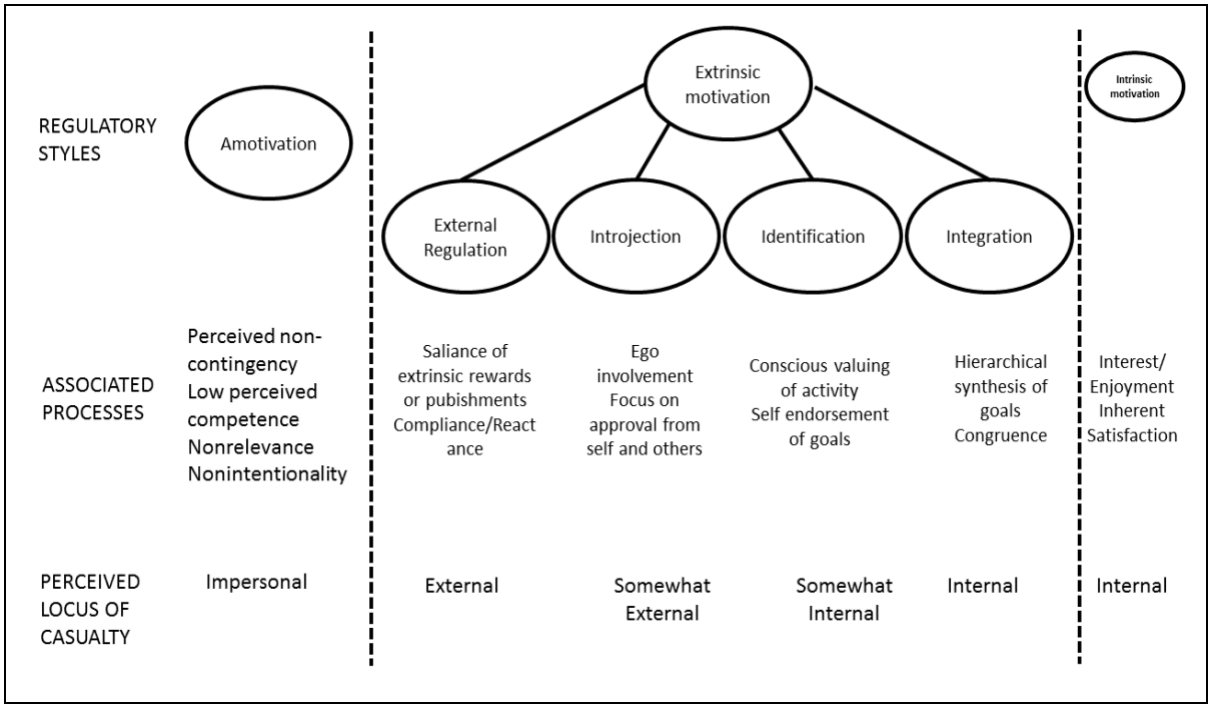


Figure 3.3. Classification of human motivation based on self-determination theory. Source: Ryan R, Deci E. Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemp Educ Psychol*. 2000;25:54–67.

Organismic integration theory is a sub-theory of self-determination theory which details different forms of extrinsic motivation as depicted in Figure 3.3. *Amotivation* refers to the lack of intention to act due to feelings of incompetence, not valuing the activity or not believing the activity will result in a possible outcome.[109,117] As illustrated on Figure 3.3, amotivation is situated on the far left as a student by way of example would have low self-determination towards their studies due to perceived feelings of incompetence. The least form of extrinsic motivation is *external regulation* in which people's behaviour is controlled by an external demand. In other words, people behave in a certain way in order to avoid a threatened punishment or to obtain a tangible reward.[111] For example, a student may do their homework not because it is the right thing to do but to avoid punishment at school or at home. *Introjected regulation* refers to people who perform acts as a result of pressure to avoid guilt or to ensure pride or ego-enhancement. For example, a student may study hard to achieve higher marks than his/her colleagues in class to attain pride.

While external regulation behaviour results from contingent consequences from external sources, in introjected regulation the control of the behaviour stems from contingent consequences which are administered by the individual him/herself. This was demonstrated by participants in Dass-Brailsford's study who achieved academic success despite coming from impoverished backgrounds.[107] Introjected regulation was shown by the participants in Dass-Brailsford's study as they achieved academic success as a result of a strong commitment to uplift their socioeconomic status through education.

A more autonomously driven form of external motivation is regulation through *identification*. This refers to an individual who has identified the personal importance of an action and accepted the action as his/her own.[109] For example, a paramedic student memorises drugs in his/her scope of practice because he/she sees it as crucial in his/her management of critically ill or injured patients where certain drug choices have to be made quickly and decisively. The most autonomous form of extrinsic motivation is *integrated regulation* which entails an individual who fully comprehends his/her actions by self-examining his/her personal values and needs.[109]

Integrated regulation has certain qualities in common with intrinsic motivation although it is still somewhat different because the reasons are extrinsic to the self as opposed to the innate satisfaction. An example of integrated regulation would be an individual who attends church because he/she believes that going to church is congruent with his/her personal values even though the attendance does not stem from complete enjoyment of it. A lack of attendance fails to engender guilt as he attends because attendance at church is the right thing for the individual to do.

3.4.7 Academic Support

Academic support emerged in the early 1980s when the historically White universities began to enrol African students as the apartheid policies began to relax.[118] The academic support initiative was initially designed to support African students who were perceived as deficient as a result of their poor schooling background. However, this deficit approach resulted in a stigma being associated with student support programmes[119] with students being seen as weak and lacking in reading and/or writing skills, basic numeracy, basic computing and critical thinking skills.[118] Jones et al. noted that few of the Non-Rural Education Access Programme National Student Financial Aid Scheme students who were interviewed in their study were

aware of the student support services which offered both academic support and student counselling.[72] These services were believed to be socio-culturally irrelevant and students feared that they may be stigmatised if they made use of them.[72]

Although academic development has various meanings at different institutions, it does, nevertheless, involve diverse educational preparedness initiatives. The focus is more on the universities than on the students being seen as deficient while the problems facing students are thought to be structural rather than individual.[119] The academic development discourse is not limited primarily to academic activities and there was the assumption that African students who entered university had either social or emotional problems. As a result, universities started employing social workers and psychologists to offer life skills and counselling.[118] In their study at various South African universities Lewin and Mawoyo highlighted various academic development interventions aimed at promoting teaching and learning.[82] These included:

1. Transition and entry: focus on the transition, admission and the first-year experience
2. Social support: included psychosocial support and mentoring
3. Teaching and learning: consisted of programmes that provided better learning opportunities such as improving infrastructure, extended curriculum programmes, tutoring, academic writing and numeracy and early warning systems for at risk students.
4. Research: aimed at influencing evidence-based decision making in the interests of improvement of academic success
5. Professional development: centred on professional development and included induction programmes, courses and workshops and research support for academics.[82]

The universities which took part in this study provide orientation programmes aimed at first year students to promote and enhance the various services offered by the institutions. However, students from a poor background are sometimes unable to attend these orientation programmes as they are forced to address student administrative issues such as finances and student accommodation in the first few weeks of the academic year.[82] Accordingly, they miss important information that may have proved useful in their academic studies. Jones et al., therefore, propose that orientation take place over a longer period in the academic calendar.[72] In addition, the orientation programmes are sometimes out of

context, serving little or no purpose. For example, it may be challenging for students to understand an orientation programme that focuses on student counselling services as they have little idea as to what they would be using the student counselling services for and how the services relate to their studies.[72]

In an effort to contextualise the orientation programme, universities have devised the First-Year Experience Programme. The First-Year Experience Programme aims to bridge the articulation gap by providing a structured support to first years by equipping them with the necessary skills required for academic success. The focus of the First-Year Experience Programme is the student experience and includes exposing students to academic and personal skills through both formal and co-curricular programmes.[82]

3.4.8 Peer Support and Academic Success

The role of peer support/influence and its association with academic success have been widely studied.[120–126] Peer support may enhance the student's well-being and self-confidence as well as his/her relational and academic development. [126] Dennis et al. found peer support to be a stronger predictor than family support in respect of the college grades and adjustment of first-generation students.[125] Geamey et al. found similar results in their study.[126] They aimed to assess the role of parental and peer attachment in academic success among university students. They found that the higher parent and peer attachment group did better on academic achievement although the low parent and peer attachment group was not considered to be the single predictor of poor academic success.[126]

Peer support plays an important role in the academic setting as, in general, students are significantly influenced by their friends.[123] For example, if the student's friends are highly positive and complete their academic work tasks, then the student in question will likely do the same. Conversely, one will often underachieve academically if one's friends are lazy and attain low academic scores.[123] One of the reasons for this is that students often discuss their views with one another and are thus likely to influence each other. Should a student have positive and highly motivated friends, the discussions among them may influence and change the student's decisions to prioritise academic work over non-academic activities, thus making decisions similar to his/her friends.[121] Berndt and Keefe found that students with more stable friendships are usually more positively involved in academic activities, less disruptive in the classroom and attain higher marks compared to students with less stable friendships.[122]

3.4.9 Family Support and Academic Success

Research has found that there is a relationship between family support and academic success.[127–130] Although some parents may lack the necessary discipline expertise, their positive attitude to and belief in the student often play a vital role in enhancing self-esteem.[131] Grolnick et al. found that family support has a strong influence on the child's motivation as the parents reaffirm the child's competence and sense of autonomy.[132] Furthermore, students are more likely to have a positive outlook about their academic work when their parents are actively involved in their education.[132] In addition, family support offers a sense of security and comfort and satisfies the need for love and belonging.[130,133] Hovey and Seligman found that family emotional support is a stronger source of support to university students than religion.[134] Similarly, Mansour established that family social support acts as a protective factor against alcohol abuse among rural adolescents.[135]

In Dass-Brailsford's study, family characteristics (warm, nurturing and supportive) played a significant role in academic success among African youth who yet achieved academic success despite their impoverished backgrounds.[107] The participants in Dass-Brailsford's study were encouraged by the high expectations of their parents which motivated them to succeed. Their parents' sacrifices did not go unnoticed by the participants and, in fact, motivated them to succeed.[107] Although the students in Dass-Brailsford's study came from disadvantaged backgrounds, the family support they received facilitated a positive coping adjustment and reassured the students' sense of confidence.[129]

In a longitudinal study of 240 university students, Cheng et al sought to determine how social and economic family support influence academic success.[130] They discovered that family social support positively predicted students' marks at university. It is important to note that their results also suggested that family social support is more important to the female students than the males. This may be attributed to the different coping strategies of men and women. Women are perceived to have higher stress levels than men and tend to seek emotional support more than men.[136]

3.5 Looking Back and Ahead

This chapter presented the history of higher education in South Africa and highlighted the marginalisation of African students by the apartheid government. The transformation of the higher education sector post-1994 resulted in an increase in African student enrolment. However, despite these advances, the African student success rate remains lower than that of other racial groups. This chapter discussed several factors that constrain academic success. These include, but are not limited to, language barriers, lack of financial support, student integration into university and the articulation gap. The following chapter discusses the research methods and research design used in the study.

CHAPTER FOUR

RESEARCH DESIGN AND METHODOLOGY

4.1 Introduction

The previous chapter dealt with the theoretical perspectives related to the emergence and absence of academic success. This chapter provides a detailed outline of the research design and methodology used in the study. It begins by providing an overview of the various methodologies and, thereafter indicates my philosophical stance. The chapter then outlines the research design, data collection methods and data collection process used in the study. For ease of reference, the quantitative and qualitative phases are discussed separately. The chapter ends with a discussion on the ethical considerations that were considered during the study.

4.2 An Overview of Methodologies

This section distinguishes between various methodologies, research designs and research methods in order to demystify these important concepts. Van Manen regards methodology as the philosophical framework and the fundamental assumptions of research.[137] In view of the fact that the philosophical framework influences the research procedures, Crotty refers to the research design as the plan of action that links the philosophical assumptions to specific research methods.[138] Research methods are more specific. Creswell refers to research methods as "techniques of data collection and analysis", for example, a quantitative standardised tool or a qualitative theme analysis of text data.[139]

There are two main research approaches described in the literature, namely, the qualitative approach and the quantitative approach. However, a third approach is often used, namely, the mixed methods approach. Qualitative researchers believe in the existence of multiple realities and use words instead of numerical data to explain a phenomenon.[140] Their focus is on explaining and understanding people's experiences instead of searching for one reality and one truth. Janesick describes qualitative research as inductive and exploratory, requiring purposive sampling to describe the phenomenon being studied.[141] Accordingly, the attainment of data saturation in qualitative research is more appropriate for achieving an appropriate sample size and not a pre-calculated sample size. That in contrast, quantitative methodology is deductive and centred on numerical data which tends to control and predict

events. Quantitative methods use a deductive approach as they often test hypotheses with the results being deduced by making use of inferential tests. It is for this reason that quantitative researchers must be precise in their sample size calculation to enable them to generalise their findings based on their sample size.[144] However, not all quantitative studies require a priori sample size calculation, particularly descriptive studies.

The mixed methods approach is achieving increasing acceptance as a method of research inquiry. There are, however, differences in the way in which this approach fits into the research framework design. Tashakkori and Teddlie regard mixed methods as a methodology while Johnson and Onwuegbuzie consider mixed methods to comprise a mixture of quantitative and qualitative methods in a single study.[145] [146] Creswell and Plano Clark define mixed methods:

> *…as a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis as well as the mixture of qualitative and quantitative approaches in many phases of the research process. As a method, it focuses on collecting, analysing and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems than either approach alone.*[147]

They further argue that mixing both methodologies increases the reliability and validity of the study findings. I used Creswell and Plano Clarke's definition for the purposes of this study as it encompasses philosophical assumptions as well as laying emphasis on the combination of qualitative and quantitative research techniques.

Methodological choices in research are often guided by the researcher's theoretical and philosophical position. The selection of an appropriate research design is a critical aspect of the research process. Crotty structures the research process in terms of epistemology, theoretical perspectives, methodology and methods.[138] Carter and Little, on the other hand, identify three fundamental facets of research which should provide the framework for planning, evaluating and implementing high standard qualitative research.[148] These facets include epistemology, methodology and methods. Creswell centred his research design process framework on Crotty's four design components and suggested that these four components will lead to a research approach that may be quantitative, qualitative or mixed

methods, depending on the researcher's initial stance towards the nature of the knowledge.[139]

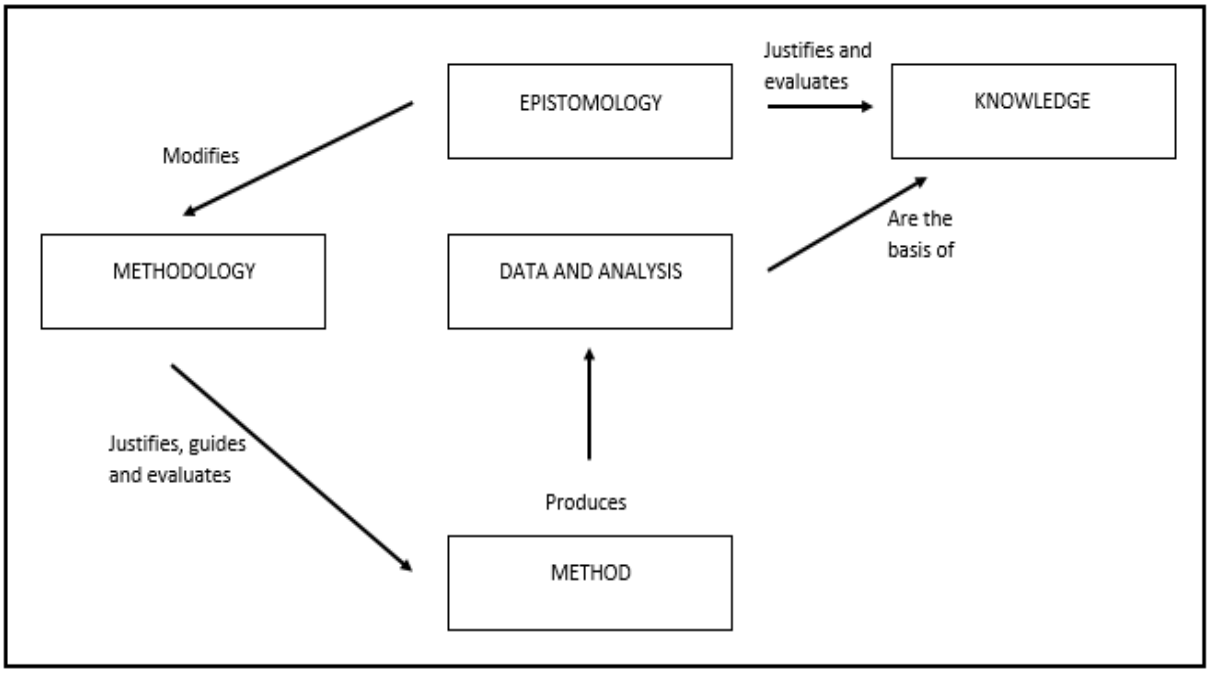


Figure 4.1. Carter and Little's simple relationship between epistemology, methodology and methods.[148] Source: Carter SM, Little M. Justifying knowledge, justifying method, taking action: Epistemologies, methodologies, and methods in qualitative research. Qual Health Res. 2007;17:1316–28

The above diagram demonstrates a useful relationship between the research terms, methodology, epistemology and method. However, ontology (how we see the world) is missing in the diagram. Espousing a particular worldview (ontology) influences the position a researcher adopts with regard to the subject of the research and what the researcher perceives as knowledge (epistemology).[149] The ontology and epistemology then modify the methodology used in the study (if the researcher believes that phenomena are measurable and observable then the methodology would be quantitative in nature).[149] The methodology then guides the methods (data collection techniques) that would be appropriate to answer the research question(s).[148] The methods then produce data that is analysed to produce knowledge.[148]

4.3 Theoretical, Ontological and Epistemological Stance: Critical Realism

The research design process in qualitative research begins with philosophical assumptions that the inquirers make in deciding to undertake a qualitative study. The assumptions reflect a particular stance that researchers make when they choose qualitative research. After researchers make this choice, they then further shape their research by bringing to the inquiry paradigms or worldviews.[150]

In keeping with the above quotation, I am a critical realist and I approached this study from a particular philosophical stance and based on underlying assumptions that inform my world view (ontology). Chapter Two discussed some of the most important concepts of critical realism. As a critical realist, I view reality (ontology) as stratified with real structures that are causally effective. I also view knowledge (epistemology) as both transitive and intransitive.[38] The transitive dimensions of knowledge are the raw materials of science that we come to know and understand. This type of knowledge is changing and extendable as knowledge grows.[38] In terms of intransitive knowledge a reality exists independent of our representation whether we know this reality or not.[38] This becomes one of the central premises in critical realism as one tries to uncover the real generative and causal mechanisms and structures underlying the perceived phenomenon. According to critical realism any discovery of knowledge or explanation is fallible and extendable as knowledge grows.[42]

4.4 Research Design

This study used a sequential, explanatory, mixed methods research design. The rationale for the choice of this design was that neither the quantitative nor qualitative research approach on their own would have been effective in generating a comprehensive understanding of the research problem. It was thus felt that the integration of quantitative and qualitative approaches in the study was best suited in identifying the casual mechanisms operating at the real level. It is for this reason that Castro et al. postulate that the integration of the two methods complement each other and provide a comprehensive answer to the research problem.[151]

Firstly, the students' backgrounds and demographics were analysed to gain an insight into the socio-cultural history of students enrolled for the BEMC degree. Secondly, the quantitative data assisted in selecting a sample for the qualitative data. Thirdly, the quantitative data

played a role in identifying certain factors that had an influence on academic success and which merited further exploration. The combination of both types of data lead to a better and richer understanding of the phenomena in question than may otherwise have been the case. Figure 4.2 below depicts the mixed method sequential explanatory process that was used in this study. Further details regarding this process are provided in this chapter.

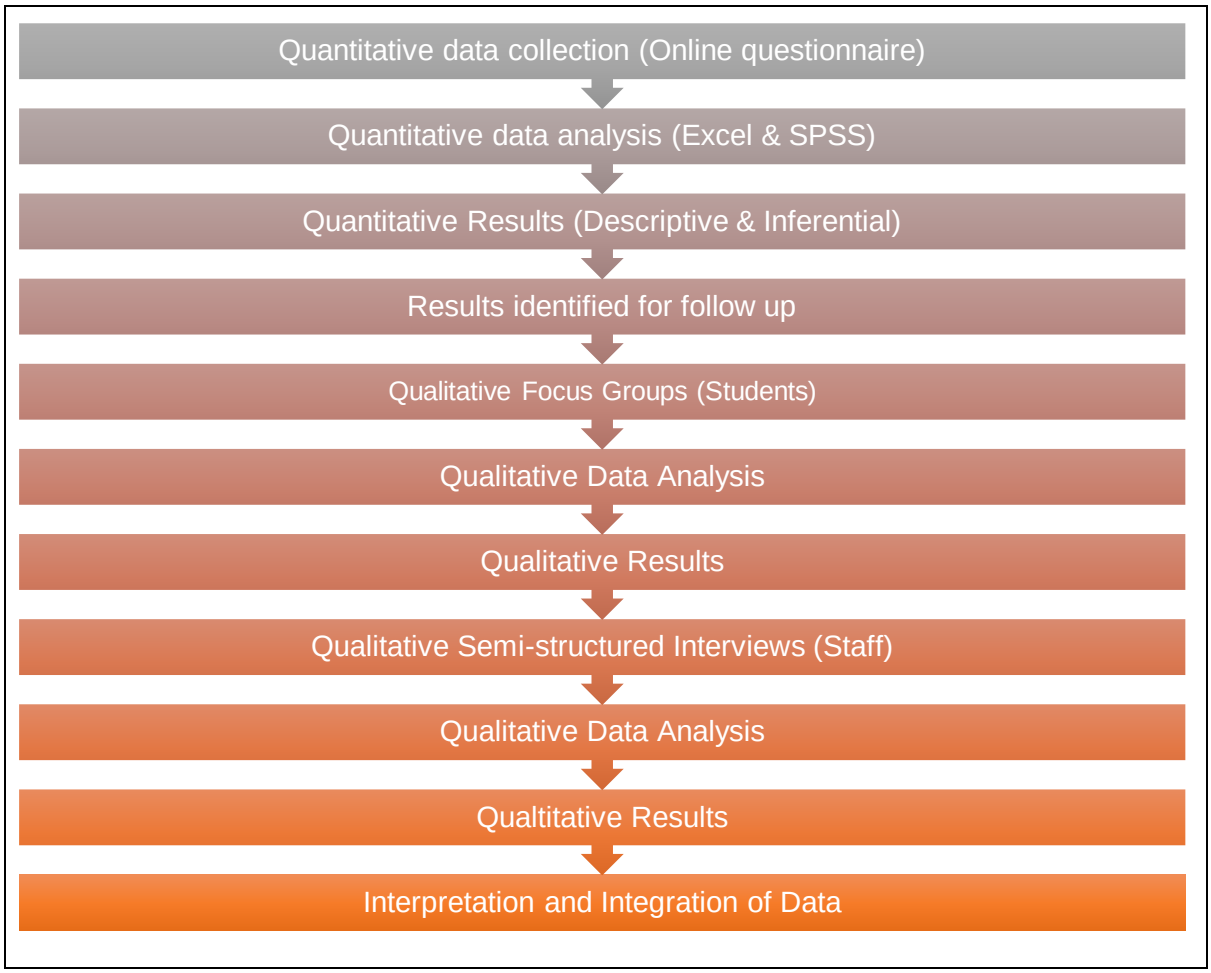


Figure 4.2. A mixed method sequential explanatory process conducted for the purposes of this study[147] (adapted from Creswell and Plano Clarke).

4.5 Phase 1: Quantitative

The aim of the first sub-question was to analyse the sociocultural history of students registered for a BEMC degree in South Africa. In order to address this research question, a descriptive, cross-sectional design was employed using a questionnaire. Creswell suggests that a quantitative approach is best to identify factors that may influence an outcome or

provide an understanding of the predictors of an outcome.[139] Zachariadis et al. contend that the role of quantitative methods within critical realism is "largely descriptive, since quantitative summaries and correlations between variables alone cannot uncover evidence on the causal mechanisms that generate the actual events we observe or predict future incidents".[152] I concur with Zachariadis and colleagues as quantitative data alone may not have been able to identify the causal powers and generative mechanisms at the real level that constrain or enable academic success in the BEMC programme. The qualitative data was used to explore and probe in greater detail a few cases from the quantitative data in order to identify these causal mechanisms. The descriptive information from the participants assisted in ensuring a broad view of the causal mechanisms associated with academic success in the BEMC and was used to draw inferences utilising the qualitative data.

4.5.1 Data Generation and Analysis

An anonymous survey was conducted during 2016 and included students enrolled for the BEMC. The study aimed to include all students enrolled for the BEMC degree from four South African higher education institutions the offer the degree: Cape Peninsula University of Technology, Durban University of Technology, Nelson Mandela University, University of Johannesburg. The survey was conducted using the e-survey client Survey Monkey (San Mateo, California) and is provided in Appendix A. After permission to conduct the survey had been granted by each of the four institutions, an electronic survey link was disseminated to the entire BEMC student body by the respective head of departments. Information about the study was provided in the first page of the survey. Participation in the survey was deemed to imply consent to participate in the study. The aim of the e-survey client was to ensure anonymous data collection. Data was collected over a period of six months. A total of three reminders was sent to the participants to optimise the response rate. In view of the estimated response rate of between 30 to 50% of approximately 408 students, a sample of between 120 and 200 participants was expected.

References to the four higher education institutions were anonymised prior to the analysis of the data. Age was the only continuous variable included in the study. The categorical variables included race, gender, previous emergency care qualification and type of secondary school attended. Race was described as White, Black-African and a cohort of other minority groups, namely, Coloured, Indian and Asian groups, which were pooled for data analysis due

to their relative size compared to the larger White and Black-African groups. The data collected was imported into Microsoft Excel® (Microsoft Corporation, Redmond, WA) for the data analysis. The continuous and categorical variables were described using basic descriptive statistics. A Fisher's Exact test was used to test associations between the various survey variables and the three racial groupings. In addition, Pearson's chi-square test was used to test associations between repeating a year and the following categorical variables, namely, emergency care qualifications prior to enrolment for the degree, racial groupings, and type of secondary school attended. These associations were also graphically depicted and odds ratios were provided. For the graphical descriptions, prior qualifications were expressed as present or not, while race was expressed in terms of the three groupings already described. Statistical significance was considered as a p-value less than 0.05 and the 95% confidence interval (95%CIs) were provided as a measure of precision for the odds ratios.

4.5.2 Reliability and Validity

In quantitative research, validity refers to the extent to which the measuring tool measures what it was intended to measure while reliability refers to the extent to which the measuring instrument may be trusted to provide consistent results.[153] While a search for similar surveys was undertaken, none were found that were similar to the questions asked related to emergency care. Therefore, the measuring instrument (quantitative questionnaire) used in the study was pre-tested by administering it to 15 graduates who had completed in 2015 to ensure that (i) the questions were unambiguous and clearly understood (ii) the answers provided accurate measures of what the participants wished to say and (iii) the answers provided related what the participants had to say correctly, thus measuring what the questions were intended to measure (validity).

The participants were asked to note or comment on the following:

- Time taken to complete the questionnaire
- Clarity of the questions or ambiguity
- Simplicity of completing the online questionnaire (including when completing it using a cellphone)
- Clarity of the given instructions in respect of answering the questions
- Relevance of the questions in relation to the research question

- Layout and design of the questionnaire

The comments made by evaluation group were studied for consistency between participants and understanding. Amendments were then made to improve both the reliability and validity of the questionnaire based on the comments. The final questionnaire was then disseminated to the study sample. The evaluation group's results were not included in the study results.

4.6. Phase 2: Qualitative

In order to address sub-questions two[l] and three[m], I made use of qualitative research methods. I also used the consolidated criteria for reporting qualitative research as suggested by Tong et al. to guide my qualitative write-up (please see Annexure B).[154]

Creswell maintains that a qualitative approach is appropriate if the phenomenon in question needs to be clarified due to the paucity of relevant research.[139] As mentioned earlier, the BEMC degree is a relatively new qualification in South Africa and, at the time of this study, no research had been undertaken into the emergence or absence of academic success in relation to this qualification. A qualitative research approach is exploratory in nature. In addition, it is also best if the research topic has never been addressed using a certain sample or group of people which was the case in this study. The role played by qualitative methods in critical realism is profound as these methods are best suited to describing and understanding the research problem, and recognising related structures and interfaces between composite mechanisms.[152] This study used the qualitative approach to explore the causal powers and mechanisms that generate the emergence or absence of academic success among BEMC students. In so doing, I used the notion of a laminated system that was first proposed by Andrew Collier and subsequently used in other critical realist studies to gain a deeper understanding of the generative mechanisms and causal powers operating in the real domain.[155–157]

[l] How does the students' epistemology and ontology generate the absence of academic success in the BEMC programme?

[m] How does the students' epistemology and ontology enable the emergence of academic success in the BEMC programme?

Table 4.2. An example of a critical realist interpretation of a laminated system (adapted from Brown and Bhaskar et al.)[157,158]

Interactive generative mechanisms	**Example**
1. Biological	E.g. adequate nutrition
2. Psychological	E.g. self-esteem
3. Socio-cultural	E.g. group dynamics in the classroom
4. Normative	E.g. curricula
5. Physical	E.g. layout of the classroom

E.g., for example

4.6.1 Study Participants

Coyne argues that the selection of a sample in qualitative research has a profound impact on the ultimate quality of the research.[159] I agree with Coyne in this regard as selecting participants who either will not or are not able to contribute much insight into the phenomena in question would not yield a sound, in-depth understanding of the causal powers or generative mechanisms at the real level. Accordingly, the research participants were carefully chosen in line with the aims of the study and taking into account variables such as age, gender, and ethnicity. This method of selection is extremely discerning and is known as purposeful sampling.

The logic and power of purposeful sampling lie in selecting information-rich cases for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry, thus the term purposeful sampling. Studying information-rich cases yields insights and in-depth understanding rather than empirical generalisations.[160]

In order to explore the students' epistemology and ontology that enable the emergence of academic success in the BEMC programme, third and fourth-year students from each of the four universities who had not repeated a single year/module/subject throughout the programme were invited to join focus group discussions. It was felt that these students represented the cohort that would help the researcher to understand the causal powers and

generative mechanisms that were enabling them to be successful in the BEMC programme. Patton contends that qualitative research is rife with ambiguities and that is best suited to people with a high tolerance for ambiguity.[160] With this caveat in mind, I examined my own tolerance for ambiguity which I feel is high. As a critical realist, my existing knowledge and interpretation of such knowledge will always be fallible and extendable as my knowledge grows because I will never get to understand the total reality of knowledge. Patton further states the following:

> *There are no rules for sample size in qualitative inquiry. Sample size depends on what you want to know, the purpose of the inquiry, what's at stake, what will be useful, what will have credibility, and what can be done with available time and resources.*[161]

Bearing the latter in mind, I conducted twelve focus groups with a total of 81 participants – an average of 6.75 participants per focus group. Thematic saturation was reached after nine focus group discussions. However, I had not conducted focus group discussions at one of the institutions and I decided to proceed with data collection from that institution as the data from there may have been different. The duration of the focus groups ranged between 40 minutes and an hour.

In order to explore the students' epistemology and ontology that may have generated the absence of academic success in the BEMC programme, students who were in their third or fourth year of their course but who had repeated a year in the programme were invited to join focus groups. The third and fourth year lecturers/year coordinators were contacted to put me in touch with the students for the focus groups. I was put in contact with the class representatives who were of great help to me in finding the participants for the focus groups. The class representatives were sent an email to disseminate to the relevant students requesting their voluntary participation in the study. I did this because I did not have the contact details of the students and the dissemination of the students' contact information by the universities would have contravened the Protection of Personal Information (POPI) Act, 2013.[162] The contact information of the class representatives was given to me by the lecturers after they gained consent to do so from the class representatives.

The lecturing staff were also interviewed to provide me with an understanding of their views on the causal mechanisms that resulted in the emergence or absence of academic success in

the BEMC programme. Three Heads of EMS departments as well as five lecturing staff members were interviewed.

4.6.2 Study Setting

The study was conducted at four sites, namely, universities offering the BEMC programme. These universities were situated in Cape Town, Western Cape province; Port Elizabeth, Eastern Cape province; Durban, KwaZulu-Natal province and, lastly, Johannesburg, Gauteng province in the Republic of South Africa. The focus groups and the semi-structured interviews on each campus were conducted in one of the EMC department classrooms / boardroom / offices, which were unoccupied for the period of the proposed data collection.

4.6.3 My Position as a Researcher

I conducted the data collection for the second phase (qualitative) through the focus group discussions and semi-structured interviews as described above. At the time of the study I was working as a head of department at one of the universities offering the BEMC programme. This made me an insider as I had lived experience of the research participants.[163] I was a fourth-year course coordinator at the time of writing my research proposal before being appointed as the department head.

I had also been a lecturer for six years at one of the institutions where this research was conducted. At the institution in question, I would have taught the third and fourth year BEMC students of 2016 who were part of the survey and focus groups. However, at the time of the study I had no vested interest in this institution.

Being an insider was advantageous in that I was able to understand the cultural experiences of the participants.[164] Mercer contends that insider researchers may develop considerable credibility and rapport with their participants, which may lead to a great deal of honesty. [163] I agree with Mercer as, although obtaining responses from the students proved to be a challenge, some of the students indicated that they had completed the questionnaire after seeing my name on it. In other words, they knew me as a paramedic engaged in postgraduate studies and were willing to assist in completing my studies. This was also true for the focus groups as the students from all the institutions were willing to participate because they had some knowledge of me. It may, perhaps, be argued that gaining access to the students would have been more challenging for an outsider researcher.

However, Shah argues that the participants may not share certain information with the insider for fear of being judged.[165] Nevertheless, charging someone else with doing the fieldwork may also not be ideal as this person would be considered an outsider and this is not without its limitations. The main issue that is raised in respect of the outsider researcher is whether the individual is able to fully appreciate the experiences of the participants and understand the culture within the research group. Merton makes the point that the outsider researcher:

> *…has a structurally imposed incapacity to comprehend alien groups, statuses, cultures and societies … [because he/she] … has neither socialised in the group nor has engaged in the run of experience that makes up its life and therefore cannot have the direct, intuitive sensitivity that alone makes empathic understanding possible.*[166]

The insider/outsider notion has been a highly contentious debate in the Social Sciences for decades, but with no definitive answer.[163,166,167] Merton himself contends that human beings within a particular group are never able to share exactly the same perceptions and, therefore, it is never possible to categorise them easily.[166] It is on this basis that he considers both the insider/outsider doctrines to be a misconception.

Nevertheless, I was consciously aware of my position in relation to my research participants. The participants from the other two institutions, at which I have never taught, also knew of my position. I endeavoured to put the students at ease at the start of the focus groups by reassuring them that (i) their responses would remain anonymous outside of the interviews and that I would protect their privacy; (ii) participation would not adversely affect their marks; (iii) they could withdraw from the study at any time; and (iv) it was an opportunity to improve the programme by means of their contribution. If anything, the years 2015 and 2016 in South Africa (The #Fees Must Fall campaign[n]) have revealed that students are not afraid to voice their opinions. Therefore, one may not assume that the students would not have participated in the study due to my position at the one institution. In fact, 55% of the participants in phase one were from the institution where I had worked previously and also the institution where I currently work.

[n] #Fees Must Fall was a student led protest movement that began in October 2015 which was an outcry against the increasing fees in South African higher education institutions

4.6.4 Pilot Study

I piloted the focus group and interview questions with BEMC graduates who had completed their degrees in 2015. The four participants were asked to provide feedback on the following:

- Clarity of the questions or ambiguity
- Clarity of the instructions given in relation to answering the questions
- Relevance of the questions in relation to the research question
- Clarity and relevance of the prompts

I also tested the dictaphone because the focus groups and interviews were to be audio-recorded. The feedback from the pilot study was useful although it was not necessary to make any amendments to the questions. The data from the pilot study was not used in the study findings.

4.6.5 Data Generation

I developed basic questions for both the focus groups and the interviews (Appendix C and Appendix D). The fundamental element that contributes to focus groups as an effective data collection instrument is the levels of "synergy, snowballing, stimulation and spontaneity" generated by the group dynamic.[168] During a focus group discussion, a comment may spark new ideas and thoughts related to the personal stories of the participants. I found this to be true as some of the students found what was said in the discussion resonated with them and they wanted to elaborate further by adding to the discussion. Some of the students also voiced differing opinions which were shared in a collegial manner.

In order to prevent any interruption in teaching/classwork, the focus groups were held during break times and after class hours in consultation with the lecturers and class representatives. Where possible, the students were selected in a way that ensured that they were representative of age, gender and previous experience in the paramedical field prior to studying the BEMC degree. This allowed for a more free-flowing discussion among the participants and provided an opportunity to study the different perspectives between the various groups.[169] Morgan recommends groups of six to ten students as the ideal size to facilitate a focus group discussion.[169] However, although two of the focus group discussions consisted of three participants, much discussion was stimulated and resulted in as rich data

as the group of six to ten students. Nevertheless, I found seven participants in a focus group to be an effective number to facilitate discussion. Information about the study (Appendix E) was provided to the respective heads of departments who disseminated it to the student body. All communication with the participants were subsequently directed via the class representatives with the researcher having no direct access to the participants. The study information was provided again before the focus groups commenced. Participation in the focus groups was deemed to imply consent.

Both the focus groups and the semi-structured interviews were audio-recorded after verbal permission to do so had been obtained from the participants. It was felt that the audio-recording would facilitate the subsequent transcription of the data. Field notes were taken to highlight key issues that had arisen during the discussions and also those issues that required clarity and further discussion.

The literature describes some key considerations which must be borne in mind when conducting focus group discussions.[170] Firstly, the topic must be narrowly focused to enable the research participants to give explicit and detailed answers. Secondly, the interaction between the group members should be the highlight of the focus group. [170] The aim of this interaction between the group members is to ensure the most thorough, rich and valid responses from the participants. The researcher acts as a facilitator and guides the focus group discussion. I found the interaction between the group members was a key highlight during the discussion and that I spoke only to seek clarity and to probe further.

Participant and or peer vulnerability is another key consideration which I took into account in the study. [170] During a focus group discussion sensitive topics or differences in opinion may arise that may reduce the comfort level of the discourse or impact on the way in a perspective is deliberated upon.[170] Some participants may feel uncomfortable sharing their experiences in the presence of other people. Taking this caveat into account, the participants were reminded of their voluntary participation and informed that if anyone was unwilling to participate in the discussion, he/she was free to leave at any time. However, all the students who took part in the focus groups participated in the discussions and willingly shared their experiences. No lecturing staff members were present during the focus group discussion with the students.

Semi-structured personal interviews were used to obtain data from eight lecturing staff to explore the causal mechanisms that may have existed in relation to the emergence or absence of academic success on the part of the students registered for the BEMC. The lecturing staff members were contacted electronically and their voluntary participation in the study requested. Those contacted agreed to participate. The interviews took place in their offices at the respective institutions which they chose as a mutual location. Initially, some of the participants were slightly hesitant but then relaxed as the interview progressed. This I attributed to my role as a colleague. They may have felt that I would judge their responses but realised that this was not the case and they then relaxed during the interviews.

4.6.6 Data Analysis and Interpretation

As Hatch articulates:

> *Data analysis is a systematic search for meaning. It is a way to process qualitative data so that what has been learned can be communicated to others. Analysis means organising and interrogating data in ways that allow researchers to see patterns, identify themes, discover relationships, develop explanations, make interpretations, mount critiques, or generate theories. It often involves synthesis, evaluation, interpretation, categorisation, hypothesising, comparison, and pattern finding. It always involves what Wolcott calls "mindwork" … Researchers always engage their own intellectual capacities to make sense of qualitative data.*[171]

I agree with Hatch and I found that the data analysis was, indeed, a systematic search for meaning, recognising patterns and identifying themes. I used thematic analysis to analyse the qualitative data. Thematic analysis is a qualitative data analysis technique that identifies, analyses and reports patterns (themes) within the data.[172] I followed Braun and Clarke's 6-step guide for thematic analysis in analysing my qualitative data set.[172]

The data analysis commenced during the focus group and semi-structured interviews as I noticed certain patterns of meaning emerging. Although I had the data transcribed by a transcriber, I listened to the audio recordings and read through the data set to check for accuracy and to familiarise myself with it. The transcriber was informed of the need for confidentiality and protecting the participants' identities. The transcriptions were safely stored in a password-protected file on a password-protected, work computer to which only I

had access. The participants' information was anonymised throughout the research process with all identifiable information being removed (names and institutions).

The transcripts were not returned to the participants for correction as I had verified the accuracy of the transcripts. After reading through the data set once, I then developed initial codes using NVIVO 11 and organised the data into meaningful groups. I continued to ask the question, "What is this about?". I then sorted the codes into different themes. I found this to be an iterative process rather than a linear one. I found NVIVO useful with this exercise as I used thematic maps to visualise the initial codes and themes I had found. I reviewed and refined the themes until I was satisfied that they captured the essence of the data. The data will be kept safely in a password protected file in a password protected computer for a minimum of five years.

4.6.7 Trustworthiness of the Study

Positivists often question the trustworthiness of a qualitative study as it is not possible to address the reliability and validity of the latter in the same manner as in a quantitative study.[173] Guba suggested four criteria to be used in a qualitative study to address the trustworthiness of qualitative research[174], namely, (i) credibility [internal validity]; (ii) transferability [external validity/generalisability]; (iii) dependability [reliability]; and (iv) confirmability (objectivity).

Credibility (internal validity) refers to the study measuring what it was intended to measure. The use of four institutions in the study reduced the likelihood of certain local dynamics occurring that may have been peculiar to one institution. The findings at the four institutions were comparable, thus leading to greater credibility than may otherwise have been the case. I established a rapport with the participants to ensure honesty in the focus groups and individual interviews and assured them that there were no right or wrong answers to the questions. The participants were encouraged to talk openly without fear of discrimination or a loss of credibility with myself or their colleagues.

Transferability relates to the extent to which the findings of the study are transferable to other situations.[173] When conducting a quantitative study the aim is to ensure a sufficiently large sample size to be able to generalise the findings to a wider population.

In qualitative research the data is collected from a small number of individuals or organisations and thus it is impossible to infer that the findings are applicable to a wider population.[173] Qualitative researchers also argue that conventional generalisation is not possible as all research is conducted in the particular context in which it occurs.[173] This is, in fact, one of Bhaskar's arguments against positivism in that positivists are also limited in their generalisability because they are able only to replicate their results in a laboratory with significant reliability by creating what he terms a closed system.[38] Bassey suggests that researchers relate the study findings to their own context if they believe that a study is similar to their context and are, thus, more receptive to the study findings than may otherwise have been the case.[175] Taking this into account, I provided sufficient background to the study in Chapters One, Two, Three and Four to establish both the context of the study and the research methods employed in the study, thus allowing for the transferability of the study findings.

Dependability refers to consistency in that, if one repeats the study in the same context, with the same methods and participants, similar results would be obtained.[173] However, Bhaskar argues that obtaining the same results in science is possible only in a laboratory by creating a closed system.[38] However, the social world is an open system and is characterised by several generative mechanisms that may trigger events differently even if the context, methods and participants are the same.[13] The phenomenon studied in qualitative research changes continuously, thus rendering the provision of reliability somewhat challenging.[176] Lincoln and Guba assert that there is a strong link between credibility and dependability and argue that, if one demonstrates the former in practice, this goes some way in confirming the latter.[177] In order to ensure dependability, I provided both a detailed description of the research design and its implementation and the operational detail of the data gathering.

Confirmability is concerned with the qualitative researcher's objectivity. A key criterion for confirmability is the qualitative researcher's acknowledgment of his/her own predispositions.[173] Patton argues that researcher bias is inevitable as tests and questionnaires are designed by human beings, thus making objectivity difficult.[160] Earlier I acknowledged my position as a researcher and how this may have affected the data generating process, thus promoting the confirmability of the study findings.

4.7 Ethical Considerations

Ethical clearance to conduct the study was granted by the University of Cape Town Human Research Ethics Committee (HREC Ref: 815/2015) and data collection was permitted by the individual institutions.

4.8 Looking Back and Ahead

This chapter explored the research design and methodology used in this study. The mixed methods design used proved to be useful as it generated a greater understanding of the research problem than may otherwise have been the case. I also stated my position as a researcher as this may have impacted the data collection process. The qualitative data was analysed using thematic analysis. The chapter also provided a critical realist conceptual tool that mapped out the generative mechanisms and causal powers in the real domain that generate either the absence or emergence of academic success. The following chapter presents the quantitative results and a discussion thereof.

CHAPTER FIVE

QUANTITATIVE RESULTS

5.1 Introduction

The previous chapter provided a detailed explanation of the research design and methods. This chapter presents the quantitative findings from the survey that marked the first phase of the study.

5.2 Results

A total of 176 subjects (43%) from an available sample of 408 students responded to the survey. The participation and response rates are presented in Figure 5.1. The median age of the participants was 24 years with the majority (n = 83, 47%) being between the ages of 20 and 24 years. Of the total number of participants 97 (55%) were male. The racial distribution was 94 Whites (53%), 54 Black African 54 (31%), and a minority cohort of 28 (16%). The minority cohort included 17 Coloured (10%), ten Indian (6%) and one Asian (0.6%).

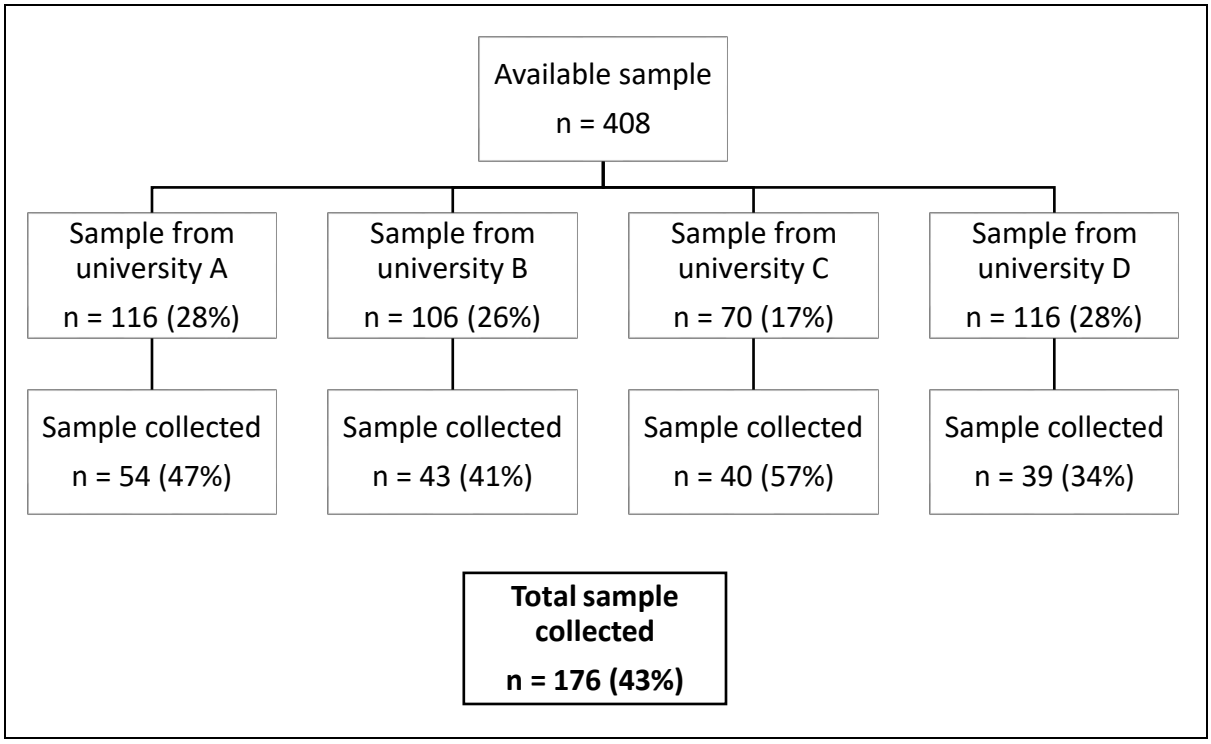


Fig. 5.1. The available number of participants and response rate

Table 5.1. Demographics of participants

Variable	All	White	African	Minority cohort*	p-value
n	176	94	54	28	-
Mean age (±SD)	26 (±7)	26 (±7)	26 (±7)	27 (±7)	-
Male	97 (55%)	48 (51%)	34 (63%)	15 (54%)	0.39
I have repeated a year during my BEMC studies	34 (19%)	22 (23%)	9 (17%)	3 (11%)	0.28
English is my main language	81 (46%)	49 (52%)	21 (39%)	11 (39%)	0.21
I have a prior emergency care qualification	101 (57%)	52 (55%)	37 (69%)	12 (43%)	0.07
I have a part-time job	52 (30%)	26 (28%)	19 (35%)	7 (25%)	0.54
I worked between school and enrolling for the BEMC	117 (67%)	65 (69%)	37 (69%)	15 (54%)	0.29
School prepared me for the BEMC	70 (40%)	33 (35%)	24 (44%)	13 (46%)	0.40
I have a quiet area at the place where I reside to study undisturbed	132 (75%)	77 (82%)	35 (65%)	20 (71%)	0.06
I have access to a computer for studying where I live	161 (92%)	90 (96%)	45 (83%)	26 (93%)	0.03
I have internet access where I live?	123 (70%)	78 (83%)	26 (48%)	19 (68%)	<0.001
I am the first person to attend university in my family	63 (36%)	27 (29%)	23 (43%)	13 (46%)	0.11
I own a car	119 (68%)	85 (90%)	16 (30%)	18 (64%)	<0.001
I or a member of my family is funding my studies	96 (55%)	58 (62%)	25 (46%)	13 (46%)	0.12

*, [Coloured (mixed race), Indian, Asian]; n, number; SD, standard deviation; BEMC, Bachelor of Emergency Medical Care

Figure 5.2 depicts the proportion of the cohort that had repeated a year on the BEMC degree for the variables emergency care qualifications prior to enrolment for the BEMC degree, race

and type of secondary school attended. There were 101 participants with emergency care qualifications prior to enrolling for the four-year EMC programme. Of these, 39 (39%) had qualified as basic ambulance assistants, 27 (27%) as ambulance emergency assistants, 21 (21%) as emergency care technicians, and nine (9%) as critical care assistants while 4 (4%) had a National Diploma of Emergency Medical Care. Of these, 23 (22%) of the participants had never practised using their qualification prior to enrolling for the BEMC. Having a prior emergency care qualification was strongly associated with not repeating a year during the BEMC ($p = 0.02$). The chances of a student with a pre-existing emergency care qualification not repeating a year were 2.4 (95%CI = 1.2 – 5.1) times the chances of a student without a pre-existing emergency care qualification not repeating a year. The statistical difference between race and not repeating a year in the BEMC was not significant ($p = 0.07$). However, when the Black and minority cohort were grouped together, it was significant ($p = 0.05$). In other words, the chances of a non-White student not repeating a year on the programme were 2.1 (95%CI = 1.0- 4.5) times better compared to a White student not repeating a year. Students who had attended township or rural schools had repeated a year of the course on fewer occasions (n = 7, 18%) compared to students who had studied at private schools (n = 12, 32%) and former privileged (model C) schools (n = 19; 50%). There was, however, no statistical difference between the type of secondary school attended and academic success ($p = 0.30$).

5.3 Discussion

This study showed that not repeating a year during the BEMC was significantly associated with two important variables, namely, a prior emergency care qualification and not being a White student. Although the latter finding may appear unexpected at first, a closer investigation of the rest of results provides an explanation. Table 5.1 describes a number of significant differences between the various racial groups as against a number of socio-demographic variables. Black African students were the least likely (and significantly so) of any of the other groupings to have access to a car, a computer or the internet at home. They were also less likely than any of the other groups to have access to a quiet area in which to study undisturbed, and (together with the minority cohort) to have a member of their family fund their studies. Nevertheless, despite these barriers, as depicted in Figure 2, Black African students were less likely to repeat a year compared to their White counterparts. This finding

could be attributed to the sample which included only students registered for the BEMC programme and thus anyone who had failed a year and not returned the following year to repeat the year would have been excluded from the analysis.

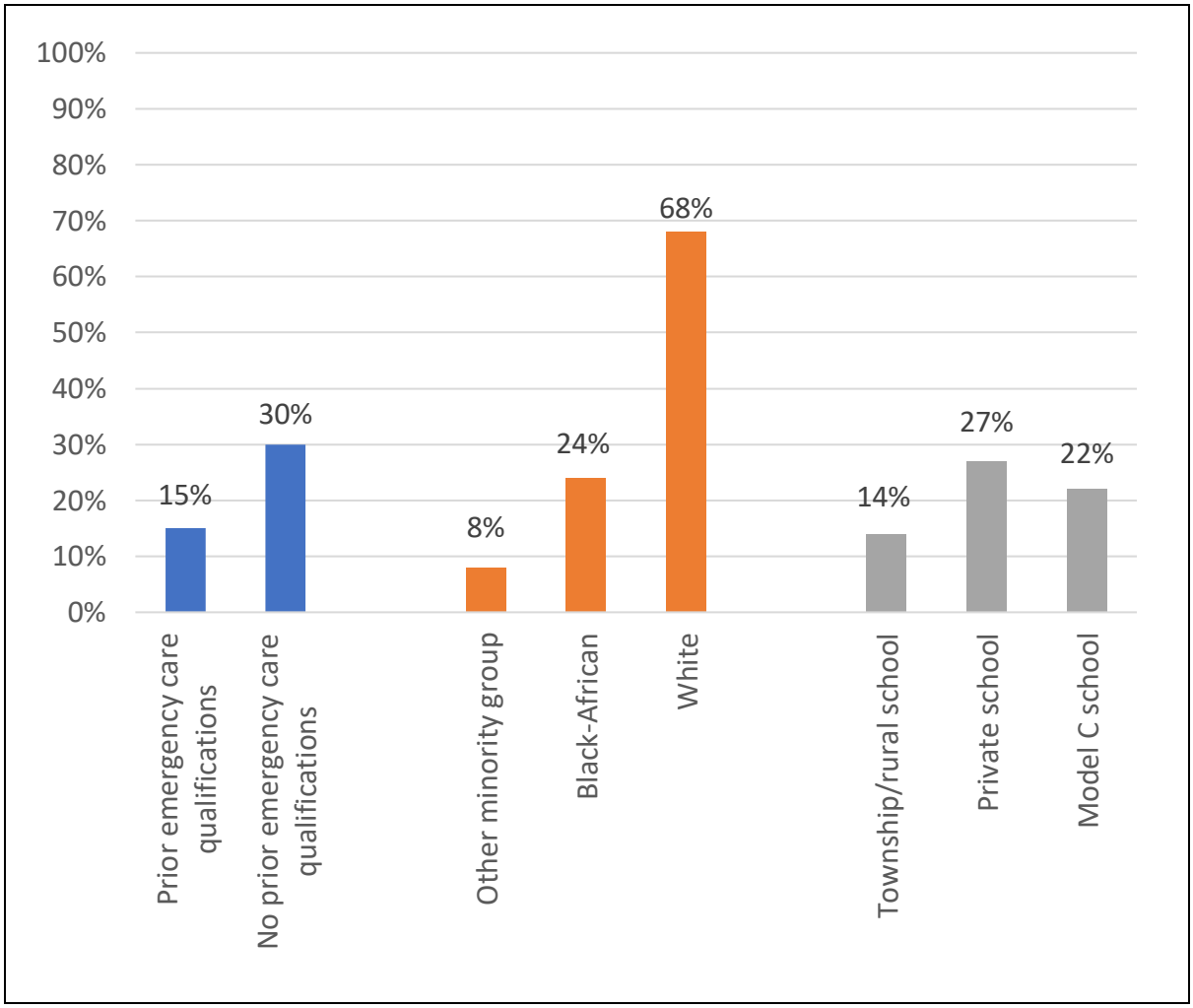


Figure 5.2. Proportion of each represented cohort that repeated a year during the Bachelor of Emergency Medical Care course

White students were proportionally more likely to have access to a car, or to have a member of their family funding their studies, and also the least likely to be a first-generation higher learning student compared to any of the other groupings. These findings, together with greater access to a computer and the internet at home, suggest that the White students had access to more capital than the other racial groupings. The 2013 cohort throughput data from three of the four sampled institutions revealed that the drop-out rate for Black African and

other racial minority students studying for the BEMC degree was almost double that of White students (email communication with the respective heads of departments, 20 June 2017). This revelation would strengthen the deduction that White students were able to fund their returning to study after they had failed a year. It provides an interesting and important explanation for the higher repeat rate in this cohort.

The literature shows that the academic success of Black African students is worse compared to that of White students. This is likely as a result of Black African students being academically underprepared for higher education.[16,18,64,72,107] This finding is usually ascribed to poor schooling as a consequence of the apartheid system, and is also referred to as the articulation gap – the knowledge misalignment between school and the first year of attending a higher learning institution.[16,72,82] This articulation gap leads to a lack of the academic skills required to function optimally, resulting in these students having to work much harder to achieve academic success which some do but not all.[83]

Cormier and Whyte found that second degree Bachelor of Nursing students' academic achievement was superior to that of first degree nursing students.[178] They also found that second degree students had better clinical assessment attributes in the clinical environment.[178] It is highly likely that second degree students simply put more hours into their academic work than their counterparts, thus resulting in their academic success.[179] The findings of this study are not altogether surprising as studies have found first degree students often struggle with the transition from childhood to adulthood while, at the same time, having to acquire mastery of the requisite knowledge and skills.[72,77] In addition, students in the medical disciplines often struggle with the moral and ethical decisions that they encounter on the clinical platform. This is more challenging if a student is developmentally and intellectually underprepared.[179] In contrast, a number of studies also support increased motivation and resiliency on the part of students despite a poor background.[107,180] In this study proportionally Black African students had more prior emergency care qualifications than students from the other race groups. They also came from poorer personal circumstances which, according to the literature above, may have rendered them more likely to achieve academic success. However, a lack of funding counters any advantage which experience may bring by resulting in the student being forced to drop out, whether the

student had been successful or unsuccessful. This particular point provides an even more 'layered' look at the findings.

A key limitation of this study was the sample size. It may well be that a number of the variables would have been statistically significant had a larger sample been used. Given an already limited convenience sample and the restrictions of relying on the various heads of departments to send reminders, etc., it was not possible to achieve a higher response rate than was the case. A random sample was considered but it was felt that it would have simply diluted the pool even further. Students may also have been reluctant to participate in a study about academic success and this may have affected the results. Although there are other non-quantifiable factors that contribute to academic success, these were not accounted for in this study. Nevertheless, despite these limitations there were several important findings that corroborated prior research. As this was the first study to explore the research topic in relation to this particular cohort, it would have been impossible to control for all limitations. However, there is little doubt that the findings will make a significant contribution in guiding the planning of future research projects. An important strength of the study was it included students from all the institutions that offers the BEMC programme in South Africa, thus making it possible to generalise the findings.

5.4 Looking Back and Ahead

This study described a number of socio-demographic variables of BEMC students associated with race and repeating a year during the course of study. Most notably, White students were more likely to repeat a year compared to students from the other racial groups with Black and other minority students being less likely to do so. Since access to resources was more challenging for the latter two groupings, and drop-out rates higher, it is highly likely that the findings of the study in this regard were merely a reflection of those students who had the capital to return to study (whether they had been successful or not in the previous year). Accordingly, surveying the cohort that did not return to the BEMC programme after failing a year and qualitative research is now required to acquire a better understanding of the significance of these findings and uncover some of the factors that enable or restrict academic success. Notwithstanding that it would be difficult getting hold of these participants that have not returned to the programme. This approach would allow the identification of the modifiable factors that inhibit the throughput of black African and other minority racial

groups. Addressing these modifiable factors would have a substantial impact on providing more prehospital emergency care provision locally and answering the World Health Assembly's call to action.

This chapter has explored various socio-demographic variables associated with academic success of BEMC students, the next chapter discusses the absence of academic success in the BEMC programme.

CHAPTER SIX

ABSENCE OF ACADEMIC SUCCESS

"You can't think of a failed attempt as a failure. You have to think of a failed attempt as an opportunity to try again" (Esther – Student).

6.1 Introduction

This chapter presents, interprets and contextualises the qualitative findings that sought to answer research sub-question two – "How does the students' epistemology and ontology generate the absence of academic success for students in the BEMC programme?" These results were reported in line with the thematic categories that had emerged from the thematic analysis process described in Chapter Four and illustrated in Figure 6.1 below. The participants' words and discussions are used to provide support for the themes and to answer the research question. The participants' names are fictional to ensure anonymity. The quantitative results are also presented in both Chapters Six and Seven as the study used a mixed methods design.

Although the study produced quantitative results, it is important to note that quantitative results may only be used to inform the researcher about an association between variables. The quantitative results alone are unable to inform about the causes or produce any explanations. In the context of critical realism causation is not about an association between two variables and, instead, causes are about the objects or relations and their nature and the causal powers they possess.[13] It is worth mentioning that these causal powers are not fixed, unchangeable entities as the nature of the object may change. This was an important aspect in the discussion on the students' epistemology and ontology that generated the absence of academic success. In other words, the students' accounts of reality were not static and the causal powers may have been present without our knowledge. More importantly, these causal powers are present not only when event X occurs, but also when event X does not occur.[13] As explained in Chapter Four, I used a critical realist interpretation of a laminated system[o] to explore and examine the causal powers and generative mechanisms that generate the absence of academic success in the BEMC degree. The aim of this was to acquire a deeper

[o] A laminated system is a critical realist interpretation that was first proposed by Andrew Collier and that asserts that social events are layered with multiple determinants.

understanding of the generative mechanisms and causal powers operating in the real domain than may otherwise have been the case.

I identified three themes for the purposes of this chapter, namely, socioeconomic, academic and personal. The analysis proved to be somewhat difficult as some of the themes identified were interrelated. Accordingly, I acknowledge that the reader may differ in respect of the way in which I grouped the themes in both Chapters Six and Seven. Figure 6.1 provides a visual illustration of the themes and sub-themes discussed in this chapter.

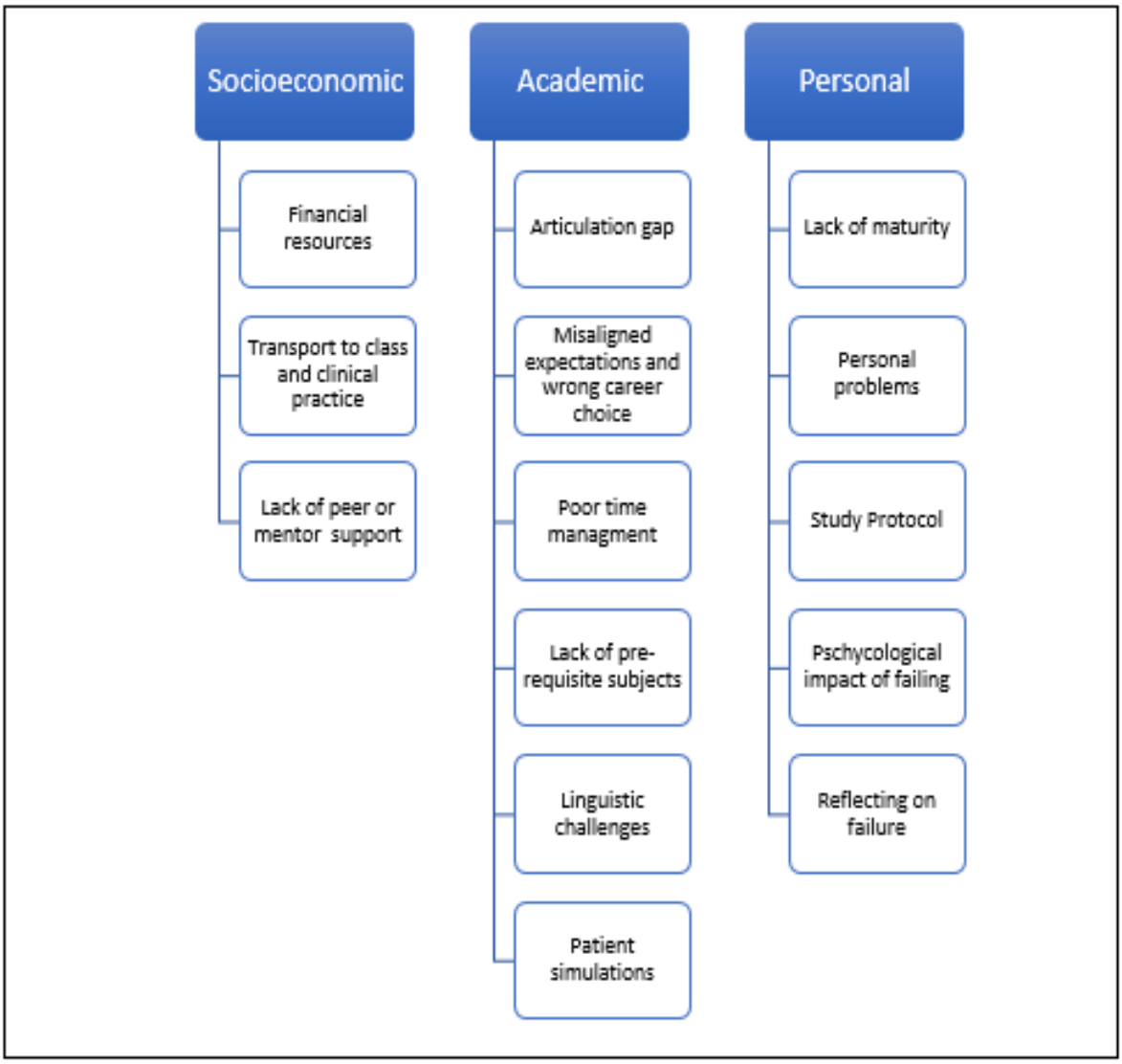


Figure 6.1. Themes and sub-themes that generate the absence of academic success

6.2 Theme One: Socioeconomic

This theme had to do with the generative mechanisms of a social and economic nature that had generated the absence of academic success in the BEMC programme. As discussed in

Chapter Two, these generative mechanisms possess causal powers to shape the actual events in the world. In other words, they possessed the power to generate the absence of academic success in the BEMC programme. This theme comprised the following three subthemes: financial resources, transport to class and clinical practice and lack of peer support.

6.2.1 Sub-theme 1: Financial resources

The lack of financial resources was one of the generative mechanisms highlighted by both the lecturing staff and the students as contributing to the students' academic failures in the BEMC programme. One lecturer indicated that:

But even some people who are intrinsically motivated, when they come to university and they haven't eaten, it doesn't matter how motivated you are, when your stomach's grumbling and your brain is hypoglycaemic (low blood sugar) *you can't – it doesn't matter how good a lecturer I am either, that student is destined to fail, and it's very unfortunate because sometimes we see very strong students, who are really committed, failing, not because they are not committed, but they may go home and – obviously having been first year coordinator for a number of years now, I sit and talk to those students (Owen).*

This staff member highlighted that poverty was continuing to play a key role in academic success. Owen asserted that a student who attends classes on an empty stomach would be hypoglycaemic and was, thus, destined to fail because it is impossible to concentrate or exercise higher thinking functions while hypoglycaemic, no matter how motivated the student is. The quantitative data illustrates the seriousness of this problem with thirty (17%) participants agreeing that hunger impacted seriously on their studies while 25 (14%) strongly agreed and 40 (23%) remained neutral. In other words, 31% of the students had suffered from hunger. The lecturer added that some of the students were academically strong students who, unfortunately, failed due to a lack of financial resources. Owen added to the discussion by stating that:

But, I think in a resource constrained environment like ours, these are the hard issues, these are the issues that we deal with every day in our classroom. And, if you go to the average university in America, I don't think half the class is hungry. I can tell you right now, half my class is probably hungry. Half my class probably did not sleep properly last night because they may live in an informal settlement, or close to an informal settlement where there's a lot of

noise. They sometimes live in fear, they sleep in fear that they are going to get robbed at night or in the morning when they come to university.

Thus, Owen made a comparison of the resource-constrained environment in South Africa and a first world country where the students would probably not be hungry during their class attendance. He further added that half of his class lived either in or near an informal settlement where there is often a lot of noise, thus resulting in lack of sleep as well as the constant anxiety about being robbed. Figure 6.2 below depicts an informal settlement in South Africa.

Figure 6.2. Picture of an informal settlement in South Africa [181] Source: https://borgenproject.org/6-facts-about-poverty-in-south-africa/

When Owen referred to a resource-constrained environment such as South Africa, he was referring to the inadequate financial resources of much of the South African population. Quantitatively, some of the participants agreed (n = 41; 23%) that the lack of financial resources was impacting seriously on their studies, 65 (37%) strongly agreed and 36 (20%) were neutral. In other words, 60% of the participants had experienced financial insecurity impacting adversely on their studies.

South Africa is a middle-income nation while 27.7% of its population is unemployed.[182] Statistics South Africa defines poverty in terms of three classifications, namely, the food poverty line, the lower bound poverty line and the upper bound poverty line.[183] Approximately 21.7% of the South African population lives below the food poverty line and thus they are unable to afford food that meets the minimum energy intake (2100 kilo-calories/day).[183] In addition, about 37% have insufficient financial resources to purchase food and non-food items, as they would rather sacrifice food for other necessities such as transport and electricity as they live below the lower bound poverty line. Approximately 53.8% fall in the upper bound poverty line and survive on less than R779/month (±US$60[p]/month).[184]

Although it is encouraging that the poverty line in South Africa is equivalent to a person living on $2.34 a day, almost twice the international norm ($1.25)[184], it is also important to note that 60-65% of the wealth in South Africa is in the hands of the elite few (10%), thus making it one of the most unequal countries in the world.[181,185] Figure 6.2 highlights the grim reality of the living and study conditions facing some of the students in South Africa. Furthermore, Owen mentioned the unsafe living conditions with which some students have to contend while trying to study and be academically successful. South Africa ranks third in the world as the country with the highest crime rate with violence an unfortunate feature of life.[186] The South African Police Service reported 52 murders a day in South Africa from 01 April 2016 to 31 March 2017, mostly in the urban townships.[187] This clearly has negative implications for students who live in townships as they may not use the campus library or internet/computer facilities after hours in case they are robbed when returning home. This finding was supported by the quantitative data which indicated that 64% of the participants were unable to work in the university library or IT centre after hours because of safety concerns.

[p] The exchange rate used to work out the currency conversion was $13 to the Rand as at 30 June 2017

Student Sheba indicated that:

Especially if you are not on campus, because then you need to – where you usually use maybe x amount of data at home, you are going to triple that with the online lectures because you need to watch the videos. Forget about the time that you need to sit there and watch it, but you are going to pay for every second. Yes, it does, it hits. I had big issues financially with those diagnostic lectures when I did diagnostics. It was an issue because it has to be online and so, what now? So it is either I drive, get into my car and drive, I come to campus and I sit here or 20:00, 21:00, 22:00, 23:00 or 24:00. I am married. Then it also brings up other concerns. Why must you go there? But now I need to give out money to buy the data and do it at home. So, both ways, you get kicked in the butt both ways [laughter].

Although universities promote the use of online teaching, as highlighted by Sheba, it appears to come at a costly price for some students. The online videos shared on the e-learning platform use a great deal of data and thus students who live at home have to pay extra money to purchase data or else they would be unable to access the online material. Sheba recalled how she had suffered financially because of the subject Diagnostics that used considerable blended learning. Sheba also pointed out that it is also not easy for a married woman to leave the house at night to use the library facilities as this may result in suspicions about infidelity. Thus, the student had one option only – to purchase more data. In view of the socioeconomic situation of South Africa highlighted above, it is possible that some students may be forced to sacrifice food in order to purchase data in an effort to achieve academic success. Adding to this discussion, one student, Israel, reflected that:

I think in my case I got a bit lucky. Because that year that I actually failed, the next year I managed to get a Metro bursary. I feel if that didn't happen – that was a changing moment for me right there, because if – because my mother was then supporting my studies. Well, she has been supporting my studies alone from before that but that was the point at which, if I didn't get assistance because I had already applied for NSFAS many times but they rejected me as well, as they rejected everyone.

If the bursary did not kick in that year, I probably wouldn't be sitting here today because she is a single mother, she has my brother who was still at school at that time. I mean, there just would've been any way. So, finances contribute immensely. If I had to be worried about getting money in order to get my results so I may know if I passed so I may finish, I would lose

it. I am already sitting here with that at least sorted and I just can't – my mind just doesn't have enough neurons to focus on everything happening all at the same time. So, I think financially, if a student is struggling, that increases the amount of work your brain has to do on stuff that is not even relevant to what you have to learn, so I would probably lose it. I would probably, I don't know, kick out windows every day in my frustration at the world.

Israel reflected on how he was fortunate to still be studying for his BEMC degree given his financial circumstances. Israel was in his last year of the BEMC programme at the time of the interview and has since successfully completed the degree. His turning point was the year (2013) he had failed but had happened to be a recipient of the Metro (Provincial Ambulance Service) bursary. He conceded that he would have been unable to continue studying for his BEMC degree because his mother was a single parent looking after two children. The student further indicated that inadequate financial resources created additional pressure as financially disadvantaged students worry not only about their academic work, but also about payment of their fees. These findings are in line with research by Cheng et al. which established that students from a poor background are often distracted as they worry about their financial problems.[130] Israel pointed out that the additional stress is often too much for the brain to cope with, thus causing unfavourable academic results. The point made by Israel was also evident in the Rural Education Access Programme study where underprivileged students' concerns about their families' finances led to their inability to concentrate in class, thus leading to poor academic results.[72] He also alluded to his unsuccessful application to the South African National Student Financial Aid Scheme managed by the government. This was also true for 9 976 applicants in South Africa whose applications were unsuccessful in 2017.[188] Without an alternative way in which to pay their study fees, students are often forced to drop out of university.

The BEMC degree is an expensive programme as it includes rescue modules that require safety gear to ensure the safety of students and instructors. Student Christie highlighted this point:

And I think a lot of people don't realise how expensive it gets when you take the rescue into it, and the next thing you have got to… somehow kit yourself out for, WSAR (Wilderness Search and Rescue) or SWIFT WATER or whatever it is. They aren't aware of the hidden costs that aren't upfront when you start.

And the worst thing about that, if you don't get the stuff, you can't do it. Then you are at a disadvantage versus someone who has got the whole kit.

Christie mentioned the unforeseen costs involved in studying for a BEMC degree. She mentioned two rescue modules, namely, Wilderness Search and Rescue and Swift Water Rescue. Wilderness Search and Rescue is a rescue course that teaches students how to navigate in the wilderness in search of a patient/s who may require medical attention and removal off a mountain. The practical aspect of the course takes place in the mountain over a period of four to five days. Essentially, the students require appropriate hiking equipment that includes, but is not limited to, a rucksack, warm jacket, hiking boots, food and cooking utensils. Although some universities that offer the BEMC degree provide some equipment, it is, nevertheless, costly for a student who is barely able to afford food while on campus, let alone food and equipment for a five-day hike. Christie made the point that students who are unable to afford the necessary equipment are at a disadvantage as they are unable to do the training. However, not one of the students who participated in the focus groups had indicated that they had been unsuccessful as a result of insufficient equipment for the Wilderness Search and Rescue hike or any rescue module. As highlighted by one of the department heads below, underprivileged students are often supported in the BEMC degree by the various departments:

So, one of the things we do as a programme is we try to help students who are in need. We have our own dedicated bursary fund that is ring-fenced just for our programme, and it is like an emergency bursary fund. It's not a massive amount of money but it is in the region of about R100 000 (±US$7692) a year, and that is money that we can allocate to individual students, for example, maybe someone just doesn't have money for transport. So, we can give them what they may need to use for taxis, trains or whatever.

We also have a way that, if the student is being selected and shows promise but does not have the money for the uniform, we can buy the uniform. We also have a thrift shop and we receive a lot of uniforms donated by students who have left, so we keep all of that, and we've got quite a lot now. And, then, those students who are struggling to get the uniform, they can take from the thrift shop" (Frank – HOD).

The HOD highlighted the support that may be offered to needy students should they require funds. The lecturing staff from the other universities also indicated that financial help was available to needy students. Frank referred to public transport as this was a mode of transport utilised by 37 (22%) of the participants in this study when travelling to clinical practice sites. Transport to clinical practice sites was a concern highlighted by both staff members and students and is addressed as the next sub-theme. In addition to the rescue gear required, as mentioned above, students are required to wear uniform to both class and clinical practice shifts. The uniform costs are approximately R3000 (±US$231) per student. Given the financial constraints in some households, it may be impossible for the students from these households to pay for registration fees from R2000 (±US$231) to R20 000 (±US$1538) and buy uniforms at the beginning of the academic year in January. It is for this reason that the one department has a thrift shop to assist these needy students with uniforms.

It was evident that insufficient financial resources were one of the generative mechanisms operating at the real level and generating the absence of academic success in the BEMC programme. A lack of financial resources has been widely reported in South African literature as one of the key factors that constrain academic success.[64,71,72,82] Although this generative mechanism may be empirically observable, its causal powers may not be exercised in every case. In other words, not all underprivileged students will be academically unsuccessful as another generating mechanism may be present and cancelling out the other one. I discuss this phenomenon in Chapter Seven as some underprivileged students use their misfortunes as a motivating factor to help them to succeed academically.

6.2.2 Sub-Theme 2: Transport to class and clinical practice

This sub-theme discusses the transport to class and clinical practice that staff members and students felt impacted on the academic success of students in the BEMC degree. There was some overlapping with sub-theme 1 (financial resources) as travelling to class and clinical practice requires funds. Student Joel pointed out that:

Another one that makes a big difference is your own transport. I don't know how you guys do it without. Like honestly, when I saw you Sunday morning after a night shift and you're saying, "I have to catch a taxi back 20kms", how do you do that? It's almost inconceivable for me to – for them to expect that of you, to turn a 12-hour day into an 18-hour day, just because you

don't have your own car.

Joel appeared to be implying that transport played a significant role in academic success in the BEMC degree. He was unable to understand how Monde (a Black student) could maintain his commitment when he had to catch a taxi to attend clinical practice, thus lengthening his day. Clinical Practice is a subject in the BEMC degree that requires students to see patients off-campus and practice a certain number of clinical skills as required by the Health Professions Council of South Africa Professional Board for Emergency Care. Students are either rostered in hospitals or ambulances to meet their required outcomes. The shifts are generally 12 hours long. Completing the minimum hours and providing evidence of the requisite skills is a pre-requisite for registration with the Health Professions Council of South Africa Professional Board for Emergency Care as an Emergency Care Practitioner – at the time of the study it was the highest registration category for emergency care providers. Monde added to the discussion on the lack of transport by indicating that:

So, basically, for us (black students) the issue – or I would say for me … with the transport, sometimes, because we work 12-hour shifts, so then it becomes a problem for us, especially during night shifts. If we are working on a Saturday, like the Sundays we hardly get taxis so you might find that you knock off from shift, maybe 6:10 or 6:30 if it's late, then you still have to wait another hour, an hour and a half to get the taxi … but the other thing is obviously, when we get off the taxis, then we have to walk maybe 10 to 15 minutes to where we live. The other issue is obviously robbery; people take our phones and all this stuff because, after all, you're wearing a flashy uniform, it's just attracting people to come to you, what's inside of your bag? ... I live 15 minutes away from school but sometimes I don't come to PT because it's too early for me to come. And then, the other shift, obviously, if I'm working a faraway shift, which means I have to be at the taxi rank by at least 4:50 or 5 o'clock the latest to get a taxi because, again, the line, the queue, it's quite a lot, and the traffic and all the violence that goes on and that. I would say for me, … not to say anything, but I'm black, I'm used to it, it's fine for me. I'm just saying it's an issue. So, that as well; transport, money, food money. My mother works, she is an entrepreneur but sometimes she doesn't have money for me to go to shift so I have to hustle it out, maybe go to my uncle's or something like that and just have to get it because we don't have any formal jobs aside from us coming to school and we don't get paid for it. I would love to get something, a stipend.

The above excerpt illustrates that students who are unable to afford a car often experience serious challenges with attending clinical practice shifts, particularly weekend shifts and night shifts. Public transport is scarce during the evenings and over weekends and thus the students often have to wait for prolonged periods to get to their shift or to their place of residence. Furthermore, students are also at risk of being robbed as they often have to walk to or from the taxi rank. Should a student without a car work a day shift (start at 06h00/07h00), he/she[q] would need to be at the taxi rank by 05h00. This means that the student has to walk in the dark during the winter months, thus exposing the student to the risk of being robbed. This may be the reason why Monde did not attend some of the physical training sessions in the mornings on campus. The physical training sessions are intended to ensure that the students are physically fit enough to take part in medical rescue training. There are various physical fitness assessments throughout the year which the students have to pass in order to progress to the following year of study. A minimum of 50% is required to pass all the assessments. In addition, as indicated by Monde, some students are unable to afford the travel costs to attend their clinical practice shifts. This was primarily because the universities do not provide either money or transport for the students to attend these shifts. A head of department shared this sentiment:

[B]ecause one of the things that we have is that the students will say, because of the rising cost of public transport, for them to go and work a shift can cost them anything from R50 to R100 (±US$4–8) *in taxi fares to get to the place. So, they have to make a decision as to whether they must buy food or whether they must pay their taxi fares* (Gordon).

Gordon appeared to understand the predicament the students faced of not having sufficient financial resources to attend their clinical practice shifts. It emerged that financially disadvantaged students often have to make a decision whether to buy food and miss a shift, which would have negative academic consequences, or attend the shift and have no food. The lack of financial resources to attend shifts was a source of concern for the students as Student Todani indicated below:

[B]ut just the financial burden of the course … Your class lecturer is busy teaching and you're

[q] Refers to male or female

busy trying to figure out where am I going to get R100 (±US$8) to go to Area B[r] *to go do that shift. Yes, that to me throughout was just a problem. Yes, you're sitting there thinking 'Okay, I've tried five people at home, you know, please can you lend me this', and then you're dealing with it. Now you're sitting in class and you're thinking 'Thursday, Friday and Saturday I need to go work'. You don't have money. If you don't do that shift, it's a problem in two ways, that you're setting yourself back, and it's also that you didn't go to attend the shift. I'm not talking about if you weren't there, you know, there was a possibility of you getting the skills that you need and that kind of thing.*

In the above excerpt Todani was reflecting on the impact of financial constraints on his state of mind during class time. It became clear that a financially disadvantaged student is unable to concentrate during class as he/she is often trying to work ways in which to obtain the taxi fare to attend shifts during the weekend. Jones et al. also found that financially disadvantaged students worry about the financial problems at home, thus reducing their ability to concentrate on their academic activities.[72] It seemed that BEMC students with no financial resources were often faced with two dilemmas – failure to attend the shifts may result in disciplinary action being taken against the student or the student may miss out on important skills during the shift. On the other hand, students who drive to campus and clinical practice shifts are also affected as they have to pay for petrol. There were 119 (68%) students in the study who owned a car. Student Eve and Student Julia had the following to say:

I drive 60 km one way; so it's 120 km a day … Then I sit in traffic, and then I get home. After you have sat in traffic for two hours, are you going to do anything? I'm not. Then literally you go for a nap, then you wake up; you still need to exercise since we don't have PT this year. You still need to exercise, then you still need to eat, you need to shower, then it's nine o'clock at night. Now I'm studying from nine to 12, sleeping from 12 to four. It is not sustainable (Student Eve).

For me it's 120km a day, and that's not even going on shift. In the past, we had a lot of our shifts in Area A[s]*. This year we literally had six shifts there; the rest of our shifts were in Area B.*

[r] This is written in this way to protect the identity of the institution

[s] Area A is a pseudonym to protect the identity of the institution as the area mentioned by the participant was in the same geographical region as the university

So, I'm travelling from Area A to Area B every single day. Some of our shifts start at 6:00 in the mornings which means I leave home before 5:00, otherwise I'm not in time for my shift. Then, this past week we were working in Area B. We finished our shift at 20h00. Then I still have to drive home, go and take a nap – well, it is almost a nap – go to bed, or have dinner and go to bed, and then I have to be at work the next morning at 6:00 again. So that driving takes a hell of a lot out of you, and it's bloody expensive (Student Julia).

It may be deduced from the above excerpts that living far away from university is not ideal. In addition to the academic lectures, the students have to do physical training in the morning or on their own in the case of fourth years. Added to this Student Eve and Student Julia had a ±120-kilometre (km) journey to class and back home. The traffic may also result in the trip home or to university taking about two hours and causing fatigue in some students. As Eve stressed, "*It is not sustainable*." Julia recalled how her clinical practice shifts had been booked 60km outside of her area. Not only did she drive ±60 km to university, but she also had to do this over the weekend to work her shifts. This was clearly both exhausting and costly for her as it would be for other students.

6.2.3 Sub-Theme 3: Lack of peer or mentor support

The focus of this sub-theme is the lack of peer support which plays a role in generating the absence of academic success in the BEMC degree. In the discussions the participants described a peer or mentor as a fellow classmate or a senior student. Some of the participants reflected that help from senior students would have helped considerably in ensuring that they settled into the department and understood the content. Student Israel reflected that:

Trying to make friends basically with people who are at a higher level and senior level, and ask them what they have been through. That really helps to – that comfort in knowing that you struggling as the student, as the lower level, but that is okay, everybody struggles. So, I think there is that little friendship bond thing that you can make. And then that also helps the learning process. As respondent says, you can advise them that this is important, or quiz them, or however your personality is, in order to teach them.

It may be deduced from the above excerpt that making friends with senior students brought about some form as the senior students could also share their experiences with their younger counterparts. In addition, the senior students are in a better position to advise the younger

students on the important content to study, thus making the learning process more manageable. Student Zeb added to this discussion by pointing out that:

I think if you are from high school, like you come directly here, you basically need – you have no clue what is really happening here. I think that's the first thing, because something that someone in the same class will say, like okay, this is like the standard thing, but you will have no clue about it. So, I think for them to actually make it, I would say getting to know senior students and for them to sort of get that information, okay, how can you actually make it? Otherwise, it is really not easy. And also, looking around the classroom, who can I actually talk to and who can actually study with me? Who can give me – not really give you information but who can actually help you in the other things that you are struggling with.

It was clear from what this participant said that students coming directly from high school into the BEMC degree have little idea of what is happening in the programme although, on the other hand, students with a background in Emergency Medical Services may have some understanding of what is going on in first year compared to students coming directly from high school. Zeb advised that getting to know senior students would be a valuable experience as they are able to share important information on how to succeed in the programme. Further to this discussion, Zeb pointed out:

I think because I have been with them (white students) from day one, they were in my class, so we didn't build that bond, okay, we can study. In my class, like when we started, it's like there was not that thing, like okay, let's go study. There was no group work or partner work, so I never really formed a partnership with anyone from the class. So, maybe for when it is compulsory that you do group work, that is when we sort of meet.

So, it isn't sometimes easy to go and have those discussions with them (white students). I remember Parsons[t]*, before he – we used to study together also. I think that is one of the things. So, when he was no longer there, I also had no one again to – because we also used to study together at some point.*

One may deduce from this excerpt that Zeb (a Black student) never formed a strong bond with his White peers in the class and there was thus no one to motivate him to study as he was the only Black student. It appeared that there was little or no group work in the first year,

[t] Pseudonym

thus resulting in less bonding between Zeb and the rest of the class. He recalled how he had studied with one Black student in his class but this did not last beyond his first year as Parsons had been unsuccessful in first year and had never returned to the programme. Peer support is a vital catalyst for academic success as the influence of friends plays an important role in their peers' academic studies.[121–123] Peer support helps to instil self-confidence and promotes student wellbeing.[123] If students are motivated and display a positive attitude towards their academic responsibilities, their friends are likely to do the same. Peer support has also been found to be a strong predictor of academic achievement among first-generation university students.[125] Student Isaiah observed that:

And, if I look at the classes that have really big drop-out rates in the years above us, it's been classes that are nowhere near as tightknit as we are. And that's not externally – like, there's no way that they can control that, but I think it does have an effect.

The above statement implies that a student is less likely to succeed academically without strong relationships with his/her peers, thus highlighting the importance of peer support for academic success.

6.3. Theme Two: Academic

This theme deals with the generative mechanisms of an academic nature that generate the absence of academic success in the BEMC degree. This theme comprises six sub-themes, namely, the articulation gap, misaligned expectations and wrong career choice, poor time management, lack of required subjects, linguistic challenges and patient simulations.

6.3.1 Articulation Gap

This sub-theme has to do with the transition from high school to the first year of university. This transition may be overwhelming and lead to students being unsuccessful in their first year of study at university. Frank - HOD indicated as follows:

I think one of the big challenges is that the transition between our current schooling system and university is quite steep and, unless there is an extended programme that would be put in place and which made things a little smoother, it's quite a big jump from where you were at school to be a first-year EMC student. And, I think that what tends to happen is that the approach to teaching – or the approach to learning for the students who aren't successful is unfortunately more of a content focused memorisation process. So, what they do as they try

to memorise the slides, they become obsessed with assessment, and they are so obsessed with the assessment that – and they are so obsessed with trying to commit everything to memory that they don't manage the questions that ask for understanding. In fact, the students really don't develop a true understanding of the concepts and the principles. They are able to parrot the content to an extent but they don't really understand the work.

The above statement highlights the articulation gap that exists among first year BEMC students. This finding is consistent with existing academic literature in South Africa.[72,82,85] Poor academic and social grounding in high school often result in ill-prepared first-year students.[72] The ease with which students adapt to their new academic and social environment plays a key role in academic success.[72] Frank also pointed out that the learning methods used by students are not appropriate for higher education as they use the rote learning they used at high school as compared to understanding subject principles. The latter assertion was supported by other students who pointed out that:

I think there's a different way of studying. In school you get the notes; there's your notes, that's what you're supposed to know, this is what we will be testing you on. When you get to varsity, they go, okay, here's an anatomy textbook, we'll be doing different chapters and you need to know these chapters. And then a chapter is 100 pages so now you need to learn the whole central nervous system.

What about the central nervous system is important? Is it the names of the sketches, is that important? Is the physiology or the processes of how the neurons are – all of those processes, is that what? What in that chapter is what I'm supposed to know? Am I supposed to know everything because you can almost spend a whole year just studying CNS and you still won't know everything about it.

So, having to, I almost want to say, figure out what we're expected to know. It's not like school where you get a nice summary, and this is what you're supposed to know, and you can study three of your handbooks and still be okay, it is still not a lot of work (Julia).

Coming from Grade 12 to first year, the workload is immense. It's a gigantic step between those two and there's no repetition of work. In matric you will go through the same chapter in class maybe two or three times before you have to go and study it. Here you will see the work once, and then you have to study it. So, from that perspective it's challenging (Saul).

Matric was easy, compared to how adult we're expected to be here. In high school they still understand that you're a teenager, you're a child, and they teach you like a child. Here we were told very, very severely, this is adult education, you're going to be treated like an adult. And, so, we would see the work once and we would be tested on this and if we didn't know it, that was our own problem. And learning to keep up with suddenly a lot more work, and work that's a lot tougher, without the experience of having to work as an adult, I think proved a little bit tougher, for me at least, than I had expected (Dwayne).

The above statements indicate that matric had been "easy", as Dwayne puts it. It appeared that students in high school are mollycoddled by being given notes and they are told what to study. While there are various reasons for the pedagogy used in the matriculation year, it appears to have had negative consequences for the students as they struggle to make the transition from high school to university. It also emerged that the precise content to be assessed in the various chapters was not made available to students in the BEMC degree. The students were informed about the chapters they had to study but these could be over 100 pages each. In view of the fact that the high school teaching styles and assessment methods differ from those at university, students are required to acquire different learning styles that suit the more independent teaching and learning styles.[84] The quantitative data suggested that the majority (n = 106; 60%) of the participants in this study were of the opinion that high school had not prepared them adequately for the BEMC degree. Lecturer Ricky added to this discussion by emphasising that:

So, the basic abilities to summarise, the basic abilities to write, the basic abilities to use technology, the basic abilities to – you know, those kind of generic skills aside from the actual content itself, become very, very important, especially if we use more self-directed, more blended learning-type techniques, more techniques where they are left alone on their own, group-work technique, group dynamics, how to talk to people, how to listen to people, how to take notes, etc. I don't think that that is coming through in the less well-resourced schools or the poorer, previously more black township schools, I don't think those kind of things are coming through there.

The above excerpt implies that students from previously disadvantaged schools lack a range of the academic abilities required to function optimally in higher education. These findings support other research on academic success in South African higher education.[16,72,83] The lack

of academic preparedness of Black students may be attributed to the unequal schooling system that was created by the apartheid government and as alluded to in Chapter Three.[16,79] Students from previously disadvantaged schools appear to have deficiencies as they lack the basic abilities to write academically, use technology and function in a group environment.[72] Given that some universities use blended learning methods, it is important that students have a basic understanding of computers and technology. However, this is not always possible in certain resource-constrained schools and this places certain students at a disadvantage at university.

6.3.2 Misaligned Expectations and Wrong Career Choice

This sub-theme deals with the expectations of the students prior to enrolling for the BEMC degree and how this influenced their academic success. It appears that there is often a misalignment between what the students think the course is about versus what it actually entails. Lecturer Owen pointed out that:

I think one of the other problems that we certainly have is students who underestimate the programme. They watch a lot of TV and they come here and it's, like, this is actually not as nice as it seems on TV. Now, you don't just shock a patient and they come back to life. It's not just flying in helicopters, it's not just going on the boat, it's actually having to study. All that stuff happens in third year, it doesn't happen now. So, I think there is also that, where the expectation that the student has from television or whatever, and they come here and they realise that it is quite a heavily loaded course, and they look at their friends who are studying a BCom. at university for three hours a week or whatever. I think for them, it's like "Why am I studying this?". I think that is certainly a problem.

The implication of the above excerpt is that the lecturer felt that the students' expectation of the programme may be misleading them into underestimating the programme. This may be due to the misinformation they see about paramedics in helicopters and boats on television. It is only in the third or final year that students are given an opportunity to fly in helicopters and go on boats. Student Abel further emphasised this point:

I think that's what a lot of first-years coming into this degree need to understand, is that – and that's one thing, I was very naïve too, coming into this degree, thinking that you're going to go to class Monday to Friday and you'll have your weekends off and stuff. In the first week you

start to realise that that's not going to be the case. And, yes, you just need to – like, I just think the students who come into this course, and I think that's why there is such a high dropout rate, particularly in the first year, is because it's very, like, they say, it's very taxing. They don't expect to have their weekends taken away.

Eventually you start to lose contact with friends, or you don't have enough time to spend with your family or whatever, and they realise that that's taking too much of a toll on their day-to-day life, that they would rather be doing something else. So, I think that's something that students coming into this degree need to understand, that it does take a lot of time away from socialising and being with friends and family.

Based on the above excerpt, I am inclined to say that the students may be misinformed about the programme. This misinformation about the programme was reflected in the quantitative data with the majority (54%) of the participants stating that the course was not what they had expected prior to registration. In other words, the students' expectations regarding the BEMC programme are clearly misaligned. Unlike some university students who may not have university commitments over weekends, the BEMC students attend clinical practice shifts during the weekends after attending lectures from Monday to Thursday. The clinical practice shifts commence in first year. This appeared to be challenging, particularly for first year students who may not have been expecting to work over weekends. It appeared that the heavy workload of the programme had negative consequences as the students had little time to socialise with friends and family and thus they were losing contact with them. Social disconnectedness has been associated with harmful effects on health.[189,190] This could, in fact, render students unfit for medical rescue and, should the ill-health persist, they could fail the year. Another student pointed out that:

I believe you may have chosen the wrong course. Because some people will tell you, 'I wanted to do medicine', but they got the nearest thing to medicine, although they didn't know what actually was in store for them to reach the top. So, medicine, there is no physical activities, you don't do rescue. So, someone will say, "Why I am here at 06:00 climbing the ropes? This is not the type of medicine I want to do." So they find that they actually want to be in the medical field but the route that they took is not the correct one. So, sometimes selecting the wrong course will also make you not finish (Zeb).

The implication of the above excerpt is that a student may not complete the programme if it

were not his/her preferred choice of study. One could doubt their desire to do the programme when they should be up early to do rescue training. It appeared that the students are expected to be either on campus or off campus at 06h00 on some mornings. Figures 6.3 and 6.4 illustrate some of the rope rescue exercises that students perform on the programme. These rope systems are fairly complex and may take novice students up to five hours to construct prior to conducting the actual exercise for the day and, hence, the early start. Before departing for these exercises, that are usually 30 to 45 minutes away from campus, an inventory and inspection of the equipment is conducted. A further inventory is conducted on arrival at the training site and at the end of the day. This is done in an effort to ensure that none of the equipment goes missing as it is expensive.

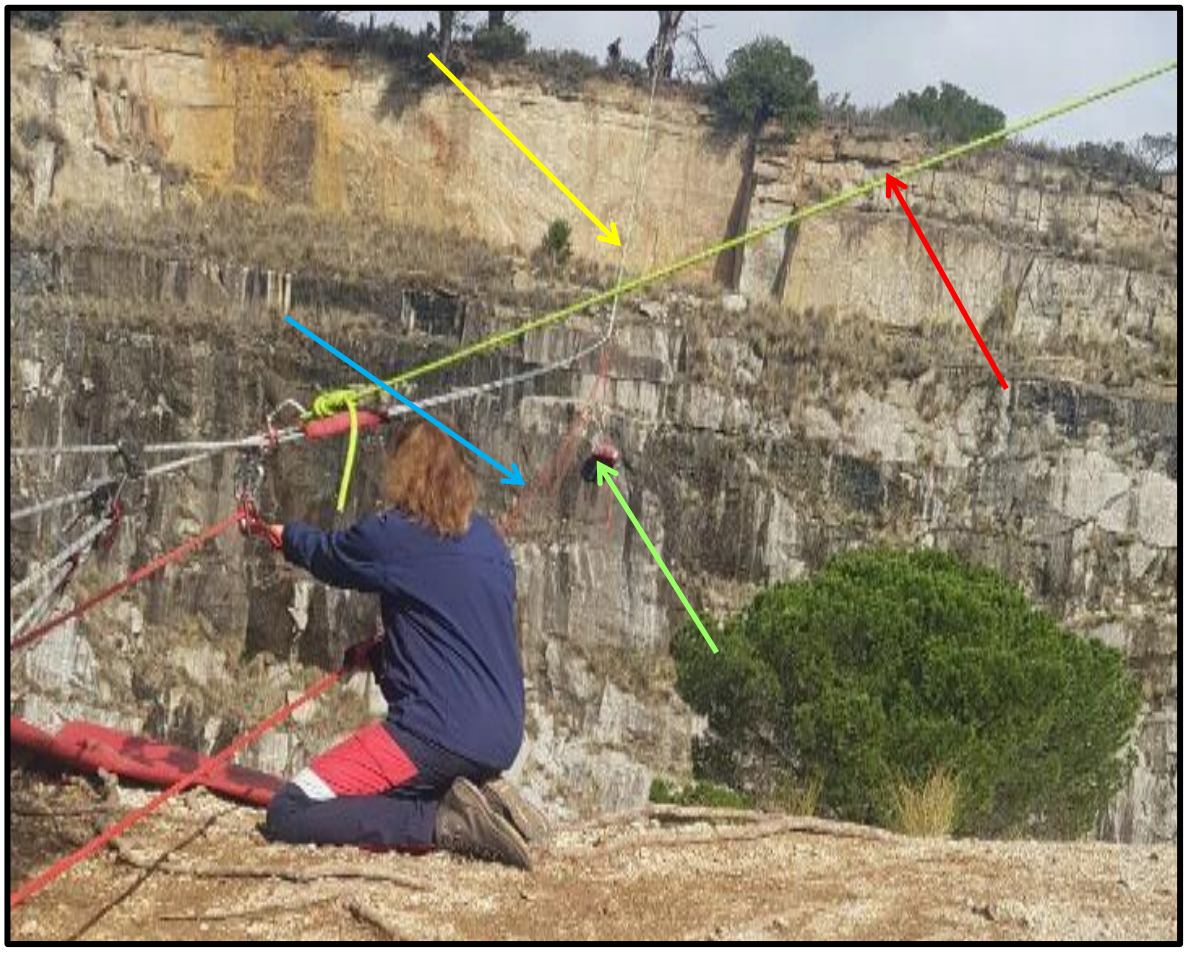


Figure 6.3. Patient being lifted from the bottom of the quarry using a high-line

Figure 6.3 illustrates the workings of a high-line. The high-line consists of two suspended ropes from one point to another (yellow arrow – track lines), e.g. a cableway with a carriage system attached to the suspended ropes that can move left, right, up or down along the suspended ropes using a mechanical advantage system. The high-line is used in cases where a patient needs to be lifted from the middle of a gorge/river and access is from the top only. The blue arrow represents the reeving line (explained below); the green arrow is the stretcher with the patient and monitoring equipment and the red arrow is an artificial redirect that helps to pull the track lines in line with the patient.

Figure 6.4. Tensioning end of a high-line

Figure 6.4 depicts the tensioning end of a highline. At the top is the set-up of two twin tensioned track lines – yellow arrow (two ropes suspended from one high point to another) with a tag line – white arrow (rope attached to the carriage allowing it to move left or right using a mechanical advantage – light green arrows) and a reeve line – blue arrow (coordinates the control of the up and down movement via a mechanical advantage – green arrows. One may argue that a student has to enjoy and understand these complex rope systems to be

successful in the BEMC programme.

The selection of the correct course to study is one of the important factors in academic success.[72] Students who enjoy the course and foresee an exciting career ahead are more motivated to succeed compared to their counterparts who are not enjoying the course and do not foresee an exciting career ahead.[72] However, students also have to choose the correct subjects at high school in Grade 9 to suit their preferred career choice. The challenge is thus that students are quite young when they have to make what may well be a life-changing decision. In addition, they may have little/no information on their preferred career, particularly students from rural areas who have less access to resources compared to their urban counterparts.[72] The university open days are supposed to provide information to prospective applicants on the courses offered at the respective universities. However, these open days take place at the universities leaving students who are unable to attend at a disadvantage. The result is that students come to university without an understanding of what is expected of them, thus exposing them to the risk of failure. Student Diana further added to this discussion by pointing out that:

I can compare this because I studied BSc Medical Science before this, and I finished my degree in that. And to be honest, that was a very – it is a hard degree but this is challenging on every level, because it's emotionally challenging, it's physically challenging, it's academically challenging because you are expected to be like – what's the word now? Performing at each level. So, I think that's where there's a big difference (Diana).

Diana was able to compare the programme with another health science related degree that she had completed prior to studying for the BEMC degree. Although she acknowledged that the previous degree had been challenging, she also asserted that the BEMC degree was even more challenging on every level – emotionally, physically and academically. Lecturer Anil below clarified Diana's point:

If you look at the profession as a whole, it's not like engineering or radiography. Here this person, this professional is exposed to a wide variety of things. Besides just the treating the medical patient or the trauma patient, you actually sometimes are the priest, you are – you're there, you're giving emotional support, this is your first contact with the person when either they are born, or the last contact when they die; it puts a lot of strain on you as a person, because it's not only – you don't have to look after your patient, you also have to look after

family and friends, so you end up needing to have a whole lot of skills that you may not find in other professions (Lecturer Anil).

Anil was referring to the emotionally challenging aspect of the course to which Diana had alluded. As I mentioned earlier, students are rostered for clinical practice shifts from first year as they need to combine theory and practice. They may be placed at hospitals or with ambulances. Emergency calls are unpredictable as the paramedic may be called upon to respond to a range of calls from a baby being born, to a patient who has been gunned down or is dying of cancer. Although bringing a child into the world may bring about a sense of gratification for the student, this feeling may quickly change on the next call when the patient has died and the student has to be present when the news is broken to the family and friends. Students may be expected to communicate the death of a patient to the family to prepare the student for the work after graduation. Furthermore, conducting a declaration of death is part of the scope of practice for students upon graduation. Counselling is, however, made available for students if required through the student counselling services.

6.3.3 Poor Time Management

This sub-theme addresses the inability to manage time appropriately and prioritise work as one of the pitfalls that may result in the absence of academic success in the BEMC programme. Two students acknowledged their inability to manage time as follows:

I failed I think purely because of bad time management. It's not that I didn't understand the work, it's just that I'm a bad student as to managing my time effectively (Student Joel).

I will admit, my time management skills are horrible so, probably, if I sat down and managed my time better, I would have been able to make time for everything. But because I didn't, I kind of made time for one thing only, and then just hurriedly did the rest (Student Hannah).

Both students acknowledge that their time management skills were probably what had let them down in the programme. It appeared that Hannah had focused on one particular aspect of the programme and neglected the rest. She added to this discussion as follows:

I failed two subjects, actually, but both times were because I prioritised other subjects instead, and then paid less attention to those subjects. So, what happened in second year was I failed rescue. But, as you said, that was the year we got crazy stuff in Diagnostics every week. So, I prioritised that and EMC instead. And then I kind of neglected my rescue work, even when it

came to studying sometimes to finish other areas, and then that obviously came back to me.

I think up until fourth year, every subject is dealt with individually, and you see it individually. It is in fourth year you only make the connection, and then you see how all the subjects are important. But I felt, like, up until then, EMC was more important than the rest. I thought they were just accompanying subjects basically (Hannah).

It appeared that Hannah had been more focused on the subjects of Emergency Medical Care and Diagnostics. Emergency Medical Care is the mother subject that is taught from the first to the fourth year of the programme. It is in this subject that students are taught how to diagnose and manage ill and injured patients. Emergency Medical Care IV is moderated externally by a moderator appointed by the Health Professions Council of South Africa Professional Board for Emergency Care to ensure the standard of the assessments is at an appropriate level. Diagnostics is the subject taught in the programme that imparts the diagnostic skills of the various body systems to the students. Student Sheba further added to this discussion by indicating that:

When you are going to study to become a paramedic, you must know the body; you must know how to treat it and how to recognise what is wrong. In order for you to do that, you must understand EMC. Now EMC is broken up into pharmacology, chemistry, that is all only small things that they actually do clarify the understanding of the bigger picture. But you don't know this at the time. So, therefore you are really only going to be wanting to get to EMC subject. This is the subject that matters.

It appeared that the students are 'robbing Peter to pay Paul' – that is, they are prioritising Emergency Medical Care over other subjects as they see this subject as the most important subject as it deals with the core functions of a paramedic – managing the critically ill and injured. Sheba and Hannah were fourth year students at the time of the focus group discussions. After some reflection they came to acknowledge the important role of the other subjects such as chemistry and physics (offered in first year) in their EMC course. Student Noah added to this discussion by pointing out:

The word (time management) is always thrown around by even your school teachers. It's always thrown around but, until you're thrown in the deep end, you actually don't know how to time manage because, if you're passing at school you're just like, "Okay, cool, I'm just going

to plod along carrying on with what I'm doing". Now when you're failing, then you must start thinking how to do time management.

Noah makes an interesting point when he states that, because a student is able to pass at school using certain study techniques; the student then assumes that these same techniques would also be appropriate at university and it is only when a student fails that he/she will reflect on effective time management. Poor time management emerged as an issue in the quantitative data with 60 (35%) participants agreeing that poor time management had impacted seriously on their studies while 59 (34%) strongly agreed and 26 (15%) remained neutral. In other words, 69% of the students cited poor time management in their studying for the BEMC degree. These findings correspond to those of other studies where students also confessed to the inability to manage time effectively during their studies.[71,72] Time management is one of the key academic competencies which plays a vital role in academic success in higher education.[72] However, as a result of poor quality education in high school, some students lack the academic skills, such as time management, required in higher institutions of learning.[72,83]

6.3.4 Lack of Prerequisite Subjects

In this subtheme I deliberate on the impact of the lack of pre-requisite subjects, namely, Mathematics, Life Sciences/Biology and Physical Sciences, on the academic achievements of BEMC students. Although students ought to have two or more of the abovementioned subjects as matriculation subjects as prerequisites for enrolling for a BEMC degree, the study found that 123 (70%) only had all three subjects while six (3%) had not had one prior to studying for the BEMC degree.

When I was accepted by university X[u] *I didn't even have a background of the subjects that we do here, like biology and other stuff, chemistry. At school I was doing commerce and I was very good in commercial subject. But I think I was accepted because of my experience in the field. So, I had to adapt, and it was quite a gap if you look at what year I finished my matric and the time I started here in university, there was a 10-year gap* (Student Sechaba).

Sechaba failed his first year. It appeared that he attributed his failure to the lack of the

[u] I have removed any reference to the actual institution to protect its identity

prerequisite subjects for the BEMC programme. Sechaba had been accepted via the Recognition of prior learning route. Recognition of prior learning is a policy which was introduced by the South African Qualifications Authority in 2002 to redress past imbalances in the education system by recognising the prior experience of individuals in order to increase access to higher education.[191] I mentioned in Chapter One that, at the time of the study, more than 80% of the registered South African emergency care providers had qualified through the short course system. Some of these emergency care providers lack the prerequisite matriculation subjects required to enrol for the BEMC degree.[33] HOD Gordon also mentioned that *"for some of them, they didn't come in with the same matric subjects and at the right level as the younger students in the class".* Thus, recognition of prior learning remains the only access route to higher education.

It emerged from the quantitative data that 101 (57%) of the participants possessed a pre-existing emergency care qualification prior to enrolling for the BEMC degree while 75 (43%) of this 101 had short course training. The possession of a pre-existing qualification in this study was strongly associated with not repeating a year (p = 0.02). Thus, Sechaba had been unfortunate to repeat a year and he seemed to attribute this to the ten-year gap between finishing school and enrolling for the BEMC degree. The average age of the students starting the BEMC degree was 24 years (95%CI = 23–25) which suggests that the majority of the participants were not school-leavers and had a certain amount of life experience before entering university. The participants added to the discussion by pointing out that:

And for me, specific to first year, I failed chemistry. Now, I came into varsity – at the stage that I applied there was a prerequisite for mathematics and science, and I didn't have those. I was still allowed into the course, and the only subject that I failed in first year was chemistry. I had to redo a whole year for the subject of chemistry. And I feel if I had had the background from school, that would have made a big difference, but I didn't. So, chemistry – I didn't even understand chemistry in grade 9, let alone first year varsity chemistry (Student Julia).

I failed first year Chemistry. The first test paper I got back, I got 2 out of 20. It was crazy. I have never seen a molecular form in my life. Being at this age, and finishing matric without chemistry, I think really bit me when I came to do this course (Student Sheba).

Both these students had not taken physical sciences as a subject in high school and they felt this had placed them at a disadvantage in the BEMC programme as chemistry is taught in the

first year. Both these students had been accepted into the programme without physical sciences. However, like Sechaba, Sheba had been a critical care assistant paramedic who had entered the programme via the recognition of prior learning route. She seemed to acknowledge not only her lack of chemistry but also her maturing age as a confounder in completing the course in minimum time.

Although mathematics, life sciences/biology and physical sciences are prerequisites for the majority of health science related programmes, there is conflicting evidence on the link between these prerequisite subjects and academic success as found in the literature. Naidoo et al found that students with higher marks in mathematics, physical science and life science/biology at the end of the first year progressed at a faster rate in health science programmes compared to those with lower marks.[103] Students with higher marks in English also progressed at a higher rate. Naidoo et al. also found an association between life sciences/biology and academic success in the Occupational Therapy, Pharmacy and Physiotherapy programmes while Mathematics was associated with academic success in the Pharmacy programme only.[103] Relatedly, Zewotir et al. established that students with poor Mathematics marks in Grade 12 were most at risk of dropping out from the Health Science discipline.[192]

Another study by Mashige et al. found no association between the matriculation subject scores of students and first-year average optometry results.[104] There was, however, a correlation between Mathematics and first year mathematics and physics score ($r = 0.5$; $p = 0.00$). Similarly, there was an association between mathematics scores and first year biology scores ($r = 0.5$; $p = 0.00$). The study by Naidoo et al. had a sample of 713 students from across various health science disciplines while the study by Mashige et al. comprised 84 optometry students. The difference in sample size may explain the contrasting results.[103,104] Naidoo et al. also indicate that each health science programme is unique and thus the results across the various health science programmes may differ.[103]

This study found that students from township/rural schools were less likely to repeat a year compared to those from non-disadvantaged [former model C] (22%) and private schools (27%). Nevertheless, the 2013 cohort data from three of the four institutions indicate that 20 non-White students had dropped out compared to 11 White students. However, this could also have been because the White students had more financial resources with which to return

to the programme compared to non-White students. That said, the data did not indicate why the students had dropped out. Given that this study had found that students from township schools had done better than their non-disadvantaged counterparts, the findings appear to support the late blooming hypothesis in terms of which students from previously disadvantaged schools eventually adapt to the university culture and "crack the code of academic literacy" in higher education.[83,193]

6.3.5 Linguistic Challenges

In this section I discuss the implications of language as a barrier to academic success, particularly among students for whom English is their second language. The quantitative data showed that English was the mother tongue of 81 (46%) of the participants in this study. Thus, English was the language of instruction for the majority of the participants (n = 95; 54%) for whom English was a second language. Student Ray pointed out that:

For me, I came straight from high school, an Afrikaans high school, so coming here to an English medium university, and, then, the workload on top of that just had proved a bit too much for one year, so I failed anatomy and EMC theory in my first year. The movement was just a big step.

And then coming from Afrikaans to English, some people who were in first year with me, I could barely speak a single word in English, and then trying to study in English, write in English, think in English, definitely proved to be difficult.

It appeared that Ray had been unsuccessful in first year because he had found the transition from high school to university overwhelming. In addition, there was the language barrier as he was Afrikaans speaking with English as the medium of instruction. The following students had this to say:

The language barrier is a big deal. I also came from an Afrikaans school, Afrikaans household and, all of a sudden, everything is in English. Now it's not just – it's new terms, it's just understanding basic concepts, all of a sudden understanding them in English, having to, I almost want to say, think in English when you come from an Afrikaans school where everything is Afrikaans. So, I think that plays a big role, and it's difficult to comprehend all of this (Student Julia).

And it's not just English terms and everything but having to process the English language is a

bit slower than having to process your home language. Like, it just happens slower in your brain. But, in first year, you physically have to listen to each and every word and process it and almost translate it before you understand what they say (Student Esther).

But the things for an English person is they understand the word immediately. Okay, they also have some words to pick up but, for me, in the beginning I tried to translate it and then I realised it's not working. You have to study the work in English and if you don't understand go and look up that word in English because Afrikaans speaking in this career is much more difficult than English. It is much more difficult. But Afrikaans is my first language. It's the language I think in so, obviously, I have to translate whatever I am thinking into English before I can ask a question (Student Batista).

The challenge for second language English speakers is not just the English but also understanding the discipline specific discourse i.e. medical terminology. It appeared that the students had to translate the words in their minds in order to understand certain aspects of the lectures. Some of the participants agreed (n = 21; 12%) that the language of instruction had impacted seriously on their studies while 19 (11%) strongly agreed. These findings are supported by numerous other studies.[71,72,85]

In her study, Wilson-Strydom suggested that language competence and confidence are one of the key cognitive strategies required by students to ensure a smooth transition from high school to university. She also argues that language competence and confidence is a prerequisite for the other cognitive strategies required by first year students, for example, the desire to learn, the ability to participate in group activities, listening and understanding other people's viewpoints in dialogue and debate and combatting the fear and anxiety which impact adversely on learning. The study found that the second-language English students in this study had been disadvantaged as they had had to construct meaning in a language other than their home language. It has been argued that assessing students in an unfamiliar language actually assesses the students' language proficiency rather than the students' aptitude or potential.[85] However, the lecturers who participated in this study were cognisant of the students' language challenges as they pointed out:

So, the barriers that I deal with mostly are language. I mean, language is always going to be a problem. Actually, the minority of my students are English first language speakers, so they are in the minority. Even here, Afrikaans is a big one, is the majority, and then the – so, I

suppose the majority of my students are actually Afrikaans speaking, and there are, I suppose, an even mix of first language English and black African languages.

So, there I find they have to work harder, they struggle a bit more, they have to turn words over in their minds more often than an English person for whom it is just second nature really – it's their nature, it's not second nature, it is their nature. So, it is just the meanings that they attach to it. So that's the one aspect of it.

Then, in their writing, so, if they have to answer a long question or write an essay, or especially when they have to write reflective reports etc., I find them being very blunt in their expression. So, they don't have the vocabulary, they don't have the sentence structure, the grammar to really put down on paper what they mean or what they say. So, it's frequently I feel that they lose a lot of their own meaning because they can't express it properly, or it's written as a series of independent thoughts, they can't just flow. So that is why I say language becomes a bit of a problem" (Lecturer Ricky).

If you come from rural Area C and one of those schools that was burnt down last year, you probably had an English teacher whose third language was English, so – and I chatted to a colleague some time ago and he said the problem is that students get taught English by – so, let's say they come from an area where SePedi is the main language, they get taught by someone whose main language is SePedi and they then learn SePedi English as opposed to English-English. And then they arrive at university and the textbooks are written in academic English and they have to learn all these new terms (Lecturer Owen).

The lecturers acknowledged that the language challenges faced by their students would always be a problem because their students were predominantly Afrikaans speaking while some learnt English in an African language. This latter finding is consistent with that of Jones et al. who also found that some students learn English and Mathematics in isiZulu.[72] The language challenge faced by second language English speakers result in certain communication barriers to effective participation in various academic activities.[71,72,85] Linguistic challenges may also impact on the students' social integration at university in terms of their extra-curricular involvement and relationship with their peers. This in turn might exacerbate feelings of loneliness and homesickness.[72]

Furthermore, the ability to communicate effectively in class discussions is compromised due

to a lack of confidence while the inability to critically engage with the academic discourse and express their thoughts in a logical and coherent manner in assignments is yet another communication barrier that second English language speakers have to overcome. As Lecturer Ricky stated: *"they don't have the vocabulary, they don't have the sentence structure, the grammar to really put down on paper what they mean or what they say*." In addition, effective participation in class requires a student to understand the language of instruction with failure to do so possibly resulting in little or no understanding of the class discussions. Lastly, lack of language confidence may discourage students from seeking help with this possibly having further negative consequences for students who are already in need of help.[71,72,85]

6.3.5 Patient Simulations

This sub-theme deals with the way in which patient simulations are a confounder to academic success in the BEMC degree. The students elucidated as follows:

That's the other thing that we also had to repeat in third year. So, I repeated first year, and then we both repeated third year. And, of all of our stumbling blocks causing us to fail third year, I think all of them were prac. Practical exams are a hell of a stumbling block, I think, for most of us, and for me it's literally the biggest thing. I think I passed one sim in third year, and I've never had – being on the road practically, I've never had bad reviews. I've never had somebody tell me, you don't know what you're doing, so walking into a sim and looking like a complete idiot, not knowing what to do, it has to be the sim, because, when I treat the real patient, it's not the same. So, sims for me are a hell of a stumbling block and, even now, sometimes I sit in a sim and I go, okay, so now what? And I think for most of us, sims are a big issue (Student Julia).

So, with simulations I'd say there are two things that I have an issue with. So, it's the nerve part of things, so, I'd say, in inverted commas, you have a certain level of brain freeze going on there, you know. So, it's natural for anyone, especially for those students who are not confident enough to express themselves and be in an environment where there are a lot of people looking at you and you have to perform, you know what I mean.

And, then, the second part of it is that practicals are not so practical, if you know what I mean, in a sense that we have a doll – a doll and a patient are two different things. You have to learn that the chest – you don't just listen to the chest, you have to know where the speakers are

for you to know what sounds are transmitted, you know, because the plastic itself transmits a certain kind of sound.

And, then, with the expectations of the lecturers themselves, so, in the sense that these will say to you do one thing on the road, and it's deemed competent, or best practice, let me say that. And then when you come and apply the same knowledge that you've learned on the road in a simulation environment, it's not right (Student Judith).

It was clear from the above responses that patient simulations are a stumbling block for some students in the BEMC programme and that patient simulation is the most likely cause of students repeating the main subject – Emergency Medical Care. A patient simulation represents real patient clinical scenarios with standardised patients or manikins.[194,195] The aim is to facilitate learning in a controlled environment without the risks of the real-life experience.[195] Fidelity is the term used to describe the level of realism that varies with the type of scenario and the resources available.[194] Performing clinical skills is not the primary aim of simulations and, instead, students have to demonstrate the following abilities: problem solving, communication with the patient, bystanders and receiving hospital staff and as well as the technical skills required to achieve particular outcomes in a medical or trauma context.[196]

Figure 6.5. Picture of a manikin used for patient simulations. Source: http://www.gaumard.com/products/pediatric-neonatal/newborn

Figure 6.5 represents a picture of a manikin used for patient simulations. These manikins vary

in their capabilities. Some may talk, cough, vomit and make breathing sounds and show pulses and different heart rhythms when an electrocardiogram is connected to the manikin in question. The advantages of using manikins in medical simulation include the following:

- Students are able to practise and apply their skills in realistic scenarios
- The learning may be designed for a specific need
- Allows unlimited clinical scenario practices that would, otherwise, be dangerous in a real life-setting
- Allows for multiple practices to ensure proficiency
- Allows reinforcement of guidelines as well as the evaluation of individual or group performance
- There are no patient safety concerns
- Clinical scenarios may be paused at any point to provide feedback.[194–196]

Although the simulation aims to replicate the management of a real clinical scenario, the responses cited above suggest that managing a real patient and a manikin is not the same. It appeared that students need to feel comfortable expressing themselves in a simulated environment and that poses a challenge for students who are uncomfortable in doing so. The manikin itself is also not entirely identical to the human body and thus students need to be comfortable in respect of where to auscultate the chest and palpate for pulses. Additionally, there are often at least two to three assessors, including the moderator, in the simulation room during a simulation assessment that is also video-recorded. The presence of these assessors and moderator/s during the assessment may be one of the contributing factors to the anxiety alluded to by Judith.

It would appear that what students are taught to do in practice sessions differs at times from what they are expected to do during assessments. The lecturers elaborated on this point which seems to create confusion for students as they are unsure of the correct patient treatment pathway to follow. The lecturers expounded on why students find simulations challenging as follows:

And my opinion is that one of the reasons why simulations are so difficult for students may well be that they are encountering the simulation in a different format when they are being

assessed. I will give you an example. If you set a high-fidelity sim for the assessment so, in other words, in the assessment you expect the student to speak to the doll as if it were a real patient, you expect the student to actually open the drip and connect it but, yet, when you do class sims you allow them to verbalise their actions. These are huge differences.

Now, they come into the assessment and they do what they have been doing all along in their sim classes and then they fail, and that creates a feeling of – and I think that that is maybe an area we need to work on, if you are going to have a way that you use sims in the learning phase, the formative phase, to be true to that in the summative phase. You can't suddenly have a different format.

And I think the other challenge with simulations is that simulation is really doing what I said earlier, it's moving the student away from content knowledge and robotic OSCE like performance to the area of critical decision-making, and this is, I think, where we find students struggle. And, in actual fact, it is quite appropriate that they struggle because that's what we want. That's the sharp end of the academic spear, to get someone to critically reason, think and apply knowledge, and that's what happens in a sim. A good simulation should require these competencies to be demonstrated (Lecturer Frank).

I think it (simulations) can be a confounder, and one of the things that we are looking at the moment is where there's almost like a double jeopardy in a simulation. So, we had a recent case, for example, where a student was required to nebulise a patient in a simulation and this student, during that simulation, couldn't assemble the neb kit with the elephant tube.

In line neb. Couldn't do that. So, as a result now, the student failed the simulation but, when we reflected on it and when we discussed it, should the student fail the simulation just because of that one aspect? In other words, I can't assemble a neb kit, therefore I fail the simulation. I think that is like a double jeopardy. So, you have really dug your hole, you can't do this thing. But, if you think about it, it was just like, because of the stress of that simulation, here is somebody, I mean, this is a person who is already an ILS practitioner, years of experience. He just hit a blank for that particular thing.

So, essentially, what you are saying is that he left a question out of an exam paper, he wouldn't have failed that paper necessarily. He could have still gone and answered the rest, he wouldn't fail that. So, what we are looking at now at the moment is saying, right, fine, stop that at the

point and say, okay here – hand him a thing, now carry on with the simulation, and are you going to make other critical mistakes? As opposed to saying "Well, that's it, now you couldn't do that. You couldn't get past that point, you have failed the sim" (Lecturer Gordon).

Thus there appears to be a mismatch between how simulations are carried out in teaching and for assessments[v]. For example, during teaching, the students may be asked to perform a blood pressure measurement and the lecturer may give the students the reading in the interests of time as each simulation takes a minimum of 15 minutes. However, during the assessment, it seems that the students may be expected to perform the actual blood pressure measurement on the manikin and that failure to do so results in an unsuccessful assessment. This variation in teaching and assessment may be one of the causes of the students' anxiety during a simulation assessment. Unlike an objective structured clinical evaluation (OSCE) that focuses purely on clinical skills, a simulation requires students to apply their theoretical knowledge to manage a particular condition/injury. Thus, students have to apply their minds to make decisions based on evidence and decide what medication/s to administer (if indicated) and why. It is for these reasons that Frank asserted that "*it is quite appropriate that they struggle*".

Lecturer Gordon uses a past simulation assessment to explain why simulations may be a confounder. A student had failed a simulation because he was unable to set up an in-line nebuliser to nebulise a severe asthmatic patient. Figure 6.6 shows an in-line nebuliser.

The in-line nebuliser is used in cases where the patient is unable to breathe adequately on his/her own due to a lower (e.g. asthma) or upper (e.g. anaphylaxis) airway obstruction.[197] The in-line nebuliser is then assembled with appropriate medications to relieve the airway obstruction. The bag-valve-mask (red arrow) is squeezed to facilitate the movement of the medications from the nebulisation chamber (green arrow) via the T-piece (blue arrow) to the patient's airway.[197] Lecturer Gordon argued that a student should not fail just because he/she is unable to assemble the in-line nebuliser as the student may simply have been nervous. He further argued that a student is unlikely to fail if he/she miss one question in a theoretical exam. On the other hand, it may be argued that it may prove fatal if an emergency care

[v] Students are not informed of the clinical scenario for the simulation assessment until they enter the assessment venue.

provider fails to assemble the in-line nebuliser to administer the appropriate medication. However, it seemed that the department in question was re-evaluating how it assessed patient simulations in the interests of being more student-centred.

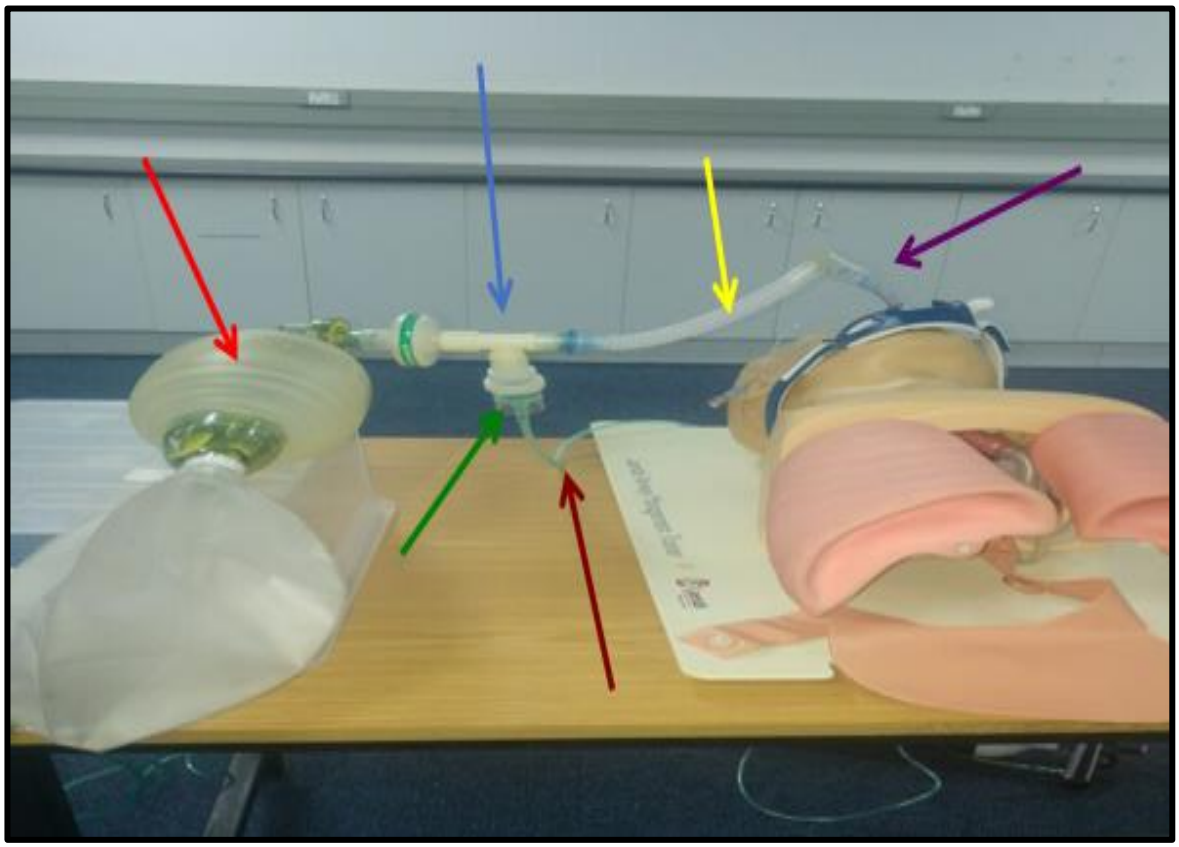


Figure 6.6. Picture of an in-line nebuliser[w]

Other lecturers provided alternative explanations as to the reasons why simulations are challenging for students by pointing out that:

What we all need to realise is that higher education in emergency services is still actually relatively new. I know it has been going for 20 years or so in terms of the National Diploma,

[w] The set up includes the nebuliser chamber (green arrow) with an anti-spill tee connector (blue arrow) attached to corrugated tubing (yellow arrow) with an elbow adaptor attached to an endotracheal tube (purple arrow). The brown arrow indicates oxygen tubing from the oxygen source to the nebulisation chamber to create a mist. The bag-valve mask (dark red) is used to push oxygen containing the medications into the patient's lungs.

but those National Diplomas were pretty much run much like CCAs were, as was the BTech. And the BEMC – even the first BEMCs were – because the big limitation is that, as lecturers, we ourselves are all products of the old system and, when we first started, we didn't have tertiary qualifications in education. We hadn't been exposed to the discussions, we hadn't done the reflection that is necessary, we hadn't read the books, we hadn't been exposed to other educators. And, as we ourselves matured as educators and not just became professional EMS practitioners, but professional educators as well, our thought processes and everything changed too. So, we are still very much the actual BEMC, the degree programme is still too young for it to be expected that these kinds of issues won't arise. We are all still learning. (Lecturer Ricky).

What makes us different from the CCA? What makes us different from the National Diploma?' And the way we've been doing simulation is the way simulations have been done for the past 30 years in EMS training (Lecturer Robert).

The above responses acknowledge that paramedic training in higher education is relatively new (±20 years) with the lecturers further maintaining that the teaching and assessment of patient simulation has not evolved since the inception of the National Diploma Emergency Medical Care (initially National Diploma Ambulance and Emergency Technology). In view of the fact that the simulation training has remained unchanged over the decades, they argue that the simulation training in higher education courses is no different to that in the 9/10-month paramedic programme. This may be attributed to the BEMC programme lecturers who are, themselves, graduates in the National Diploma and the Bachelor of Technology in Emergency Medical Care. In addition, because some BEMC programme lecturers are clinicians with no higher education experience, it may take some time to develop pedagogical strategies that ensure a student-centred approach to teaching, learning and assessment.

6.4. Theme Three: Personal

This theme focuses on the participants' personal experiences that may have resulted in the absence of academic success in the BEMC degree. This theme comprises the following five sub-themes, namely, lack of maturity, personal problems, study protocol, psychological impact of failing and reflecting on failure.

6.4.1 Lack of Maturity

I discussed the lack of maturity as a generative mechanism for academic underperformance in the BEMC degree. Student Lois pointed out that:

I don't believe that you should be allowed to come from high school, I believe that you should have previous experience. I don't believe that someone who is 18, and some people finish high school when they are 17, I don't believe that they are equipped to come straight from high school. For me, personally, I think if I said to someone – if they said to me at the end of matric, 'I want to come and do this' I would advise them to first go and volunteer, I would advise them to first go and do something else, and then come here. I don't think that they should be coming from high school to here.

At 18 you're not emotionally equipped to see dead people. You come from a suburban – most of us come from a suburban area.

It's not racist [laughter], *but, I mean, you come from a place where you're protected. High school, you were sheltered from everything. Then 18, during your shift you see dead babies and you see dead people lying on the side of – emotionally you're not equipped to handle that kind of stuff. I don't even think people that are 40 or 50 are emotionally equipped to handle that kind of stuff. And, then, you go and speak to someone about it, firstly, student counselling, they don't know what we see, so you go, "I saw a dead body", they're, like, "How does that make you feel?"* [laughter]. *Then you go upstairs and you speak to them (lecturing staff) and you say, "Listen, I saw something that traumatised me", "Okay, cool, well go see student counselling. That's what we do here. If you don't like it, de-register".*

At 18 you have no emotional – you're so not equipped to deal with the stuff that we see, the stuff that we – when you're treating someone who is so much older than you, they're always like, "You're 18 years old and now you want to do what on me?" It's very difficult.

Lois appeared to be suggesting that BEMC students who come straight from high school suffer from multiple discursive dissonance – the conflict caused by the demands of early leadership and skill development.[198] In other words, paramedic students may be judged on their ability to manage patients and respond to certain stressors inherent in the profession such as seeing dead babies.[198] Lois's response was not altogether surprising, particularly among health science students. Health science students often struggle with the moral and ethical decisions

they are required to make and this may be attributed to a lack of emotional or intellectual development.[179] It is for this reason that Lois advised students who intend to study the BEMC degree should first volunteer or "*do something else*" so that, hopefully, they would be more mature by the time they register for the BEMC degree. All the participants in this focus group agreed with Lois' opinion on this matter. Academic maturity (students with prior a Bachelor degree) has been identified as a possible predictor for academic success among nursing students.[199]

The benefit for students with more experience and greater maturity is that they have usually developed coping mechanisms which enable more resilience. [199] The assertion supports Lois's point that an 18-year old coming straight from high school is emotionally ill-equipped to deal with some of the incidents to which paramedics respond.

While the response from the lecturing staff may appear cold and uncaring, suppressing emotions is often a coping mechanism which is used by paramedics and student paramedics to cope with the harsh realities of the job.[200,201] In addition, there is the "got to deal with it" attitude and gallows humour which are also used as coping mechanisms.[200,201] This may explain the "deal-with-it" attitude expressed in the academic staff member's alleged response of "*That's what we do here"* although the response may also suggest compassion fatigue.[202] Research has found that one of the coping strategies used by paramedics is to emotionally detach themselves from the patient in order to manage their emotions – also known as buffering.[203,204] In her study, Filstad established that emotional management among paramedics is learnt on the job through practice and that it comes through experience.[200] In other words, although resilience may not be an inborn trait it may be developed over time by facing difficulties.[204] This assertion would support Lois' argument that students who enrol for the BEMC degree should volunteer first to develop the resilience and coping mechanisms required for paramedic practice.

It seemed that there was little faith in the student counselling services as Lois maintained that the psychologist/s at the student counselling services had little or no knowledge about student paramedics' experience during clinical placement. It emerged that *"How does that make you feel?"* was the standard response student paramedics receive when they see a psychologist. However, this response would seem to be inadequate when dealing with their emotional difficulties. On the other hand, Clompus et al. found that counselling sessions were

helpful for paramedics who accessed the psychological support.[204] The majority of paramedics who accessed the psychological support were female.[204] This may be the result of the masculinised paramedic environment which results in it being regarded as shameful to openly share emotions. However, this may lead to depression, burnout and compassion fatigue which may in turn result in academic underachievement.[202]

6.4.2 Personal Problems

This sub-theme discusses how a student's personal problems may become a confounder for academic success. The following responses illuminate this:

You see, my distractions were all domestically related because I got married and had a baby, all hurriedly, because my girlfriend was pregnant at the time. So, we got married all hurriedly. Then there were factors that she couldn't understand that I needed to do. It is still going on basically. I am still trying to get through that barrier. But I think there has to be – especially if you are married and living with your partner, you need to establish some sort of goal and explain to them that you are doing this for the both of us and they have to compromise in a sense. However, that is not always the case (Student Isaac).

I had my own overwhelming amount of personal issues regarding court cases and divorce (Student Ran).

They could be having personal problems, personal issues either again related to finances, or it could be things that are happening at home; parents are separated, parents are divorced (Lecturer Gordon).

So, there are personal factors. So, real life examples were, there was one student, for example, who was abused at home, physically abused, and that had a major impact on her studies. She was failing nearly every single subject in the first year … So, obviously as a lecturer and as the programme facilitator, and even take it up with the head of department, but there is only so much we can do. So, we've managed to get some information from the police on the local community to motivate her to come and stay at university residence, so to take her out of that environment. And then we thought that would be the end of it but then her daughter got cancer (Lecturer Raphael).

The above responses show that students' personal problems may impact negatively on their academic achievement. From a quantitative perspective, 61 (35%) participants agreed that

personal problems had impacted seriously on their academic studies, 41 (23%) strongly agreed and 43 (24%) were neutral. In other words, 58% of the participants had experienced personal problems that were either domestic or financial and which had distracted the students from concentrating fully on their academic activities. It also emerged that, despite the Emergency Medical Care Department's best efforts to assist certain students, there were sometimes personal concerns that were beyond the department's control. Although mature students have the added advantage of experience, they also often have other pressing matters that they have to address, such as taking care of their families compared to their younger counterparts.[199]

6.4.3 Study Protocol

The focus of this sub-theme is on how the students' study protocol may result in their being less successful in their BEMC studies than may otherwise have been the case. There was some self-reflection from the students on the reasons why they had been less successful. They pointed out:

At the beginning I thought it was nice to have learner guides, I didn't realise the importance, that they actually – as it says, they guide you, your marks, what you have to do, provide examples of how you are supposed to complete assignments and things like that. I just took it as – I just took learner guides as something that lecturers had to give to students but I didn't think it was of that much importance. But now I use it all the time. That is how I go through what I need to study. I am going to use that. Because I realise now they have all of the outcomes that are required and all of that, it was never a big important factor for me in first and second year. The next three years and this year, it has been way important, much more important (Student Gabriel).

I think it is laziness. I blame myself, actually. I was very lazy, and the amount of work, that homework that we get, it is like – and you have to do it, and you have to be online, you have to submit online. I was lazy. Just laziness basically (Student Isaac).

I would say in first year it's more like I had varsity fever type of stuff. And, at the same time, having just come from high school, I didn't have that medical background. So, it was more challenging to me to try and just put myself into the medical terminology and everything that is going on. I didn't have that basic understanding, up until when I repeated in 2014. That's

when I started understanding what is going on and everything, and everything started making sense to me, like all the medical stuff that we were taught and everything. But, in first year, in my first year in 2013, it was more, like, okay, me playing around, the varsity fever, not understanding exactly what is going on in the course … it was too much of parties, women and everything [laughter] (Student Monde).

It was possible to draw at least three inferences from the above excerpts. Firstly, there were some students who appeared to be less successful because they did not become acquainted with the study guides. It is thus possible to infer that some of the students did not consider the study guides to be a useful tool. Gabriel was not the only student to mention this and the other students agreed with him. Gabriel was in fourth year at the time of the focus group discussion and has now completed the BEMC degree. It appeared that repeating second year had been a 'wake-up call' that made him use his study guides.

The second inference relates to student apathy towards their studies. Isaac was also a fourth-year student who had repeated a second-year subject – Diagnostics. He had mentioned that he had often not completed the homework they had been given for Diagnostics. When asked "*What do you think was the rationale behind not doing the homework?*" Isaac had responded as quoted in the excerpt above. However, through self-reflection Isaac had acknowledged that he repeated Diagnostics just because he had been lazy.

The third inference relates to 'varsity fever' which referred to be too many parties and dating of women. Everything had started to make sense for Monde after he had repeated a year in 2014. It is, therefore, possible that things may have made sense for him sooner had he concentrated more on his work than on varsity fever.

Finally, Monde also attributed his failure to a lack of understanding of the medical terminology. Understanding the medical discourse is extremely important if students are to make sense of the medical literature. However, Monde had only understood the medical discourse after repeating a year.

The above excerpts suggest that students often engage in critical introspection after they had to repeat a year. The students were honest and transparent in acknowledging their role in their academic underachievement. These findings are similar to those of McGhie who found that students admitted to failing because of their own negligence and that this had then

increased their personal agency to achieve academic success.[71]

6.4.4 Psychological Impact of Failing

This subtheme focuses on the effects of failing on the students' psychological wellbeing. It appeared that failing has an impact on a student's motivation and self-esteem. The students pointed out:

I failed one subject in first year, and I found I would just get despondent so I would stop listening in class and then a big test would come up and I would be, like, I honestly don't care about these results. I would just not study because I didn't care, I was, like, "There's no point, I'm not going to pass so I might as well not stress myself out".

I had achieved a lot in, so, in high school I was an A student, and then coming here and, suddenly, my average mark is 50, it's soul crushing. So, when you start failing you're just, like, "No, I can't do it" (Student Micah).

The psychological impact of failing is quite bad if you're not used to it. I mean, coming from school, school is easy … there is nothing really tricky to school. So, when you're not used to it and you fail a subject here you do feel stupid and a loser, I suppose (Student Joel).

Half way through second year I was done. I was, like, I don't care if I fail, I want to repeat it, I feel like such an idiot, I don't know what's going on, this and that and whatever. And friends here and family at home were, like, "Listen, it sucks. We know what's happening but, come on, put on your big-boy pants, strap them up and just push through it". And by the end of second year I was, like "Hey, I'm passing, yes, woohoo" (Student Enoch).

The responses above demonstrate the negative consequences associated with failing at university. Other students also shared similar sentiments during the focus group discussions. The students appear to have lacked motivation and they had felt helpless and hopeless. These symptoms are associated with depression.[205] The cognitive theory of depression claims that the negative thoughts generated by dysfunctional beliefs give rise to depressive symptoms.[206] Dysfunctional beliefs include feelings of inadequacy, i.e. (i) I am useless, (ii) All my attempts at success result in failure and (iii) The future looks dismal.[206] The three symptoms are known as the cognitive triad.[206]

Academic underachievement has been associated with depressive symptoms at university

resulting from a range of academic stressors that students encounter at university.[207–210] There is often an increased prevalence of depressive symptoms among university students.[209] Furr et al. found that 53% of 1455 students reported that they had experienced depressive symptoms since entering university with academic results being the biggest contributory factor to depression. In fact, 9% reported that they had considered suicide.[211] These depressive symptoms that arise due primarily to academic underachievement may lead to a decrease in the student's academic productivity, thus lowering the student's motivation and desire to learn. This in turn leads to a further decrease in academic performance.[208,209] The depressive symptoms and the low academic results may then exacerbate each other in a vicious cycle and leaving the student with little hope of succeeding.[208,209] However, in the main students with high self-efficacy possess more motivation and belief in themselves, thus enabling them to perform better academically than their counterparts with low self-efficacy.[212] In addition, support from family and friends plays a key role in maintaining student motivation.[107,130,180] This was evident in the case of Student Enoch who had been underperforming academically during the year but had ended up passing the year with the support of his friends and family.

Some students appear to regard failure only in a negative light. Student Joel admitted to feeling stupid and a loser simply because he had failed to understand why he is not passing and yet his fellow students are passing. Kiyosaki attributes the fear of failure to the schooling system which teaches students that to fail is bad.[213] Kiyosaki asserts that failure is part of the process of success and is inevitable at some point in one's life. Accordingly, one should not be afraid of losing or failing as it is acceptable to make mistakes on the path to success as the valuable lessons may come from reflecting on one's failures. In addition, students ought to learn that academic success is not a test of character. Unfortunately, society portrays failure in a negative light, thus placing students under added pressure.[209] Nevertheless, if one is unsuccessful, it should be a matter of 'What can I do to ensure that it does not happen again', and then trying again.[213]

6.4.5 Reflecting on Failure

Contrary to other themes above that discussed the mechanisms that generate the absence of academic success, this theme focuses on the students' change in their attitude towards their studies as a result of critical thought and insight. The students had conceded that they

had been ill-equipped to progress to the following academic year. They reflected as follows:

I only failed my last sim (patient simulation) last year, but it was such a big sim and I did so badly in it that I was unable to then move into fourth year. So, it made me fail my entire year – that one exam. That was very difficult because I just felt that one more chance would be enough. But now, looking back on it, actually that did make sense because maybe I actually wasn't ready to move to fourth year.

I do feel that this year I'm a lot more confident; I understand my work a lot better. I feel that I wasn't ready to go to fourth year, looking back on it. I do feel failing third year has been one of the biggest blessings in that way (Student Lois).

For me as well, also, at the time it is horrible, you don't want to stay back. You just look to your future and you want to progress out there and go on with your life, but, now, if I look back at it, there's nothing more I actually wanted. I couldn't be happier than actually staying an extra year. And not only the classmates, it's a better class group than the year ahead. It's the best thing that happened to me, I've learnt a lot. They say if you repeat a year you actually grow five years ahead of yourself, and I could see it a lot within myself personally, and I could see it was the best thing for me (Student Josiah).

The above excerpts indicate that the students appeared to have embraced failure and learnt valuable lessons from their failure. They seemed to have used their failure as a self-reflective tool to recognise where they had gone wrong. The fact that failure has the potential to build character was evident in Lois who, since failing, was more confident and understood his work a lot better. Failure and defeat have the potential to provide some valuable insight into where one has gone wrong. It was for this reason that Esther asserted: *"You can't think of a failed attempt as a failure. You have to think of a failed attempt as an opportunity to try again"*. In other words, failure is a part of life and one must see it as an opportunity to learn from one's mistakes and try to succeed the next time. Student Julia added to this discussion as follows:

And sometimes you actually need failure, and I'm speaking of personal experience. All of the things that we said about third year, yes, there are contributing factors. Yes, sims were sh##, yes, whatever. That's a fact. Did I need to redo third year? Yes.

If you gave me – I did my first third year in 2014. If, by the end of 2014 you had said to me 'In a year's time you'll get a drug bag and the response car keys and you'll have to be on your

own'. Hell no. Fourth year is – and that's what it is to me, is a year in which you've pretty much settled in your ways. Now you know what you're doing, kind of. You just have to figure the last couple of things out and make them work for you. You have to smooth out the edges.

If you don't walk out of third year being comfortable with what you have to do, whether that's paralyse somebody, or whether that's to declare somebody who is in agonal rhythm, or whatever; if you're not comfortable with that at the end of third year, you will never be comfortable with it.

So, third year, to me, was a make or break year, and I think it did me bloody good to repeat it. Like I said, there's still a few edges that need to be smoothed out in fourth year, a couple of things like ICU and those things, which are all building blocks which go on top of third year. You can't not be comfortable by the end of third year.

Thus, Julia asserted that one needs failure at times. She felt that she had been unprepared to progress to the final academic year although, as discussed above, she still had concerns around patient simulations. Repeating a year appeared to have made her reflect on her academic journey and she had realised that she was unprepared for fourth year. Failing has made her appreciate that, by the end of third year, the BEMC student should be reasonably comfortable managing critically ill/injured patients because the student would be on his/her own in a year's time after completing the programme.

Unlike other health professions, there is no internship for BEMC graduates post-graduation. The students may immediately register with the Health Professions Council of South Africa Professional Board for Emergency Care as Emergency Care Practitioners after they have met all the programme requirements. Emergency Care Practitioners practise as independent emergency care providers and manage patients and administer any medication/s within their scope of practice without requiring either permission or oversight. Part of the scope of practice in the Emergency Care Practitioner register is rapid sequence intubation. This entails administering an induction agent (sedative) followed by a neuromuscular blocking agent (paralytic) to create optimal intubating conditions.[214] The respiratory muscles are also paralysed and thus the patient is not breathing once the paralytic agent has taken effect. Rapid sequence intubation is considered to be the ideal standard for emergency airway management in patients without a predicted difficult airway.[214]

Rapid sequence intubation is, however, not without challenges as failure to insert the endotracheal tube means the paralysed patient is likely to die of hypoxia (lack of oxygen) should he/she remain unventilated.[215] This may, in turn, create some anxiety as the intubating paramedic is wholly aware of this. It is for this reason that Julia had emphasised by using a double negative "*You can't not be comfortable by the end of third year".* Julia understood that once she registered, she would receive a drug bag and a response car and start working on her own. There are some employers who place new graduates with another experienced paramedic for a few shifts before placing them on their own. It is clear how important it is that students feel comfortable and confident in exercising their skills by the end of third year in preparation for the end of fourth year.

6.5. A Critical Realist Perspective: The Laminated System

The academic environment is a laminated (tiered) system where learning is the expected emergent outcome.[157] The academic space has an ontology, i.e. it exists and consists of various laminated systems, namely, biological, psychosocial, psychological, socio-cultural, socioeconomic and normative. The academic environment is characterised by causal mechanisms with real structures that are causally effective in either constraining or enabling academic success.[157] The causal mechanisms are interrelated at multiple levels to determine academic success although it is not possible to reduce academic success to any of these levels.[156,157] In addition, the academic environment is also an open system where one is unable to observe a constant conjunction of events. Using the laminated system, Table 6.1 maps out the generative mechanisms discussed in this chapter where absence of academic success is the emergent entity. Admittedly, this is a transitive depiction of the intransitive.

Table 6.1. Mapping out the laminated system in Chapter Six

Interactive Generative Mechanisms	Sub-themes
Biological	Inadequate nutrition, fatigue
Socioeconomic	Lack of financial resources (poverty)
Socio-cultural	Lack of peer support

Normative	Curriculum, articulation gap, poor time management, lack of pre-requisite subjects
Psychosocial	Lack of maturity, personal problems, study protocol, expectations and wrong career choice
Psychological	Psychological impact of failing

Table 6.1 illustrates an intermeshing of the causal mechanisms generating the absence of academic success in the BEMC degree. It also shows that the academic environment is a causal ensemble in view of the several mechanisms operating at various levels, thus resulting in a complex feature of academic outcomes. These causal mechanisms are more likely to operate diachronically (over time) as the social world is evolving and not static.[158]

This study found that the student learning appeared to have been constrained by the lack of financial resources (causal mechanism operating at the *socioeconomic* level). The lack of financial resources appeared to place a strain on 60% of the students who were constantly worrying about their financial situation and about where they would find the money required to attend their clinical practice shifts. This worry distracted them from their academic activities and may have resulted in students dropping out of the programme. In addition, underprivileged students were often not able to afford a computer and they may have been unable to work late on campus in fear of being robbed on their way home. In addition, the lack of financial resources often resulted in students being unable to afford adequate nutrition (causal mechanism operating at the *biological* level), thus leading to inadequate nutrition. Inadequate nutrition may result in possible hypoglycaemia that may subsequently result in confusion, light-headedness or weakness – all undesirable in the learning environment.[197]

Peer support plays a key role in academic success in higher education as students tend to listen to their friends.[123] Peer support also improves the student's self-confidence and well-being.[125,126] It is thus no surprise that the lack of peer support (causal mechanism operating at the *socio-cultural* level) was one of the mechanisms that generated the absence of academic success. Student Enoch reflected that:

And, if I think of it now, like this is the class I want in fourth year with me, like our rescue class.

We're a tightknit group of people. We enjoy working with each other – yes, we can tune[x] *each other or get angry with each other but, eventually, it comes to a point where you're like "Okay, it's done. It's over. Let's move on". And I don't want to fail third year, not because it's going to make me look bad academically or, you know, impact on my family negatively, but as well as these are the guys I want to study with because I know, if I have trouble, I can go and speak to Isaiah or I can go and speak to Esau, or Berenice can help me or, you know – I don't know about Jeremiah* [laughter].

Thus, Enoch, who was a third-year student in the focus group, had insisted that he would like to have the same group of peers in fourth year with him as they were a close group. Based on the above excerpt, I am inclined to say that Enoch wanted to move to fourth year with his current peers as they gave him self-confidence and self-belief in his abilities to succeed academically. The joke he makes "*I don't know about Jeremiah*" and at which everyone laughed illustrated the close relationship the students had with each other. All eight of the students progressed to the final year.

It had been argued in this study that students entering university straight from school are mentally ill-prepared to deal with the stressors associated with the paramedic profession (causal mechanism operating at the *psychosocial* level). Some young students appeared to struggle to meet with the mental requirements of Clinical Practice and this may have contributed to their academic underachievement.

The next level comprised the *normative* causal mechanisms that refer to what should or ought to be.[157] In the context of this study this had to do with curriculum matters such as patient simulations with the curriculum in this context referring to what is imparted to the students or what is learned and includes both the hidden and the null curriculum.[157] An example of a hidden curriculum is the unintended learning which takes place such as when a lecturer speaks from the front of the lecture venue. The implicit meaning for students may be that the lecturer is the centre of attention and the authoritative person. The null curriculum refers to what is not taught, for example, time management in some schools or higher education programmes and yet it is expected of students that they will manage their time effectively. Some of the students in this study had learnt time management only after they had repeated

[x] Tune in this context is South African slang meaning to argue with each other

a year and following some introspection. The lack of time management skills speaks to a mismatch between the cultural capital of some students and the curriculum. Similarly, those students who were English second language speakers and those who lacked the pre-requisite subjects lacked the cultural capital required in the curriculum.

The absence of academic success among certain students had resulted in negative psychological effects (mechanism operating at the *psychological* level) with one student stating that it is "*soul crushing*". Unfortunately, students may become stuck in a vicious cycle of depression followed by worse academic results. In addition, the masculinised paramedic environment appeared to discourage students from seeking help. The excerpts below highlight this:

Fake it until you make it (Student Eve).

Don't let people see your stress (Student Esther).

We call it the duck syndrome. So, above water everything is nice and calm but, under water, the feet are flipping going. So that's basically what you need to learn. You need to learn to be able to keep a straight face, even when you personally know … [intervention] (Student Esther).

The sh## is hitting the fan

... this patient's going to die, and it's up to me to save them. That's what you need to learn, and you need to be not just confident in procedures and protocols, but you need to be confident in yourself. You need to build up your self-esteem to be able to tell yourself "Listen here, this is up to you". You need to be able to keep it calm, trust in yourself, and that's really something I've learned on this course.

At the beginning of first year, I was this scared little Afrikaans girl who didn't want to make friends because I didn't want to talk to new people, where now I've got no issue talking to new people. I've got no issue going to a strange, new base alone, without a partner, and being, like, "Hey, what's up, I'm here to work". In first year that wasn't me, where now I'm confident, I'm self-assured, and I know this is what I want, this is how it needs to be, and I'll tell you that without being scared of what you're going to think of me (Student Esther).

Esther had clearly undergone what Bhaskar terms transformative negation, which is the transformation of a thing or state of affairs.[48] Transformative negation always leads to a newer, richer determination.[48] In critical realist terms, Esther's personality trait of timidity had been transformatively absented and a newer, richer determination – self-confidence and self-assurance – had emerged. However, it appeared that one of the traits that students need to acquire is assuming the appearance of confidence while stressing out – a phenomenon known as the 'duck syndrome'. Understandably, paramedics have to deal with stressful events and make life or death decisions and it is essential that they remain calm to ensure that they make rational decisions when it matters most. The "*fake it until you make it*" attitude may result in a student not seeking help, thus resulting in the "drowning duck".[201]

6.6 Looking Back and Ahead

This chapter explored the generative mechanisms that resulted in the absence of academic success in the BEMC degree. The findings are presented according to the thematic categories that had emerged. The main themes discussed in this chapter included the academic, socioeconomic and personal. I then used a critical realist concept of a laminated system to map out the sub-themes into their various interactive generative mechanisms.

The interactive generative mechanisms included the biological (inadequate nutrition due to poverty), socioeconomic (lack of financial resources), socio-cultural (lack of peer support), normative (lack of pre-requisite subjects/patient simulations), psycho-social (lack of maturity) and psychological (psychological impact of failing). Thus, this chapter highlighted that the students' epistemology (lack of pre-requisite subjects and articulation gap) and ontology (lack of financial resources and linguistic challenges) were some of the causal mechanisms that generated the absence of academic success.

The next chapter addresses the generative mechanisms that resulted in the emergence of academic success in the BEMC degree.

CHAPTER SEVEN

ABSENTING ABSENCES – THE EMERGENCE OF ACADEMIC SUCCESS

"Keep on top of the little things" Elon.

7.1 Introduction

The previous chapter presented the findings in relation to the causal mechanisms that generate the absence of academic success in the BEMC programme. This chapter seeks to answer research sub-question three, namely, how does the students' epistemology and ontology enable the emergency of academic success of students in the BEMC Programme? The results are presented according to the thematic categories that emerged from the thematic analysis process.

I identified the following three themes, namely, the personal, academic and social. Figure 7.1 depicts themes and sub-themes that will be discussed in this chapter.

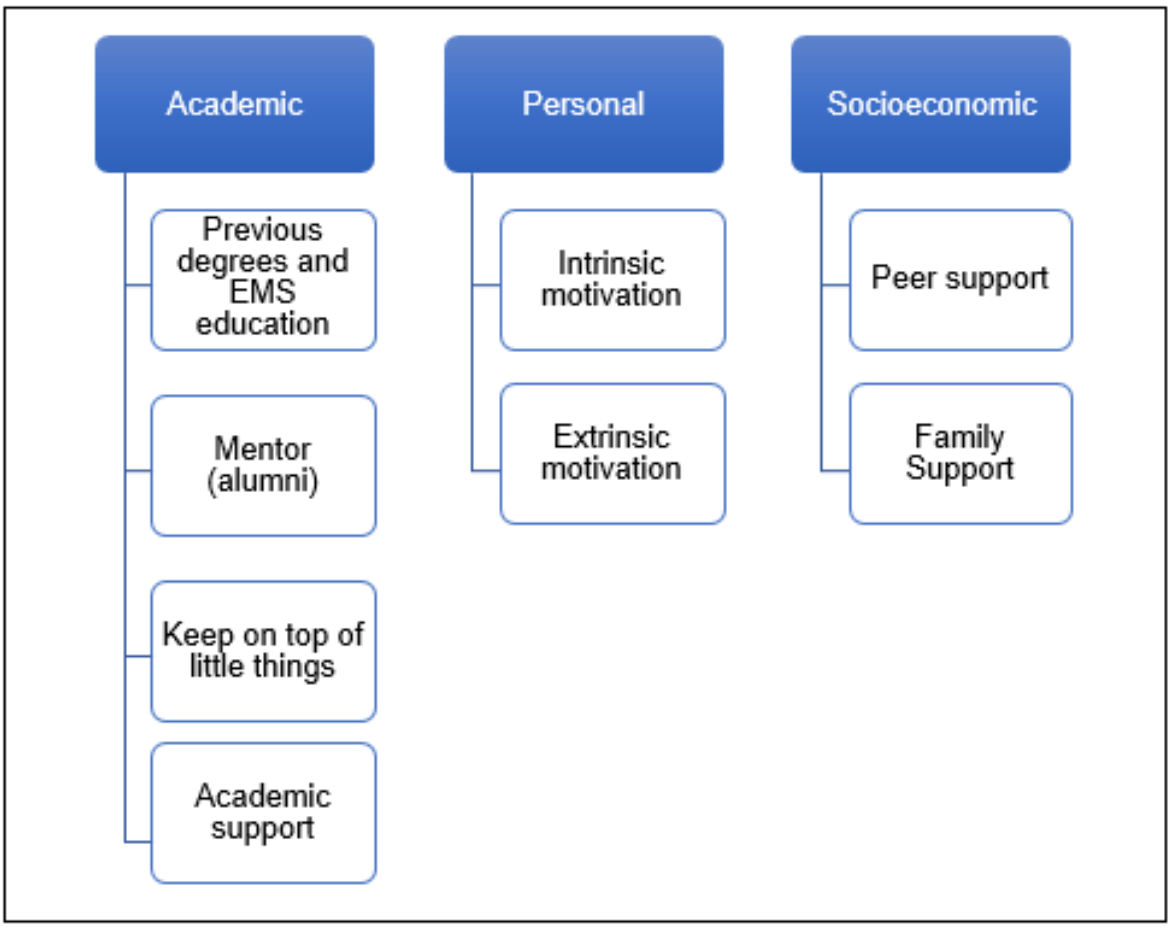


Figure 7.1. Themes and sub-themes that enable the emergence of academic success

7.2 Theme One: Academic

This theme deals with the generative mechanisms of an academic nature that enable the emergence of academic success in the BEMC programme. This theme comprises the following four sub-themes, namely, previous degree and EMS education, mentor (alumni), keep on top of little things and academic support.

7.2.1 Previous Degree and EMS Education

The possession of a previous degree and EMS education with industry experience was highlighted as one of the generative mechanisms that enabled the emergence of academic success in the BEMC programme. The students indicated the following:

Although it was many years ago, I did 3 years of medicine at UCT so I had all the subjects. Especially 1st and 2nd year subjects, I had done them at university level before. So that was a big help for me. Although I couldn't RPL for them because it was too long ago, I had already done all the physics, the chemistry, the anatomy, physiology, bio chem. I had done that at university level, so that was a big help for me (Student Adele).

For me I find that the practical helps a lot. The experience on the road helps a lot because when they talk about the patient, this is the symptoms of a patient, and you think, "Oh, but I've treated one of those patients and it went like this, this and this. Ah, but the way that they are saying that you should do it, that makes more sense, because it would improve the way I treated the patient" (Student Carter).

I can tell you from personal experience, first year, the only reason I got through first year was because I had a level of intellect and history of doing this, it is the only reason I got through this (Student Isaiah).

Although Adele had not been able to complete her medical degree, it appeared that the three years spent at medical school has been an advantage in the BEMC programme. She had already completed some of the first and second year BEMC subjects such as Physics, Chemistry, Anatomy and Physiology. Carter and Isaiah had previous short course emergency

care training and both alluded to the fact that their previous training had given them advantage in their BEMC studies. Lecturer Anil agreed with this point and pointed out:

We notice that the ones that succeed or get through in the minimum period of time are those that want to do the programme, or those that have had some experience in the programme, maybe have had short course training or even worked as volunteers for an extended period of time. This is what they really want to do, so these students are more likely to succeed.

However, while prior experience in the emergency care field may be an advantage, as Anil and the students above pointed out, Lecturer Ricky held a different view.

There are two categories; there's the mature student who's just older, okay? Then there is the mature student who comes out of the emergency services and holds a prior qualification in the emergency services. My subjective experience, I haven't done a proper study on this, but my subjective experience on this is that the mature student who comes from the emergency services with a prior, specifically advanced qualifications, finds it harder and does poorly. I feel that they struggle to let go of their previous training, their previous education and they struggle to adapt to the higher education methods. The way I am expecting their answers, the way the teaching is done, they allow – their prior knowledge is very engrained in them and they don't let it go easily. So, I feel that they struggle more and that they do poorly but, once again, I haven't done this in any methodologically sound way. This is just an impression.

Ricky's views were supported by Student Alicia who had qualified as a critical care assistant paramedic:

I have mixed feelings because of that (her pre-hospital experience giving her an added advantage). For me, personally, I wanted – my foundation was laid down and I think, because the foundation was there, I wanted to break down all my walls. Because they say in Afrikaans, I have to say this unfortunately, "Jy kannie 'n boom buig terwyl hy dik is nie" (you cannot bend a tree with a thick stem) (Means a big grown tree is not so flexible) and that is how I felt. Because, remember, this is years and years and years – I am not saying that I am that old, but I am just saying, remember hulle se "buig die boom terwyl hy klein is" (they say "bend the tree when it is small") because then you can mould it to your advantage. But, now, I was such a thick past that I needed to break because I wanted to unlearn the bad habits. And, yes, it is possible, but only if you consciously decide you want to develop and break all over. Because

this is breaking to build up at the end of the day. So, that foundation, I want to let go and I want to start from the beginning again, and just build on wherever structures that were missing for me. So, it was good and bad at the same time (Student Alicia).

Thus, it would seem that although students with pre-existing emergency care experience may have practical experience coming into the BEMC programme, their experience may, in fact, be a disadvantage as they may be reluctant to change their longstanding practices. It appeared that students with pre-existing emergency care qualifications, such as Alicia, need to be cognisant of the negative effects of their experience, which might include complacency and a lack of desire to transform their long-standing practice. Nevertheless, the quantitative data showed that having a pre-existing emergency care qualification was associated with not repeating a year during the BEMC degree ($p = 0.02$) as students with a pre-existing emergency care qualification were 2.4 (95%CI = 1.2 – 5.1) times more likely not to repeat a year compared to students without a pre-existing emergency care qualification. These results suggest that the experience of students with a pre-existing emergency care qualification is useful in the BEMC degree. In fact, these results also appear to support Lois' suggestion that younger students are mentally ill-prepared to study for the BEMC degree and should rather volunteer first. However, Lecturer Ricky made a distinction between the theoretical and practical subjects in the context of the argument about previous EMS experience and academic success.

I find the stellar performers, the super-high achievers, are generally school leavers, and I feel – and we need to differentiate between the theoretical subject and the practical subject here. The practical subject, especially the clinical practice, I think the more mature people, in terms of being both older in years as well as being mature people who have had prior experience and qualifications, they slot into the practical training areas a lot more easily because they have already adopted the culture. They have adopted the culture, and the more mature people recognise that there is more than one culture around. So, they don't try and force everything into the way they see the world. They adapt, they fit into the thing.

However, when it comes to the theoretical subjects, the school leavers are still in the studying groove, they pick up the message, they are able to work with it and they give back the theoretical answer the way the memo would be done. So, they are the high-achievers in the

theory in terms of marks. I'm not convinced that they perform better in the clinical placements though. That is the one thing (Lecturer Ricky).

Thus, Ricky highlighted that he had observed that students with a pre-existing emergency care qualification performed better in the practical subjects compared to those without such a qualification. This is supported by Cormier et al. who found that second degree nursing students were more responsive to clinical stimuli in the practical setting and were thus likely to intervene effectively.[178] School-leavers, however, tend to perform better theoretically compared to older students because they are still in the studying mode. On the other hand, second degree students have been found to perform academically better than their younger counterparts with younger students having been found to struggle with the transition from childhood to adulthood.[179] [199] Mature students are often more motivated to succeed as they know what they want in life.[199,216] This was supported by Mariah who stated:

I think with great age comes great responsibility. Because, coming into this course I was an older student, not fresh out of school, but I came in with the attitude of, I am a big girl, I know what needs to be done to pass. Like, there's no playtime, especially not in this course, there's anyway no playtime, but you're a grownup, you know what needs to be done to pass, so do it (Student Mariah).

It may be deduced from the above excerpt that mature students are more confident as they "*know what needs to be done to pass*". Additionally, they are more academically mature as they bring into the classroom their life-experience and a wealth of knowledge which enhances the learning environment.[199] They have also often developed confidence from previous academic success and understand the university culture or the emergency care field.[178] However, it must also be remembered that mature students have additional pressures which most school-leavers may not have, such as studying while taking care of their families.

7.2.2 Mentor (Alumni)

Mentors, particularly alumni from the respective Emergency Medical Care departments, were considered to play an influential role in the academic success of the students. The students elucidated as follows.

I have to add to what Esau said about having a mentor, people inside the EMS. I think we all have either one, or somebody like that, and I think that is so important, because especially a

university … graduate, but most university graduates because they understand what you're going through. They can empathise and they understand what it is you're going through. And a lot of the time they are the only person to whom you can actually say 'What the heck is going on here', and they will be able to tell you what is going on. … a lot of the time the university graduates actually understand how hard this is, and tell you what you need to hear at the time (Student Jacob).

know I've had university graduates mentor me before, and they've always said that they are the best people to speak to because nobody else really and truly knows how hard this is, and all the stuff that we go through, unless they've actually gone through it. So, you can try and tell me what it's like, some of the experiences or some of the things we've done, and they might go, 'Wow, that sounds tough', or they can't really – you need to speak to somebody who has really gone through the four years, and who, really – you don't have to explain, they get it (Student Dinah).

The study found that certain students in the BEMC programme had made use of mentors who were qualified emergency care providers. Mentorship has various meanings among the different professions. Shaw et al. define mentorship as a relationship between the student and the qualified emergency care provider.[217] Vance et al. define a mentor as someone who "advises, guides, encourages and inspires another person during an extended period of time".[218] It was clear from the extracts quoted above that the students like the idea of sharing their experiences with someone who understands what they are going through as this was a liberating experience. Student Elon further added: "That's my biggest support structure too, university graduates. That's the people I go to and I speak to them". The alumni appeared to give the students a sense of calm and provide them with guidance. Arguably they are also the best placed to advise them on what it takes to succeed in the BEMC programme. The study found that speaking to people who had not passed the BEMC course was not very informative as Elon further pointed out:

Because you speak to an average person and you try and explain – I don't even tell people what I study anymore. … Their first question is, 'What's the worst thing you've seen?' … And then to try and explain to them what it feels like to just do rescue challenge in the first year,

just those 36 hours, or even the hike (WSAR); you can't explain it to anyone who hasn't done it (Student Elon).

The rescue challenge is a 36-hour endurance rescue exercise that is undertaken primarily by first-year students. The planning and outcomes of the event differ from year to year and from institution to institution. All students are required to participate in the event whether as organisers, group leaders for the first-year teams or rendering medical assistance. Students are required to hike long distances while performing various rescue exercises with minimal sleep. The event tests the students' physical and mental capacity as rescuers are required to work in difficult circumstances in search of the ill/injured patient/s. Millar found the event to play an important role in the emergence of student identity among paramedic students.[37] Elon was making the point that it is not possible to understand what the BEMC students go through if one has never experienced the event or the Wilderness Search and Rescue. It is thus easier for the students to seek guidance from the alumni as they understand what is expected of the BEMC students and are able to guide them appropriately. It is for this reason that my insider researcher position proved useful as I could relate to students' experiences and they understood that I had gone through similar experiences.

7.2.3 Keep on Top of the Little Things

Keeping on top of the little things, i.e. working hard and consistently throughout the year, was highlighted as one of the generative mechanisms for academic success by the students. The students indicated:

It is definitely putting in the hard work throughout the year so that your DP is as high as possible. I will give you an example, in my situation where I had a really good DP for Anatomy and I actually failed the final exam but, because my DP was good enough, it carried me through. So, it's that consistent work (Student Trevor).

This is what helped me a lot, Jeremiah here: he set up an Excel sheet with all the weightings and all the tests in it, so you can calculate "Okay, I duffed[y] *this one. What is my current percentage at, how much do I need to get for the next test?" That's also an additional*

[y] "Duffed" means "failed" in this context

motivator. You are like "Listen bud, if I do not get at least a 50 for this test, it's tickets[z]*, it's game over"* (Student Esau).

It is clear from the above extracts that working consistently throughout the year is essential for academic success in the BEMC course. Lecturer Raphael termed it "*academic endurance*, *they give sort of more than 80%, 90%, even 100%, at all times. So throughout … they are working hard for every subject consistently*". The students in Esau's focus group informed me they used a spreadsheet that calculated their cumulative percentages for all their subjects/modules. They were thus able to calculate the marks required in the next couple of tests to pass. This spreadsheet was highlighted as one of the key contributing factors to the emergence of academic success as it helped them to organise their studies. As Esau pointed out the spreadsheet also motivated the students. For example, some universities offer a fee discount to students who obtain distinctions. Therefore, students with an average mark of 70% often worked even harder for the next test to achieve a distinction in their overall subject/module mark so as to qualify for a fee discount.

Student Elon added to the discussion by highlighting the need to "*keep on top of the little things*". For example, keeping a comprehensive record of the clinical skills, case studies and patient numbers for the clinical practice module. In other words, Elon was referring to good planning and time management. Assembling the clinical practice portfolio is extremely time-consuming. Some students indicated that they tried to do some academic work during clinical practice shifts if there were no patients requiring medical attention. However, if a student remained oblivious to the clinical skills and patient numbers during the year, the student could find that he/she lacked these skills at the end of the year, resulting in a rush to complete them. This could, in turn, have a negative effect on the student as other assessments also need to be completed at the end of the year.

Student Mary had the following to say:

What helps for me is not missing classes because, as soon as you miss a class, you are already behind because a lot of things are said in class that apply to exams and important points … we don't necessarily always study out of textbooks. So, if you are not in class you are not going to know where to go and look for the stuff that you need to know. So, I concentrate in class

[z] "Tickets" means "it is over" in this context

and try to participate in class, ask questions, be in class fully and that helps to achieve success (Student Mary).

Regular class attendance was cited as one of the generative mechanisms that result in the emergence of academic success. Lecturer Raphael expounded as follows:

So, the students who actually attend class because, for the subject that I taught last year, we have lots of discussion in class around the content which you can't get from just looking at the slides or looking at the notes or reading the chapter in a textbook. And, for me, I found that marking the scripts of students who've interacted in class and have attended class, they are more successful than other students who have merely just come there just for the lecture, or they have been absent and they have just looked at the PowerPoint or done the notes (Lecturer Raphael).

It is clear from the above extract that while, attending class is important, paying attention in class is imperative in order to ensure academic success. Some of the content is discussed in class and thus students who learn just from the notes or PowerPoint presentations risk failing. Raphael observed that students who attend and interact in class achieve higher marks than those who do not. These findings are similar to those of McGhie's study which highlighted class attendance as an enabler of academic success.[71]

7.2.4 Academic Support

Academic or institutional support is offered to students to enable the emergence of academic success among the BEMC students. Two lecturing staff members elucidated as follows:

And the way our at risk policy works is that the minute you fail anything, any assessment, even if it is just a 10 percenter, you have to make an appointment to see your lecturer, and there is a set mode that engagement takes place. There is a form that is filled in before the time and that asks the student to indicate the material from which they have been learning. And then there is a discussion which is documented about the way forward. And those meetings so happen.

If a student makes it into the senior years, it has happened once or twice that we've really had to do something radical and pull the student out of an area because the situation at home or wherever is so dire, and put them in res (residence). We've done that on two occasions and

it's cost us in the region of R60 000 (±US$4615) or so … in fact, both those students graduated (Lecturer Frank)

From the lecturer's point of view, there are different ways of teaching. Some students may not catch on to the way you are teaching, so there are other ways of teaching you could explore. For example, some students, you can talk and they listen and they pick it up. Some students want to see more videos so you've got to change your paradigm sometimes because now we are exposed to different types of learners from different race groups or different walks of life so maybe we have to change the way we traditionally think and how we offer programmes. That's from the lecturer's point of view.

From the university, there is always the academic development, there is the writing centre. Some students have access to information, for example, the internet or the library but don't know how to use them properly.

The other one is maybe provide premises for studying. The university is providing premises to stay and to live but what about study after hours, weekends? Because some of them, as I mentioned, don't have a – the environment is not conducive to studying. We could do that (Lecturer Anil).

It is clear from the above extracts that the respective EMC departments have put in place various measures to support academic success. Lecturer Frank mentioned that, if a student fails anything, the student must see a lecturer to find out where he/she went wrong and how to improve. The student may receive extra tutorials to assist with his/her understanding of the academic content or the student may be referred to a relevant department/unit such as the academic development, writing centre or student counselling should the need arise.

Academic development has various connotations across academic institutions.[82] Generally speaking, however, academic development involves offering various educational activities to promote teaching and learning. The student may receive support from the writing centre as well as psychosocial support from the student counselling centre. However, Jones et al. found that some students considered the academic assistance to be socio-culturally irrelevant and also that some students were not attending academic support sessions due to the stigma associated with this.[72] Anil alluded to the point that the living conditions of some students are not conducive to studying and, hence, a classroom is made available after hours for study

purposes. This classroom is also equipped with WIFI to enable students to access online study material.

Gordon contributed to this discussion as follows:

I think the other thing that works in our favour in a department like this is that, because the students have such a close relationship with the lecturers, the nature of the programme is such that the lecturers have to have that. They spend five days together with the students in the mountains … for example. So, this relationship has positive and negative consequences, but I think one of the positive consequences is that the lecturers get to know which students are at risk, which students – if the student is having a bad day, the lecturers will sort of pick it up because they interact so closely with the students (Lecturer Gordon).

I mentioned earlier that the EMC department enrols up to 40 students per year. These small student numbers mean that the lecturing staff are able to get to know all the students, particularly the year coordinators. As alluded to by Gordon, the lecturers spend a significant amount of time with the students, particularly in the Medical Rescue modules. The fact that the lecturers know the students well places them in a better position to identify when a student is unwell. Should a problem be a psychosocial issue, the student may be referred to the relevant department/unit to seek help. In other words, the student is not "a small fish in a big pond" where he/she may go unnoticed for a prolonged period. It may be deduced from the above extracts that the respective EMC departments offer support to the students to enable the emergence of academic success.

7.3 Theme Two: Personal

This theme has to do with the student's motivation as a generative mechanism for the emergence of academic success. The theme comprises two sub-themes, namely, intrinsic and extrinsic motivation. Self-determination theory is used in this section to explore the students' motivation.

7.3.1 Intrinsic Motivation

This section considers how the students' intrinsic motivation enabled the emergence of academic success in the BEMC programme. The students commented:

Well, I started in first year with the goal to complete this course in four years, and I think

setting yourself a goal does give you a bit of a goal to achieve. So, you're very driven, you're very motivated to achieve that goal, you don't want to slip up anywhere. So, yes, that's the reason why I have possibly come to fourth year in one go, and haven't repeated a year because I did set that goal right at the beginning, right when I was accepted (Student Abel).

I think on that one also, the mind-set thing, and also people who are internally motivated and you need to do this because, when I started here, swimming was, you know – I mean, it's a black thing. But it was, I mean, if I was thrown into a pool or whatever, I wasn't going to drown, I will do that. But I'm telling you, for me to prepare and get to do it in the times. I'm telling you, I used to do that thing in, like, 12 minutes, and when I'm done, like, I'm out, you know. Having to learn those tricks about breathing out when you are in there; you know, when you're breathing out the bubbles are disturbing [laughter]. *No, I'm telling you. But, looking back today, I go in there and I've got a goal of doing it in four minutes, 30 seconds or something, you look at it and you think, yes, it has to be motivation. You know what you want and you're going to work hard and do whatever it takes to get through* (Student Todani).

It was clear that both these students had been intrinsically motivated to achieve their goals – completing the course in the minimum time. These findings are consistent with the existing literature.[71,107,180] Intrinsic motivation means doing something because it is inherently satisfying and this, in turn, results in high-quality learning and innovation.[109] Biggs et al. also argue that intrinsic motivation results in high quality learning because of the deep approaches to learning that result.[219]

Self-determination theory suggests that, the more autonomous the motivation, the better the outcome.[108] In other words, the use of intentional agency leads to a better academic outcome than may otherwise have been the case. The desire to succeed was evident in Todani's commitment who had initially swam the 200 metres in 12 minutes but, at the time of the study, was aiming for a time of 4 minutes 30 seconds, below the required six minutes. Additionally, Intrinsic motivation is likely to increase with continued success in an activity. This was borne out in the case of Todani whose swimming time was improving and who had passed successfully.[219]

The cognitive evaluation theory is considered a sub-theory of self-determination theory and suggests that feelings of competence may enhance intrinsic motivation as these feelings satisfy one of the basic psychological needs – competence.[109] However, the cognitive

evaluation theory further argues that feelings of competence also involve another basic psychological need, namely, a sense of autonomy, in order to enhance intrinsic motivation.[109] Lecturers who enjoy their subject and perceive great value in it are likely to inspire their students to become more curious to seek the same worth.[219] This was illustrated by Student Athalia who stated that:

I nearly failed chemistry in high school and, then, first year chemistry came and I achieved marks in the nineties. The lecturer had the ability to teach so well and her passion shines through, and that also motivates you to acquire the same passion, like, basically, draw from their strength to go on and actually excel (Student Athalia).

In the education context intrinsic motivation may result in the improved study techniques and the intensive studying which may result in improved academic performance.[108] Selecting the correct course of study also enhances intrinsic motivation as the students are more likely to succeed than those who made an incorrect study choice.[72] Of the participants, 59 (34%) felt they had a calling, while 39 (22%) had chosen the course because they wanted to help people. It is reasonable to assume that these students would be more motivated in their BEMC studies than students who had enrolled but who had no interest in the profession.

7.3.2 Extrinsic Motivation

Some students used extrinsic factors as motivation to succeed in the BEMC programme. The students had this to say:

EMS is a bit of a man's world and, as a female and being quite feminine, I enjoy my femininity, it can be quite difficult. But it was a challenge and I have really enjoyed it … it is equal rights and, as a paramedic, females can also be paramedics. And you have to acknowledge that men have different strengths to women. I don't think it was something to prove but, maybe, to myself, but not to anyone else. It was a challenge (Student Marie).

I have a learning disability and in high school I had a scribe, as well as a writer on the computer and the papers were read to me, and I got extra time for my papers. But, in high school a lot of – especially pupils, said to me that I would never get tertiary education because I am not clever enough. So, proving everybody else wrong is my kind of own ego boost and just showing everybody else that I am clever enough, that I have the means to get where we are right now (Student Annika).

As mentioned in Chapter Three, there are various types of extrinsic motivation. My conclusion from the above extracts is that these participants exhibited the second type of extrinsic motivation, namely, *introjected regulation*. This refers to performing an activity to avoid guilt or to produce ego-enhancement or pride.[109] Marie's motivating factor was her stance against gender bias in the masculinised emergency care profession. This emerged in her assertion that "*it is equal rights and, as a paramedic, females can also be paramedics".* Thus, she was using her gender bias stance to motivate her to succeed academically in the BEMC programme.

Annika was dyslexic and had used her learning disability as a motivator to demonstrate that she was capable of obtaining a tertiary qualification despite her critics. In his book, *David and Goliath*, Gladwell argues that being dyslexic may be an advantage and that what may to appear to give 'giants' their perceived strength may be their biggest weakness.[220] Gladwell uses the story of David Boies, one of the most famous trial lawyers in the world, to illustrate his point. David Boies compensated for his dyslexia by developing the ability to be an effective listener which had made him a good lawyer. It is thus plausible that Annika had also compensated for her dyslexia by developing abilities she had not realised she possessed. Both Annika and Marie passed the BEMC programme in the minimum time.

Some students indicated that they used their financial circumstances as a motivating factor to apply themselves academically.

You think of the finances, the strains of it, so we still have siblings that the money is still going towards too. So, if you fail, then that just adds to the actual burden on your parents, especially if you are being raised by a single parent, and that salary won't sustain every single child in the household (Student Parsons).

Another thing I wanted to add to this was that the financial implications too, if you are looking at the younger students, they are being paid for. Whereas us, the more mature guys, it is coming straight from our pockets so we know that there is no way I'm going to repeat a year. My family is going to suffer with me sitting up late and studying, the course is going to be more. There are a whole lot of implications for me if I fail (Student Seth).

Repeating a year was not an option for some of the students as it would have meant they had to spend an extra year studying, thus leading to increased costs for their families, some of

whom were single parent families. Some of the students were from disadvantaged backgrounds and education was seen as way of improving their socioeconomic situation. These findings are similar to those in other literature which highlight that students achieved academic success despite their poor background.[107,180] Some of the students in this study indicated that they had to sacrifice time away from family and friends to achieve academic success and that repeating a year would mean more time away from them. Some had a sponsorship or a bursary which would lapse should they fail. This was illustrated in Elon's response: "*My goal was more external. I'm fully sponsored to study, and my sponsor said to me, 'If you don't complete it in four years, I can't help you; there's nothing I can do'*".

Student Sarai added to this discussion by pointing out:

> *You know, you're not satisfied with knowing the bare minimum. I'm going to be having people's lives in my hands, but I want to know just enough to potentially save their life* (Student Sarai).

Some students, like Sarai, demonstrated the characteristics of regulation through *identification* – a more autonomous form of extrinsic motivation. In terms of regulation through *identification,* the individual has identified the personal value of an activity and accepts the activity as his/her own.[109] In other words, Sarai had identified the value of applying herself academically as she would be performing potentially life-saving interventions that may have adverse outcomes if carried out badly.

7.4 Theme Three: Socioeconomic

In this section, the socioeconomic mechanisms that enabled the emergence of academic success in the BEMC studies are discussed. Two themes emerged, namely, peer support and family support.

7.4.1 Peer Support

The students reported that choosing the right friends had been a contributing factor to their academic success. The responses included the following:

I think the whole success thing also comes into the people you surround yourself with, your support structure. So, if you have a good group of friends and you help to motivate each other, then it doesn't seem like you are alone in this (Student Naomi).

So, like I have told a couple of first years who also came out of school. "Find those people who are experienced in the field, feed off them, and then you can probably help them as well in terms of the Physics and Chemistry sense and that stuff. So, you can always feed off each other and find people, support groups" (Student Ezekiel).

Support mainly from our guys. Our class is, like, a united class and that's one good thing, because, without these guys I don't think … Like, for rescue I was petrified of heights, I couldn't even look over a building, and don't ask me how I went over. It was them (Student Virat).

I was fortunate enough to meet a like-minded, ambitious person. So, you drive each other, you have that one person to say, "Oh, we need to do this" (Student Athalia).

Thus, these students were asserting that surrounding themselves with the right group of friends had contributed to their academic success as they had motivated each other. Students are influenced significantly by their friends.[123] If a student has friends who are hard-working and complete their academic tasks, the student is likely to do the same.[126] Berndt et al. found that students with more stable friends are more positive and achieve higher academic scores than students with less stable friends.[122] Peer support also increases the students' self-assurance and well-being.[126] In addition, finding a friend from a similar background with whom the student may identify provides the student with some form of academic identity that, in turn, increases the student's resiliency.[180]

Buffet supports the notion of being in the company with like-minded individuals.[221] Buffet asserts that a person needs to make friends with people who are better than the person concerned and who may, thus, motivate the person to achieve higher professional goals than may otherwise have been the case.[221] Ezekiel's response speaks to Buffet's viewpoint suggests that first years need to befriend students with EMS experience who would guide and support them, particularly with the medical terminology. Student Virat also attributed his

academic success to his peers by stating "*it was them* ", thus emphasising the role of peer support in academic success. The participants in McGhie's doctoral study also attributed their academic success to their choice of friends at university.[71] Stable and supportive friends enhance one of the three innate psychological needs (self-determination theory), namely, relatedness as the students feel a sense of belonging which may promote the student's psychological health.[109]

7.4.2 Family Support

This sub-theme deals with family support as one of the generative mechanisms for academic success in the BEMC programme. The students stated:

I think for me I have got a very good support structure at home. Lots; I have got my parents who can help me and physically – well, financially and psychologically, I suppose.

So, financially, living at home, means that I don't have to pay rent. My parents also help with fuel, and I don't have to pay for food or anything. So, it has been a major help with regards to just coming home at the end of a long day and supper is ready on the table (Student Marie).

You do have a lot of support when you live at home and you live with your family. I mean, like she said, you do have your meals cooked for you, your washing's done, the house is clean, things like that. You literally come home, you do an assignment, or you study for a test. But I do think it's also nice having the emotional support because we all go onto shift, we all have bad calls. Yes, you might go home and your parents or your siblings might not be able to help you with the stuff emotionally because they don't understand what you're going through but at least it's someone who's there to listen, who's there to provide support where they can (Student Jacob).

It was clear from the above extracts that living at home appeared to have added benefits such as financial and emotional support. In addition, students who live at home appear to have the added advantage of being able to concentrate exclusively on their academic activities and not have to worry about domestic related activities and financial burdens such as petrol costs to university. A positive attitude and belief towards the students on the part of family also enhances the students' self-assurance.[131] Family support also influences the students' motivation as the support reaffirms the students' psychological needs – competence,

autonomy and relatedness [132] All three of these psychological needs are necessary for optimal psychological well-being.[109]

In other words, family support reassures the student of his/her competent abilities and sense of autonomy while the love and comfort satisfy the need to belong to and care for other people (relatedness).[130] Cheng et al. also found that family support is a positive predictor of academic success at university[130] while family support was found to be one of the key contributors to academic success among disadvantaged students in Dass-Brailsford's study conducted in South Africa.[107] The students in Dass-Brailsford's study were motivated and succeeded because of the high expectations of their families who had made sacrifices to send their children to university. [107]

7.5 A Critical Realist Perspective: The Laminated System

As mentioned in Chapter Six, the academic environment consists of various laminated systems that contain causal mechanisms that either constrain or enable learning. Using the laminated system Table 7.1 below illustrates the causal mechanisms discussed in this chapter with academic success as the emergent entity.

Table 7.1. Mapping out the laminated system in Chapter Seven

Interactive Generative Mechanisms	Sub-themes
Psychological	Intrinsic and extrinsic motivation
Psychosocial	Peer, family and mentor (alumni) support
Normative	Previous degree and EMS education;
Socioeconomic	Academic support

Although academic success was the emergent entity, it is important to remember that the emergent entity is not the same as its properties and cannot be reduced to these properties.[41] In critical realist terms, emergence refers to two or more entities which give rise to new phenomenon/a.[41] The new phenomenon would be academic success in the context of this study. In other words, as seen in Table 7.1, for academic success to have emerged at the

actual level, there were at least two or more causal mechanisms that were operating at the real level.

The study found that academic success was enabled by intrinsic and extrinsic motivational factors (mechanism operating at the *psychological* level). Although the lack of financial resources generated the absence of academic success (Chapter 6), it also had the ability to motivate students to achieve academic success and, thereby, change their socioeconomic situation at home. As Khumalo pointed out:

Being supported by my family is one thing that I want to get rid of now. I know that they like to do it but now I want to be the one supporting my family. So, to do that, I know that I have to push and qualify and maybe get a job. And that's one of the things that is pushing me, that they need me and I have to be there for them (Student Khumalo).

As alluded to in Chapter 2, a generative mechanism, i.e. lack of financial resources, may be present but not produce an event/phenomenon(a) (absence of academic success). [41] Even if the mechanism does operate, its effects are dependent on other conditions.[13] For example, in the studies by Dass-Brailsford and Cheng et al, students achieved academic success because their families were providing high levels of social support (mechanism operating at the *psycho-social* level) despite their impoverished background.[107,130] In other words, the high levels of family social support acted as a buffer against the adverse impact of poverty on education, thus resulting in academic success.

Having pre-existing EMS education and a previous degree appeared (mechanism operating at the *normative* level) to have enabled the emergence of academic success. The study found that these students were often already familiar with the curriculum and knew what was expected in the programme. The academic/institutional support included student counselling (mechanism operating at the *psycho-social* level), financial support (mechanism operating at the *socioeconomic* level) and looking at study techniques and providing extra tutorials (mechanism operating the *normative* level). It may thus be deduced that the emergence of academic success is a result of interacting causal mechanisms.

In critical realist terms, the students had to absent absences for academic success to emerge. Student Julia illustrates this point:

In this school, you have to be able to climb the highest mountain on earth and then be able to

go down that same mountain and be able to say I'll climb it again, if you know what I mean. But mentally you have to be strong, in a sense that that's what I think I needed to do, for me to get up to this stage. We have physical training, physical this.

I'm not a physical person. I came here without being able to swim. Well, I have to say I'm black and I can't swim. So, you have to be someone who actually says "I can do this", you know. Not have that mentality that I'm black, you know. Black people can't swim, no. I actually told myself that, you know what, I will learn how to swim, I will put in the time, the effort (Student Judith).

And now you swim faster than I do (Student Esther).

The above extract demonstrates that Judith underwent a transformative process known as radical negation. Radical negation involves the autosubversion, transformation or overcoming of a being or condition.[48] Table 7.2 illustrates the four elements of radical negation as present in Judith's statement.

Table 7.2. Judith's four elements of radical negation

Radical negation	Quotation
Autosubversion	I'm not a physical person. I came here without being able to swim. Well, I have to say I'm black and I can't swim.
Self-transformation	So, you have to be someone who actually says 'I can do this.', you know. Not have that mentality that I'm black, you know. Black people can't swim, no
Self-realisation	But mentally you have to be strong, in a sense that that's what I think I needed to do, for me to get up to this stage.
Self-overcoming	I actually told myself that 'You know what, I will learn how to swim, I will put in the time, the effort'.

Table 7.2 illustrates the radical negation process which started with Judith undermining her physical and swimming abilities – similar to Todani above. In order to transform herself, Judith had to develop a positive attitude by telling herself "*I can do this*" instead of using her disadvantaged past as a black person as an excuse to not be able to swim. She realised that she needed to be mentally strong to meet the programme requirements which included

swimming. To overcome her lack of swimming abilities, she understood that she needed to put in the necessary time required to learn how to swim. At the time of the study she could swim even faster than her White female fellow students.

In order to absent an ill or a condition, one must possess the criteria for rational agency:

a) Possess the knowledge required to act in one's own real interests (the cognitive requirement)

b) Be able to access the skill and resources required to do so (empowerment component)

c) Be disposed to so act (the motivational component).[48]

In other words, one has to possess the self-determination to absent the absence, referred to by Bhaskar as the empowered praxis.[48]

As shown below, an analysis of Judith's statement above demonstrates that she did possess rational agency:

i. She had the *cognitive requirement* to act in her best interests in that she understood that she needed to be mentally strong and attend swimming lessons

ii. She understood that she *could empower* herself by attending swimming lessons

iii. She possessed the *necessary motivation* to overcome her inability to swim, emphatically stating, "*I will learn how to swim, I will put in the time, the effort*". Thus, Judith had the empowered praxis to overcome her absence of the swimming abilities required in the programme and she succeeded in the programme.

In other words, there was an emergence of a transformative praxis to absent both epistemological and ontological absences through intentional agency, thus enabling her to complete her degree.

7.6 Looking Back and Ahead

The discussion and analysis of the findings in this chapter demonstrated that there are various interactive generative mechanisms that enabled the emergence of academic success in the BEMC degree. At the psychological level, intrinsic and extrinsic motivation enabled the emergence of academic success while peer and family support (mechanism operating at the psychosocial level) acted as a buffer against poverty, motivating the students to succeed. In

addition, the study found that students with pre-existing emergency care qualification were more comfortable in their BEMC studies while the quantitative data also suggested that they were less likely to repeat a year compared to those without pre-existing emergency care qualifications

The last section of this chapter discussed Student Judith who had used her transformative praxis to absent both her epistemological and ontological absences through intentional agency, thus achieving academic success. The final chapter presents the conclusion to the study and discusses the recommendations of the study.

CHAPTER EIGHT

LOOKING BACK AND AHEAD

8.1 Introduction

This final chapter synthesises the findings from Chapters Five, Six and Seven in order to provide a response to the research questions posed in Chapter One. The chapter then discusses the contributions of the study to the existing body of knowledge. This is followed by the recommendations of the study and possibilities for future research. The chapter concludes by presenting a critique of the study.

8.2 Answering the Research Questions

The study used critical realism to identify the causal powers and generative mechanisms that enable or constrain academic success in the BEMC degree. The following main research question formed the basis of the study:

"Why is academic success emergent or absent in BEMC students?" The research sub-questions included the following:

1) What is the socio-cultural history of students registered for a bachelor degree in Emergency Medical Care (BEMC) in South Africa?
2) How do the students' epistemology and ontology generate the absence of academic success in the BEMC programme?
3) How do the students' epistemology and ontology enable the emergence of academic success in the BEMC programme?

For the purposes of this thesis academic success was defined as the emergence of student transformative praxis to absent both epistemological and ontological absences through intentional agency in order to complete an undergraduate degree in the minimum time stipulated. The study found this definition to be appropriate because the data suggested academic success emerged through intentional agency on the part of the student. The study contends that academic success should be associated with completing the degree in question in the minimum time. Some students who had repeated a year/s appeared to have learnt valuable lessons and were more confident in the BEMC programme than they had been prior to repeating a year(s). Accordingly, the definition was amended to read as follows:

The emergence of student transformative praxis to absent both epistemological and ontological absences through intentional agency in order to complete an undergraduate degree.

8.2.1 Sub-question One

What is the socio-cultural history of students registered for a bachelor degree in Emergency Medical Care (BEMC) in South Africa?

This study used a sequential, explanatory, mixed methods research design. The first phase consisted of quantitative research which sought to describe the socio-cultural history of students enrolled for the BEMC degree. The data was collected using an electronic survey that was disseminated to all BEMC students through the relevant emergency medical care departments.

A total of 176 students responded to the survey. The median age was 24 years. Just over half of the participants were male (55%) and White (53%). Of the total number of participants, 101 (57%) had pre-existing emergency care qualifications prior when they enrolled for the BEMC degree.

The study found that having a pre-existing emergency care qualification was associated with not repeating a year during the BEMC degree ($p = 0.02$) as the chances of a student with a pre-existing qualification not repeating a year were 2.4 (95%CI = 1.2–5.1) times better than those of a student without a pre-existing emergency care qualification.

There was no statistical difference between race and not repeating a year in the BEMC degree ($p = 0.07$). However, when the Black and minority cohorts were grouped together, the difference was statistically significant ($p = 0.05$). In other words, the chances of a non-White student not repeating a year during the programme were 2.1 (95%CI = 1.0–4.5) times better compared to a White student not repeating a year.

The analysed results show students who had attended either township or rural schools had repeated a year on fewer occasions (n = 7, 18%) compared to students from private schools (n = 12; 32%) and former privileged (model C) schools (n = 19; 50%). However, here was no statistical difference between the type of secondary school and academic success ($p = 0.30$).

The findings suggested that white students had more financial capital as they were more likely to own a computer and more likely to have access to a car while their families were more likely to fund their studies compared to students from the other racial groups. In addition, White students were the least likely to be first-generation university students compared to the other racial groups.

8.2.2 Sub-question Two

How do the students' epistemology and ontology generate the absence of academic success in the BEMC programme?

The qualitative data provided answers to this research sub-question, namely, how do the students' epistemology and ontology generate the absence of success in the BEMC programme? The data analysis identified the following three main themes, namely, socioeconomic, academic and personal. The laminated system was used to map out the sub-themes in respect of which absence of academic success was the emergent entity.

Table 8.1. Mapping Out the Laminated System for the Absence of Academic success

Interactive Generative Mechanisms	Sub-themes
Biological	Inadequate nutrition, fatigue
Socioeconomic	Lack of financial resources (poverty)
Socio-cultural	Lack of peer support
Normative	Curriculum, articulation gap, poor time management, lack of pre-requisite subjects
Psychosocial	Lack of maturity, personal problems, study protocol, expectations and wrong career choice
Psychological	Psychological impact of failing

The socioeconomic causal mechanism was found to constrain learning as it was found that the lack of financial resources placed strain on students who were constantly worrying about their financial situation. Travelling to campus and clinical practice was expensive for some

students with some students having insufficient financial resources to travel to their clinical practice shifts.

In addition, the socioeconomic mechanism sometimes gave rise to the biological mechanism as some of the students with inadequate financial resources found it difficult to purchase the food required to concentrate or exercise higher thinking functions as they may have been hypoglycaemic as a result of insufficient nutrition.

Some of the students had commented that the socio-cultural mechanism (lack of peer support) played a key role in the absence of academic success. The study found that class groups who were not as close were inclined to be academically unsuccessful compared to class groups that had bonded well.

The normative mechanism is a result of poor schooling which leads to the articulation gap and poor time management. The fact that some students had enrolled for the BEMC degree without the prerequisite subjects was attributed to the lack of academic success.

At a psycho-social level, students intimated that BEMC students who entered university straight from high school were mentally ill-prepared for the stressors associated with the paramedic profession. The study found that some students struggled with the mental requirements of the Clinical Practice module and this, in turn, may have contributed to their academic underachievement. Furthermore, some of the students had misaligned expectations about the BEMC degree which resulted in their lack of academic success.

At a psychological level, some students had never failed before in their lives and had found failing the first test to be a significant challenge which resulted in adverse psychological effects. Unfortunately, some students became depressed with this resulting in even worse academic results than before.

8.3.3 Sub-question Three

How does the students' epistemology and ontology enable the emergence of academic success in the BEMC programme?

Research sub-question three focused on the emergence of academic success, namely, how the students' epistemology and ontology enable the emergence of academic success in the BEMC programme.

Table 8.2. Mapping Out the Laminated System for the Emergence of Academic Success

Interactive Generative Mechanisms	Sub-themes
Psychological	Intrinsic and extrinsic motivation
Psychosocial	Peer, family and mentor (alumni) support
Normative	Previous degree and EMS education;
Socioeconomic	Academic support

At a psychological level, motivation propels students towards academic success. Some of the students were intrinsically motivated while some were extrinsically motivated. For example, there were students who wanted to finish their degrees so that they could start earning money to help their families.

The psycho-social generative mechanism was important as the study found that family and peer support appeared to enhance student agency in relation to achieving academic success. Although some students came from previously disadvantaged backgrounds, it appeared that peer and family support acted as a buffer against the negative effects of poverty on higher education, thus facilitating academic success. Similarly, support from mentors who were alumni of the respective emergency care departments was crucial. It seemed that students were more inclined to seek the advice of alumni because they have also been through the emergency care programme/s and understand what is required to complete the degree.

Students with a previous degree and/or pre-existing emergency care qualification appeared to be more comfortable in their BEMC degree studies and attributed their academic success to their previous studies. As compared to their counterparts with no previous experience or qualification they seemed to be familiar with the culture of the emergency care profession and thus they knew what to expect when they enrolled for the BEMC degree.

8.4 Contributions to the Body of Knowledge

Firstly, a critical realist definition of academic success which was formulated, contributed to the existing body of knowledge by taking account the role of the students' epistemology and ontology in academic success, thus recognising student agency.

Secondly, this study contributed to critical realism body of knowledge through highlighting concepts from critical realism, the laminated system as well as absence and emergence in the context of academic success. These concepts were applied in the real-life context of academic success in emergency care education. For example, the laminated system and the concept of radical negation in Chapter Seven were mapped out using excerpts from students' interviews.

Thirdly, similarly to the first point above, the use of critical realism to explore the generative mechanisms and causal powers that generate or enable the absence or emergence of academic success in prehospital emergency medical care and higher education in general is unique.

Finally, while other studies on academic success have focused on the absence of academic success, this study also focused on the causal mechanisms that enable the emergence of academic success. Although some of causal mechanisms that generate the absence of academic success have been investigated in other studies, there are some which were unique to the emergency care profession. For example, the study found that some of the students found patient simulations to be both challenging and stressful due to the level of complexity and possible misaligned pedagogic strategies which, in turn, culminated in unsuccessful student outcomes. Furthermore, the data suggested that students who enrol for the BEMC degree should be sufficiently mature to enable them to cope better with the mental stressors of the paramedic profession. The students were also aware that they would carry with them potentially lethal drugs after graduation with this functioning as an extrinsic motivator for academic success as the students wanted to ensure that they would be competent emergency care providers after graduation. In the same vein, some of the third-year students indicated that repeating a year had been beneficial as they would otherwise have not been prepared to function as independent emergency care providers in a year's time.

8.5 Recommendations

It is recommended that the Emergency Medical Care Departments raise more third-stream income to assist financially disadvantaged students who require funds to enable them to travel to and from either campus or clinical practice shifts. Offering of short courses and sponsorships from corporate can assist in increasing third-stream income. Furthermore, some of the students have insufficient funds to purchase their own food and thus money from

third stream income could be used to sponsor financially needy students and help them to buy food.

The data suggested that some of the students had misaligned expectations about the BEMC programme. It is thus essential that prospective students are provided with detailed information about the BEMC programme. This should include information about the medical rescue that requires strenuous physical activity, early morning starts and late nights. Included in this information should be the associated costs related to the programme such as purchasing any of the equipment required for the medical rescue and/or emergency care modules.

It is further recommended that Emergency Medical Care Departments strengthen and encourage peer support through mentoring and tutoring groups. It emerged from the data that peer support played a crucial role in academic success. Tutors and mentors can support and encourage students to maximise their potential and improve their academic performance. Furthermore, tutors can offer peer-assisted learning to facilitate study sessions for junior students. In addition, the Emergency Medical Care Departments should foster a sense of belonging in their respective departments to facilitate communities of learning. The latter can also benefit junior students who can ask about the programme and what is expected of them in the programme.

The results showed that the students often found the patient simulations to be stressful while the academic staff had mentioned that very little had changed in the way in which patient simulations are conducted in emergency care training. It is, therefore, recommended that Emergency Medical Care Departments revisit how patient simulations are taught and assessed to ensure a more student-centred approach than was the case at the time of the study. In addition, there should be a better constructive alignment between the teaching and assessments of patient simulations so as not to disadvantage students. A workshop for all higher education institutions and the Professional Board of Emergency Care should be held to address the challenges surrounding patient simulations. It emerged that other institutions had multiple patient simulation assessments which gave students a better chance to succeed through the year through scaffold learning. The latter is desirable practice which needs to be considered by other institutions. Lastly, the Emergency Medical Care Departments can explore a situation where the assessors for the patient simulation are not in the same room

as the student to reduce the student's anxieties. However, students may never learn to cope with stressors on scene such as crowd control and potentially violent scenes.

In addition, the Emergency Care Departments should strengthen relations with the Institutional academic support units such as the Academic Writing Centre and Academic Development to address issues such as poor academic writing and study techniques. The Emergency Care Departments need to foster a culture of accessing support to coincide with encouraging counselling to help students deal with the emotional and mental stressors associated with clinical practice. The study found that the students perceived student counsellors as being uninformed about the stressors which paramedic students encounter. In addition, lecturing staff should be more empathetic towards students who want to discuss their experiences in class or Clinical Practice. The duck syndrome (keeping up a brave appearance while suffering in silence) should be discouraged and students encouraged to seek the relevant support.

8.6 Possibilities for Future Research

The study found a gap in relation to the culture of emergency medical services that is possibly being transferred to the respective Emergency Medical Care Departments. This culture relates to the masculinised paramedic environment. Millar investigated this culture in respect of the way in which it influences the emergence of student identity among emergency care students.[37] There is, thus, a gap in respect of conducting an ethnographic study that investigates how the culture within the Emergency Medical Care Departments influences academic success. Accordingly, a longitudinal study could be carried out to assess whether the interventions that have been put in place to address academic success are having the desired impact.

8.7 A Critique of the Research

A longitudinal study into academic success over three to five years would have provided richer data on academic success. In addition, it is possible that a longitudinal study may be able to track a cohort of students and whether any of the interventions that have been put in place are, in fact, yielding positive results. The participants for this study were recruited via the heads of departments. However, this may perhaps have restricted the sample size in the quantitative phase. Several variables could possibly have been statistically significant with a

bigger sample size. All the required statistics that were warranted for the research question were done, these include both descriptive and inferential statistics, namely, the Fisher's exact and Chi-square test. The quantitative study was never intended to be a large study in the first place. As this work has never been done within an African context I started small with the quantitative work and then expanded on the findings in the qualitative work. In addition, students who had dropped out were not included in the sample and thus the study contained no information related to dropouts from the BEMC degree. However, getting hold of dropout students may prove to be difficult as some may have changed their contact details. Furthermore, the research findings may not be applicable to all paramedic students in South Africa, only those who participated. Lastly, there are several variables that affect academic success which some may not be accounted for in this study due to diverse factors associated with academic failure.

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Appendix A: Quantitative Survey

1.	GENDER	
	Male	
	Female	

2.	AGE	

3.	Age when you started the BEMC/BhSc for the first time	

4.	Self-identified race	
1	African	
2	White	
3	Coloured	
4	Indian	
5	Asian	
6	I choose not to indicate	

5.	Which country are you from?	

6.	What is your mother tongue?	

7.	Please select the institution at which you are currently studying the BEMC/BhSc EMC. Make a tick (√) in the appropriate box	
1	Cape Peninsula University of Technology	
2	Durban University of Technology	
3	University of Johannesburg	
4	Nelson Mandela Metropolitan University	

8.	Do you have a previous emergency care qualification?	
1	NO	
2	YES	

8.1	If yes, which one?	
1	Basic Ambulance Assistant	
2	Ambulance Emergency Assistant	
3	Critical Care Assistant	
4	Emergency Care Technician	
5	National Diploma in Emergency Medical Care	

8.2	Did you use this previous emergency care qualification to work in Emergency Medical Care before you came to study full time?	
1	NO	
2	YES	

9.	Do you have a previous degree?	
1	NO	
2	YES	
	If yes, Please explain	

10.	Do you have a part-time job?	
1	NO	
2	YES	

10.1	If you work part-time, how many hours per week do you spend working at the part time job?	
1	Less than 5 hours per week	
2	6–15 hours per week	
3	16–30 hours per week	
4	More than 30 hours per week	

11.	When you enrolled for the BEMC, had you worked first or did you come directly from school?	
1	Came directly from school	
2	Worked first	

12.	Why did you choose to study the BEMC?	
1	The course would offer a potential opportunity for promotion	
2	I want a job with a qualification	
3	I felt it is my calling/vocation	
4	To help people	
5	My parents/family forced me	
6	Being a paramedic is an exciting and glamorous job	
7	When I obtain my BEMC I want to work overseas	
8	Other	

If other, please elaborate further _____

13.	What type of school did you attend?	
1	Private school	
2	Public (Former Model C)	
3	Public (Township)	
4	Public (Rural)	

14.	Which of the following subjects did you take and pass in Grade 12? (You may indicate more than one)	
1	Mathematics	
2	Biology/Life sciences	
3	Physical Science	
4	None of the above	

15.	Do you think that high school adequately prepared you for the BEMC degree at university?	
1	NO	
2	YES	

16.	Do you have a quiet place at home (the place where you reside while studying) to study undisturbed?	
1	NO	
2	YES	

17.	Do you have a working laptop/PC with the software you need at home/the place where you reside while studying?	
1	NO	
2	YES	

18.	Do you have internet access at home/the place where you reside while studying?	
1	NO	
2	YES	

19.	Are you able to work in the university library or IT centre after hours?	
1	NO	
2	YES	

20.	Are you the first person to attend university in your family?	
1	NO	
2	YES	

21	How do you travel to campus?	
1	Own car	
2	Public transport	
3	Lift club	
4	Walk	

21.1	How long does it take you on average to get to campus?	
1	≥ 5–10 minutes	
2	≥ 11–20 minutes	
3	≥ 21–30 minutes	
4	≥ 31–60 minutes	
5	More than 60 minutes	

21.2	How do you travel to clinical practice shifts/experiential learning?	
1	Own car	
2	Public transport	
3	Lift club	

22.	How are your studies funded?	
1	Parents or relative paying	
2	Bursary (state which)	
3	Self-funded	
4	NSFAS	
5	Other	
	If other, please specify	

23.	Have you repeated a year in your BEMC studies?	
1	NO	
2	YES	

23.1.	If yes to Question 22, please select which year? (You may indicate more than one, if necessary)	
1	YEAR 1	
2	YEAR 2	
3	YEAR 3	
4	YEAR 4	

24.	Have you repeated a subject/s in your BEMC studies?	
1	NO	
2	YES	

24.1	If yes to Question 24, please state which one/s.	

25.	The following factors impact seriously on my studies				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Personal problems					
Lack of money					
Family/home problems					
Hunger					
Health					
Poor time Management					
Accommodation					
Language of instruction at your institution					

Thank you for taking the time to complete this survey.

Appendix B: Consolidated Criteria for Reporting Qualitative Research (COREQ)

No Item	Guide questions/description
Domain 1: Research team and reflexivity	
Personal characteristics	
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?
2. Credentials	What were the researcher's credentials? E.g. PhD, MD
3. Occupation	What was his/her/their occupation at the time of the study?
4. Gender	Was the researcher male or female?
5. Experience and training	Experience and training
Relationship with participants	
6. Relationship established	Was a relationship established prior to commencing the study?
7. Participant knowledge of the interviewer	What did the participants know about the researcher? *e.g. personal goals, reasons for doing the research*
8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interest in the research topic
Domain 2: Study design	
Theoretical framework	
9. Methodological orientation and theory	What methodological orientation was indicated as underpinning the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis

Participant selection	
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball
11. Method of approach	How were participants approached? *e.g. face-to-face, telephone, mail, email*
12. Sample size	How many participants took part in the study?
13. Non-participation	How many people refused to participate or dropped out? Reasons?
Setting	
14. Setting of data collection	Where was the data collected? *e.g. home, clinic, workplace*
15. Presence of non-participants	Was anyone else present besides the participants and researcher(s)?
16. Description of sample	What are the important characteristics of the sample? *e.g. demographic data, date*
Data collection	
17. Interview guide	Were questions, prompts, guides provided by the authors? Was the interview guide pilot tested?
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?
20. Field notes	Were field notes made during and/or after the interviews or focus groups?
21. Duration	What was the duration of the interviews or focus group?
22. Data saturation	Was data saturation discussed?

23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?
Domain 3: Analysis and findings Data analysis	
24. Number of data coders	How many data coders coded the data?
25. Description of the coding tree	Did authors provide a description of the coding tree?
26. Derivation of themes	Were themes identified in advance or derived from the data?
27. Software	What software, if applicable, was used to manage the data?
28. Participant checking	Did participants provide feedback on the findings?
Reporting	
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? *e.g. participant number*
30. Data and findings consistent	Was there consistency between the data presented and the findings?
31. Clarity of major themes	Were major themes clearly presented in the findings?
32. Clarity of minor themes	Is there a description of diverse cases or a discussion of minor themes?

Appendix C: Interview Guide and Questions for the Absence of Academic Success

Welcome

- Introduce myself and the purpose of the focus group interview.

Guidelines

Inform the participants of the following:

- No right or wrong answers, only differing points of view.
- You've probably noticed the voice recorder. I am audio-recording the session because I do not want to miss any of your comments. People often say very helpful things during these discussions and I cannot write fast enough to get them all down. May I have your permission to record this session? I will be the only person to listen to the recording so everything will remain confidential.
- Reassure the participants of their anonymity
- I ask that you turn off your cellphones or pagers. If you are not able to do so and if you must respond to a call, please do so as quietly as possible and re-join us as quickly as you can.
- My role here will be to guide the discussion

Grand tour question

- Can you describe to me what you think contributed to you repeating any subject or year in the BEMC programme?

Further exploration and prompts will arise from the responses that elicit this grand tour question.

Thank you for your time and availability.

Appendix D: Interview Guide and Questions for the Emergence of Academic Success

Welcome

- Introduce myself and the purpose of the focus group interview.

Guidelines

Inform the participant of the following:

- No right or wrong answers, only differing points of view.
- You've probably noticed the voice recorder. I am audio-recording the session because I do not want to miss any of your comments. People often say very helpful things during these discussions and I am not able to write fast enough to get them all down. May I have your permission to record this session? I will be the only person to listen to the recording so everything will remain confidential.
- Reassure the participants of their anonymity
- I ask that you turn off your cellphones or pagers. If you are not able to do and if you must respond to a call, please do so as quietly as possible and re-join us as quickly as you can.
- My role here will be to guide the discussion

Grand tour question

- Can you describe to me what you think contributed to you being in 3rd/4th year of the BEMC programme without repeating any subject or year?

Further exploration and prompts will arise from the responses elicited by this grand tour question.

Thank you for your time and availability.

Appendix E: Focus Group/Interview Letter of Information

FOCUS GROUP/INTERVIEW LETTER OF INFORMATION

Dear participant,

I am conducting a doctoral research project in order to complete a Doctor of Philosophy in Emergency Medicine through the Division of Emergency Medicine, University of Cape Town.

Title of research: A Critical Realist Study into the Emergence and Absence of Academic Success among Students enrolled for the Bachelor of Emergency Medical Care in South Africa

Name of research student	: Mr Simpiwe Sobuwa
Email	: simpiwesobuwa@gmail.com
Name of supervisor	: Dr S. Bruijns
Name of institution	: University of Cape Town
Email	: stevan.bruijns@uct.ac.za

The purpose of the study is to explore and understand the factors that influence either success or the lack thereof among students enrolled for the Bachelor degree in Emergency Medical Care in South Africa.

Procedure: The study will require you to participate in a focus group discussion or an interview which will last for approximately 45 minutes to an hour. You have been invited to participate

in the study because you are a BEMC student/lecturer and may have some insight into the factors that influence either success or the lack thereof among students enrolled for the Bachelor degree in Emergency Medical Care in South Africa. You will be asked questions in relation to what you think are factors that have led to your performance in the BEMC.

The discussions will be audio-recorded as I do not want to miss any of your valuable information. However, I am the only person who will have access to these recordings. These recordings will also be transcribed by myself to maintain confidentiality of the proceedings. Your name will not be used in any part of this research study and pseudonyms will be used to ensure your confidentiality.

Risks: There are no risks for the participants as strict confidentiality of the source of the information used in the study will be maintained. The results will be used for research purposes only. However, confidentiality in the focus groups is also dependent upon your colleagues who will take part in the discussion with you. Although this is beyond my control I will do my utmost to urge all participants to respect the confidentiality of the discussion.

Benefits: There will be no financial benefits from your participation in this study.

If you agree to participate, you will be required to complete the consent form. You may refuse to participate in the study or withdraw from the study at any stage without any adverse consequences.

Persons to contact in the event of any problems or queries:

University of Cape Town Human Research Ethics Committee Administrator

lames.emjedi@uct.ac.za or 021 406 6338

You may request the results of the study when it is completed.

General:

You may ask questions of an independent source if you wish (see supervisor contact details above). If you are not satisfied with any area of the study, please feel free to forward any concerns to my supervisor. Thank you once again for your interest and your decision to participate in this study.

Thank You