

**SCIENCE FOUNDATION STUDENTS' EXPERIENCES AT A  
TERTIARY INSTITUTION**

by

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## ABSTRACT

*The Science Foundation Programme (SFP) at the University of KwaZulu-Natal, now called the BSc 4 (Foundation) and SFP is a pre-degree programme intended for previously educationally disadvantaged students. Although under-prepared, these students demonstrate academic potential and are therefore provided with an alternative route into science studies. Not only are some of these students academically disadvantaged, but others are also drawn from communities with low socio-economic status. This study was an exploration of the SFP students' experiences at UKZN. The study examined how these experiences influence achievement and how they can be dealt with to improve achievement.*

*In data gathering, this qualitative study utilised both individual and focus group interviews which were conducted with students enrolled in the programme during the year 2006, whilst another interview was done with the SFP student counsellor. Students were also asked to keep reflective journals to record their daily experiences. Furthermore, document analysis produced data with regard to students' academic background.*

*The experiences related to achievement in the SFP emerged as different academic, social and personal factors. Poor schooling background, a mismatch between SFP students' expectations and those set by the programme; poor academic adjustment, financial problems, lack of family support, career misguidance, lack of knowledge and*

*misconceptions about student support services are all some of the factors that impede the achievement in the programme. In contrast, peer support emerged as one of the key factors that enhance performance amongst most SFP students.*

## PREFACE

The work described in this thesis was carried out in the School of Science, Mathematics and Technology Education, University of KwaZulu-Natal under the supervision of **Dr. Michèle Stears**.

This study represents original work by the author and has not otherwise been submitted in any form for any degree or diploma to any tertiary institution. Where use has been made of the work of others, it is duly acknowledged in the text.

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## **ABBREVIATIONS**

SFP      Science Foundation Programme

UKZN     University of KwaZulu-Natal

CHE      Council for Higher Education

HSRC     Human Resources Research Council

# CHAPTER 1

## ORIENTATION OF THE STUDY

### INTRODUCTION

The need to engage the learner's personal experiences in the learning process has been argued by various scholars on the basis that learning is mediated by diverse factors ranging from cognitive, i.e. the academic factor, to non-cognitive factors, which embrace social and personal experiences. Tight (2003), in a study focusing on students' experiences during their first year of higher learning, reveals that students' personal experiences may impact on their learning, particularly those students who enter through alternative access routes. In South Africa the majority of students who enter university through alternative access routes are usually those previously disadvantaged in terms of their schooling, a fairly large number of which is African.

A consequence of this inappropriate schooling experience is underdevelopment of cognitive skills, which in turn leads to a substantial gap between students' actual cognitive development and their potential development; the actual level at which they should be functioning (Jadalla, 2000). This disparity in cognitive development as expounded by Vygotsky's Zone of Proximal Development theory in Jadalla (2000) may influence the adjustment of students to a new learning environment, which in turn may be the core reason for the shortfall in these students' academic performance. Having been drawn from lower socio-economic status, these students also experience social-emotional factors that may undermine their academic performance.

Tinto (2000) further articulates that students who do not have a positive experience in making academic and social transitions at university may face difficulty in negotiating their way through the challenges of first year. Hence, this study investigates students' experiences in the Science Foundation Programme (SFP) at the University of KwaZulu-Natal (UKZN), a typical first year undergraduate programme. The study further explores how these experiences influence academic achievement.

In this chapter, the scene is set by presenting the motive for the study. A brief description of the Science Foundation Programme as an alternative access route for entry into mainstream faculties of science and engineering is provided, whereupon the policies underpinning foundation programmes are subsequently dealt with. The critical questions underlying the study are introduced. After imparting the intention for the study, the significance of the study and how its outcome may be used in monitoring success in the programme, is mentioned.

## **RATIONALE**

The higher education environment worldwide is on a major transformation route to cope with the need to broaden access. South African Higher Education is thus embarking on a major restructuring initiative aimed at overcoming the inequities of the past. Whilst foundation programmes have been in place for a number of years in some tertiary institutions, they have just been introduced in others. This is a result of the redress funding for academic development which has been made available by government as a

means of widening access. The science foundation programme at UKZN is one such programme that has existed for a number of years and now benefits from government funding, effective from 2005.

While participation rates in the South African Higher Education have increased, the throughput and success rates of students from educationally disadvantaged backgrounds have not increased at the same pace (Koch & Foxcroft, 2003). Given South Africa's high-level skills shortage, all policy documents promote expanded participation in Higher Education to increase the number of graduate outputs. However, Koch & Foxcroft (2003) argue that expanding the participation without increasing efficiency may be counterproductive, particularly for the educationally disadvantaged students. In the Human Resource Development Review done by the HSRC (2003) on Higher Education enrolment and graduate output, it is also argued that achieving greater access for disadvantaged students without improving their success rate may not advance equity or improve human resource development. Hence, the review emphasises the utilisation of different strategies in order to improve success amongst previously educationally disadvantaged students. According to the review this involves unpacking all the factors that cause student attrition and failure, then developing a method of intervention to counteract them. In enhancing this process, it is thus imperative that not only the cognitive but also the non-cognitive factors associated with academic achievement be explored as they may influence each other.

Motivation for the project is a consequence of my being part of the research team in the SFP at the time of the study. By analyzing SFP comprehensive student records for the 2005 cohort, the team embarked on a task to investigate cognitive factors that cause student failure, and possible ways of intervening to improve success rates. The results of this study indicated that students that had a combination of weaknesses, for example, a poor pass in school Mathematics and Science subjects together with a low matriculation and the Science Foundation Selection test score, were more likely not to succeed at the end of the SFP year. Thus, the fewer the number of weaknesses, the better the students performed. However, a few exceptions were observed where students with all these combinations succeeded. Explanation to this trend required a qualitative study which was not conducted. Hence the research also investigated the best possible means of maximising retention in the programme, for example extra lessons were put in place for 'at risk' students. With the intention of giving a holistic view, I then set to investigate, from the students' point of view; both the academic and the non-academic factors which they considered as having had an effect on their levels of performance. This was done with the intention to contribute to the augmentation of graduate throughput rates, particularly for the previously marginalized students.

Following the merger of the then University of Natal and the University of Durban Westville, a new curriculum was designed and implemented for the first time in 2005 to respond to the needs of the SFP students at UKZN. The overall pass rate for both Westville and Pietermaritzburg campuses where the programme is offered was moderately low with a few students excluded, based on academic performance in 2005.

Similar trends were observed after the 2006 year-end evaluations. Academic interventions had been at relatively optimum levels, with tutorial sessions intensified to allow for individual attention, and extra lessons offered for the underachievers. Counselling had also been effectively running, with counsellors giving feedback on the generic problems (both academic and non-academic) that the students reported as having an effect on their academic performance. It became apparent that a thorough investigation of these aspects was crucial in order to advance our pass rates. This project therefore aspires to investigate the students' overall experience of the programme, by exploring not only the academic factor, but also the social and personal factors that influence students' achievement in the programme.

## **SFP BACKGROUND**

The Science Foundation Programme (SFP), now called the BSc4 Foundation & SFP at the University of KwaZulu-Natal was established to address the needs of previously disadvantaged students who do not satisfy entry requirements for mainstream programmes in the faculties of Science, Engineering, and Health Sciences at UKZN. Some of the students may not necessarily have been entirely underprivileged, but did experience some levels of disadvantage during their schooling. The SFP is a year long undergraduate programme designed specifically to address the needs of under-prepared students. Having been through disadvantaged schools where resources are limited, some of the students enter the programme with poor educational and social background knowledge that would facilitate their transition from school to higher education. Adapting to a higher learning environment may be more challenging for them in comparison with



students from better resourced schools and more affluent social environments. The programme thus strives to help these students develop a range of skills and competences that would improve their learning not only during their SFP year but would also support their survival in mainstream degree studies. There is therefore less emphasis placed on acquisition of facts, but rather focus is given to the development of life-long skills that will provide the students with a firm foundation for their career studies.

In order for a student to be eligible for admittance into SFP, he or she has to write and pass a selection test that comprises Mathematics and Science components. The language component is also specifically used to place students according to their levels of need for development of language proficiency as they display different language aptitudes. A student also needs to meet other criteria stipulated in the selection procedure, for example, that they must have been educationally disadvantaged during their schooling years. This is determined by the school rating allocated by the Department of Education for each school, indicating the level of disadvantage. On successful completion of the programme, a student may pursue any science degree, with a limited number of students gaining admission into health science or engineering degrees at UKZN, provided they meet the required sub-minima for that particular stream. No candidates are allowed to repeat the SFP.

Students in the SFP take core modules of Mathematics, Physics, Chemistry, and Biology, all of which were non-credit bearing for degree studies until the beginning of 2007. All modules were ultimately made to carry credits towards a BSc degree as specified by the

Department of Education. As highlighted above, Foundation modules are designed to develop a wide range of knowledge, competencies, and skills, including conceptual, social and learning skills; and also to develop and enhance students' abilities in scientific reading and writing.

In addition to the above modules, the programme offers a Counselling module that deals with students' personal and emotional issues as well their academic needs. The Counselling component includes training in life skills, vocational guidance, mediation, academic monitoring, and personal counselling. This is a crucial component of the programme as it attempts to help students cope with the demands of University life, teaches them valuable skills in academic literacy, and improves their confidence, sense of being, and self-esteem. The module addresses issues of career choice and planning during the SFP course of study to assist students in making relevant vocational choices.

## **HIGHER EDUCATION POLICIES**

A number of admission policies regarding Higher Education have been adjusted to accommodate under-prepared students, i.e. previously educationally disadvantaged students. This section looks at how some policies have been modified to widen access for the designated students.

## **Higher Education Policy on Access Programmes**

In its mandate to transform Higher Education, The Council for Higher Education states the following vision for equity and redress:

*“To promote equity of access and fair chances of success to all who are seeking to realise their potential through Higher Education, while eradicating all forms of unfair discrimination and advancing redress for past inequalities” (CHE, 2002).*

According to the above policy, the vision serves to ensure that there is no mismatch between the output of Higher Education and the needs of the modernised economy. The document further highlights the vision as responding to the shortage of highly trained graduates in fields such as science, engineering, technology, and commerce - a backlog attributable to the discriminatory practices of the past, which resulted in limited access of black and women students to pursue such fields.

To register for degree studies at a public university in South Africa a learner needs to be in possession of a Senior Certificate with a matriculation endorsement; a certificate of complete or conditional matriculation exemption. However, admission criteria have been adjusted to open access.

The Council of Higher Education for example provides the following rights with regard to admission and selection procedures in Higher Education:

*“Institutions will continue to have the right to determine entry requirements as appropriate beyond the statutory minimum. However, in exercising this right, they*

*should ensure that selection criteria are sensitive to the educational backgrounds of potential learners, and incorporate the recognition of prior learning” (CHE, 2002).*

The Senate Discretionary Conditional Exemption allows universities to admit students who do not meet the statutory admission requirements and provides them with an academic development programme which is a form of appropriate prior learning, then assesses and recognises this prior learning as the equivalent of a Senior Certificate with endorsement or exemption. This practice has been streamlined through the recognition and subsidy of Foundation Programmes and Certificates which are designed to articulate with, and to provide access to a range of Higher Education Programmes (CHE, 2002). Also under the Senate Discretionary Conditional Exemption concession, some universities set up institution-specific entrance tests for prospective students. In most cases, all students with a Senior Certificate below a certain aggregate are required to write these tests. The results are used to assist universities in making alternative admissions and placement decisions. This expansion results from established research findings which show that only high matriculation scores are good predictors of success and that it is not possible to predict success or failure from low matriculation scores (Griesel, 1999). Relying exclusively on matriculation scores may therefore disadvantage students who have had poor previous learning opportunities. Hence, an adjustment to the admissions policy was fundamental for the purposes of widening access.

## **Policy on undergraduate access and admissions to the University of KwaZulu-Natal**

In responding to the imperative for redress proposed by the Education Ministry, the University of KwaZulu-Natal Vision and Statement (2006a) states:

*“The University of KwaZulu-Natal will be ‘demographically representative, redressing the disadvantages, inequities and imbalances of the past’” (p.1).*

In addition, one of its stated goals specifically highlights access:

*“The University will promote access to learning that will expand educational and employment opportunities for the historically disadvantaged, and support social transformation and redress” (p.1).*

The policy on access distinguishes between two forms of access: direct and alternative access. Direct access is for students who gain entry to university because they fulfilled all the requirements prescribed, i.e. statutory and faculty requirements. Alternative access caters for students who are ineligible to enter through direct access but demonstrate potential to learn and benefit from degree study. These students who usually fall below cut-off point, are not excluded, instead they are given the opportunity to display aptitude and ability to learn by means of an entrance or placement test.

Interventions in the form of foundation programmes have been established to deal with the educationally disadvantaged students by equipping them with the skills and knowledge necessary to enhance success throughout their years of tertiary study. Hence, the year-long UKZN Science Foundation Programme as an intervention programme is designed for under-prepared disadvantaged students who wish to pursue a science related

degree but do not meet the requirements to go directly to mainstream degrees. The adoption of this policy by UKZN is therefore in accordance to the adjustment of the admission policy as a redress mandate by government, which endeavours to address the inequities of the past.

## **PURPOSE OF THE STUDY**

The purpose of the study is to gain an understanding of the Science Foundation students' experiences at the University of KwaZulu-Natal and how these experiences influence their performance. The research also aims to establish how these experiences can be addressed to enhance performance.

## **CRITICAL QUESTIONS**

The following critical research questions will underpin the study:

- What academic disadvantage do students bring to the Science Foundation Programme?
- What are the experiences of students in the Science Foundation Programme?
- How do these experiences influence performance/achievement in the programme?
- How can these experiences be addressed to enhance performance in the programme?

## **CONCLUSION**

The above discussion of the SFP background highlights a clear need for the research. In the South African context, educational disadvantage is one of the key factors that may impact on achievement, hence the adjustment in the admission policies for entry to higher education learning. A greater understanding of students' experiences in the SFP programme will therefore help in the monitoring of transition and adjustment of students in the programme, contributing to successful learning. The following chapter will provide an outline of the theoretical framework and the relevant literature regarding factors that may influence achievement during the first year of university, in particular, in the Science Foundation Programme.

## **CHAPTER 2**

### **THEORETICAL FRAMEWORK AND LITERATURE REVIEW**

#### **INTRODUCTION**

The first part of this chapter introduces the UKZN SFP philosophy and then gives an account of the principles of constructivism, in particular, social constructivism which frames the SFP philosophy. Furthermore, it discusses social constructivism as the theoretical framework guiding the study and as the lens through which the data was analysed. The second part of the chapter presents the literature reviewed to support the study. To offset this second part of the discussion, a profile of previously educationally disadvantaged students and their access to higher education is discussed. A brief discussion of some of the academic as well as social factors that may influence achievement, especially during first year of higher education study, is presented.

#### **THEORETICAL FRAMEWORK**

As the study examines the experiences of students in the UKZN SFP, it is important to recognise the theoretical framework and the philosophy adopted by the programme, both of which draw from the theories of Constructivism.



The UKZN Science Foundation Programme History and Philosophy (2006b) states:

*“The Programme's philosophy draws extensively from the theories of Vygotsky and Constructivism, and was designed to fill the needs of a specific type of learner: those who have come from historically disadvantaged schools where teaching resources are severely limited, and transmission-based teaching predominates. Students entering SFP are under-prepared for tertiary studies in a variety of ways. Firstly, their cognitive skills are underdeveloped and rote learning predominates. This is not only a result of the large classes and under-qualified teachers at many of these historically disadvantaged secondary schools, but also because what is presented to the students is usually alien and irrelevant to their ordinary circumstances and lives” (p.1).*

As seen from the above, the majority of students come to the programme with limited knowledge to facilitate their learning in the programme. Their school learning experiences may impact on the level of construction and acquisition of new knowledge in the higher education learning environment. This indicates a gap between their actual cognitive development and their potential development; the level they should be functioning at, given appropriate learning experiences (De Villiers, 1996). The programme aims to close this gap to enable students to face challenges in mainstream degree studies and beyond. As explained by Vygotsky's zone of proximal development theory (In Jadalla, 2000), the disparity in development of cognitive skills may impact on the adaptation of students to a new learning environment. Jadalla (2000) puts forward that experiences can definitely provide a catalyst for developing knowledge, however he

argues that how the experience is translated into meaningful understanding will affect the type and quality of knowledge. Hence, the theories of constructivism (individual and social) are used to guide teaching and learning in the programme where construction of new ideas is achieved by means of personal interpretation of knowledge, personal experience, as well as social context.

### **Constructivism**

The theories of constructivism are generally attributed to a number of scholars which include Bruner, Piaget, and Vygostky. A major theme in the theoretical framework of Bruner is that learning is an active process in which learners construct new ideas or concepts based on their past knowledge, a notion echoed by the Piagetian approach. The Piagetian perspective as articulated by Bennet (2003), proposes mechanisms by which knowledge is internalized by learners. Piaget's framework suggests that through processes of accommodation and assimilation, individuals construct new knowledge from their experiences. Assimilation involves interpretation of new experiences, i.e. individuals assimilate a new experience into an already existing framework, while accommodation involves modifying or reframing of existing knowledge or experience to fit new experiences. Both Piaget and Bruner's theories are similar in nature to Vygotsky's constructivist perspectives of learning.

The basis of Vygotsky's theoretical framework holds that social interaction plays a fundamental role in the development of cognition. According to Vygotsky (1978) every function in the child's cultural development appears on the social level and later on the

individual level. Vygotsky (1978) further argues that all the higher functions originate as actual relationships between individuals. A second feature of Vygotsky's theory is the idea that the potential for cognitive development depends upon the "zone of proximal development" (ZPD), a level of development attained when children engage in social behaviour. Full development of the ZPD depends on full social interaction, either with adult guidance or peer collaboration, (Vygotsky, 1978). Thus social learning plays a key role in cognitive development, where learning occurs not in isolation but as a result of association with significant others.

Social learning as argued by Vygotsky complements the 'situated learning' theory of Lave & Wenger (1991). According to Lave & Wenger (1991), learning normally occurs as a function of the activity, context, and culture in which it occurs i.e., it is situated. Social interaction is a critical component of situated learning where new learners become involved in a "community of practice" which represent certain beliefs and behaviours to be acquired (Lave & Wenger, 1991). Thus, as the learners move into a new learning community, they become active participants in the practice of learning.

### **Social Constructivism**

As argued above, even though knowledge is personally constructed, each individual's constructions are mediated by the actions of others in a social setting as well as the characteristics of the culture in which learning is situated (McRobbie, 1997). As expounded by the Vygotskian perspective, knowledge is not solely constructed within the mind of the individual but is constructed within the social context. Bennet (2003) asserts

that social constructivism places less emphasis on the individual and more on the learning context and communities of practice, i.e. the social aspect. Social constructivism thus recognises the importance of both social and personal aspects of learning. It acknowledges that learning is a social activity in which learners are involved in constructing consensual meaning through discussions and negotiations. McRobbie (1997) further argues that during these discussions, students can identify and articulate their own views, exchange ideas and reflect on other students' views, reflect critically on their own views, and, when necessary, reorganise their own views and negotiate shared meanings.

A Social Constructivist approach as developed by Vygotsky prevents the alienation of students' learning from their socially relevant interactions and further allows them to reflect on their past learning experiences in construction of new knowledge (Jadalla, 2000). According to Wilson & Ramphela (1989), in the South African context, most learners are educationally underprivileged as they come from social environments which are not motivated towards learning. This forms the majority of the SFP students. Some of them are the first children in the family to even reach a tertiary level of education and hence there are no adequate motivational structures. Because of these negative social experiences, the cultural orientation of the disadvantaged learner is frequently not compatible with that promoted by the education institution, causing them to experience alienation in the learning environment (Rosa, 2004).

When students experience alienation in the learning environment, they are likely to experience deteriorating academic interest. Moreover, as a consequence of disadvantaged

schooling they are likely to suffer a weak social transition and integration to a new learning environment, particularly when they enter higher education. They bring along amongst other social-emotional factors, low self-image, lack of self-confidence, and lack of motivation, which influence their performance and more often than not, hinder achievement. As Rosa (2004) reasons, disadvantaged learners prefer a more co-operative, social style of processing information, yet, the education system presented to a learner requires a more competitive, independent approach. For this reason, factors that hinder students' achievement need to be closely monitored to enhance the success rates amongst this group of learners.

In support of the above theories, Frieden (2005) argues that the experience of learning should not be viewed in a vacuum but should embrace all aspects including the personal and social experiences of an individual. This provides a framework for thinking about learning as being holistic, contextual, generalisable, and developmental (Frieden, 2005). Since educational experience stems from formal schooling as well as from the social environment, students who do not get adequate exposure to these resources are likely to be disadvantaged in the future years of their education.

To conceptualise the experiences of students in the programme, the theory of social constructivism was used to guide the study precisely because it focuses on both social and educational aspects of learning. This theoretical framework was also used as a lens to analyse the data.

## **LITERATURE REVIEW**

According to Vithal & Jansen (1997), a literature review is undertaken to provide the framework of the research and to identify the area of knowledge that the study is intended to advance. De Vos, Strydom, Fouche, & Delport (2002) assert that the review of literature helps refine the research questions by embedding the questions in larger empirical traditions. A good literature review demonstrates that the researcher has identified gaps in previous research and that the proposed study will meet a demonstrated need, articulates Neuman (2000). As further proposed by Vithal (1997) “a literature review offers a synthesis of what has already been written on the topic, what has not been written on the topic, or is written in such a way that it is conceptually or methodologically inadequate, with the goal of clarifying how the researcher’s proposal addresses the gap, silence or weakness in the existing knowledge base” (p.14). Cohen, Manion & Morrison (2007), further regard a literature review as a preparatory stage to gathering data which serves to acquaint researchers with previous work done on the topics they are studying, thus contextualising their research.

### **Disadvantaged students**

The UKZN SFP caters for students who are under-prepared, predominantly as a result of educational disadvantage during their schooling years. These students demonstrate potential for tertiary studies in science but do not meet the requirements to get directly into mainstream degree studies. In the South African context, educational disadvantage is due to the unequal distribution of resources, poor infrastructure, and poor quality instruction especially at school level, (Phurutse, 2005). During the apartheid era, the

Bantu Education system in South Africa ensured that Blacks were denied the sort of learning experiences that would prepare learners for tertiary education. The bulk of the resources like finance, infrastructure, teacher training and facilities were directed towards white schools. After the election of democratic government in 1994, the South Education system embarked on a major transformation in order to address inequities of the past. However, according to Christie (1998), the schooling system continues to fail the majority of learners in terms of learning experiences it makes available to them because inequalities in access and resources have not been completely removed.

Based on the study by the HSRC (2003), most South African schools are typically characterised by lack of teaching and learning resources; large class sizes (educator to learner ratio); fewer number of formal contact hours i.e. the amount of time spent teaching and learning; and low annual school fees, to name a few. As quoted from Bernstein (1996)

*“The distribution of material resources tends to follow the distribution of images, knowledges and possibilities so that there is an inverse relation between resources and the hierarchy of images and knowledges. For those at the top there is more, for those at the bottom there is less, with respect to their needs and conditions of effective support. This maldistribution of resources, certainly outside the school and often within it, affects access to and acquisition of school knowledge” (p.8).*

Due to this inequitable exposure to good-quality teaching and learning, educationally disadvantaged students are likely to experience lowered levels of academic achievement.

This may result in inferior levels of future expectations as they have pessimistic perceptions about their actual academic capabilities, thus negatively influencing their motivation and more importantly their academic achievement (Becker & Luthar, 2002).

Timm (2005) identifies disadvantaged students as those that come from low socio-economic backgrounds, are rurally isolated, and come from non-English backgrounds. These students, who are mostly black Africans, are identified as educationally disadvantaged due to the fact that the schools most of them attended were inferior as the classes were very large; the facilities were limited; and there were insufficient teachers who were frequently not adequately qualified (Futter, 1999). Disadvantaged learners are also defined by Natriello, Mc Dillel & Pallas (1990) as learners who, because of negative social or cultural situations, such as 'lower class, race, ethnic origin, poverty, sex, geographical location', enter school with knowledge, skills, and attitudes which impede learning and contribute to a cumulative academic deficit.

Although 'educational disadvantage' is defined differently by various scholars, the core argument is that disadvantaged students appear to be lacking in the forms of adaptation as well as the kind of knowledge that could be a basis for academic growth. For many learners the major determinants of school attainment are social situations, motivation, and support in the family and community, yet these characteristics are often lacking amongst the educationally disadvantaged. It is this particular profile which may include a shortfall in terms of personal, emotional, social, and mental aspects that the UKZN SFP caters for which requires careful monitoring in order to enhance performance. Hence the study looks at the holistic experience of the learner in the programme.



### **Access to higher education for disadvantaged students**

Both government and Higher Education have noted the under-representation of students from low socio- economic backgrounds in Higher Education studies. To increase their participation, the Higher Education Act (1997) compels higher education institutions to formulate their own admissions policies and criteria, with the specification that these criteria should broaden access and contribute to equity (Higher Education Act: 1997). Access has thus been widened by adjusting the admissions criteria for entry to Higher Education and also creating intervention programmes as a means to provide alternative routes to degree studies. As highlighted in the introduction, one of the most crucial debates in Higher Education is how to widen access to higher education and still ensure success.

Opening up access has to be accompanied by strategies to provide adequate and appropriate forms of support for all students, in particular, the previously educationally disadvantaged Black African students which form the majority of this group. These students are set to be academically ‘at risk’, due to inadequate schooling, which influences their achievement throughout their learning careers. The core issue remains whether the widening of access achieves the desirable results, i.e. whether it does improve success (Futter, 1999). Walker, Matthew & Black (2004) revealed in their study to determine a relationship between widening access and student non-completion, that students from low socio-economic backgrounds who attended a ‘top-up’ programme progress at better rates during higher education compared to those from the same status who do not have access to such programmes. Previous educational disadvantage, they

argue, continues to impact on students' achievement throughout their educational careers. This may have implications on wider access policies and therefore requires that performance of such students be monitored by identifying all factors that influence their learning and advocating ways to promote the protective factors to address students 'at risk'.

### **Some academic and social factors influencing performance**

South African Higher Education Institutions find it increasingly difficult to deal with school-leavers who are ill-prepared for Higher Education despite efforts to improve inferior academic levels for the educationally disadvantaged students (Fraser & Killen, 2005). As mentioned above, although access has been widened to accommodate students who would otherwise have been excluded on the basis of their matric results, research indicates that the higher education graduate output rates are still low. Fraser & Killen (2005) further reason that to admit students who have the potential to succeed and then treat them in ways that do not allow them to realize their potential, would be immoral. He suggests that the post-enrolment factors that influence student success be addressed to avoid merely opening formal access as this sets students up for failure.

A number of factors, both cognitive (which may be obvious for the disadvantaged students) as well as non-cognitive, which include socio-emotional factors, have been identified as having an influence on academic success. Research has shown that there is an inevitable link between the social, personal or emotional factors, and academic achievement. Muss (1996) puts forward academic success as a function of both personal

characteristics such as mental ability, academic skills, motivation, and goals, and the characteristics of the environment, which can be viewed to be interconnected. Although some of the disadvantaged students may develop successful survival strategies despite their previous educational shortcomings, some are likely to have rather unrealistic expectations about university as they lack knowledge about the system. These students are also likely to be lacking in both academic skills and social support, and these may contribute to negative academic outcomes.

Fraser & Killen (2005) propose a set of socio-emotional factors that influence academic success. These include peer support, family support, encouragement from lecturers, career choice, financial security, appropriate balance between academic commitments and social life, and a stable personal life. According to Tinto (2000) a student who is integrated into the institution both academically and socially will, all things being equal, be more likely to persist with study than a student whose academic and social integration is less well developed. He contends that school background, adjustment difficulties, financial problems, university-wide academic programmes, and satisfaction with accommodation, are also some of the factors that determine the retention or attrition rate of university students.

SFP students experience university life for the first time, representing diverse educational and socio-economic backgrounds. These differences in experiences and backgrounds will determine how well they negotiate their way through and adapt to the new challenging environment. Some may have experienced deprived schooling, while others may be

facing financial problems. Others may not necessarily have these kinds of problems, but, as typical first year students, may in one way or another be experiencing general adjustment problems.

Most of the factors highlighted above are a feature common to first year students. Some factors are however pertinent to under-prepared and socio-economically disadvantaged students. Since these are generic factors, it is thus imperative to know in particular which factors are experienced by the SFP students. This study thus endeavoured to determine exactly which factors apply in the context of the UKZN SFP students, and to what degree these factors influence achievement. From the review of the literature it is apparent that amongst the most significant factors are the students' schooling background, their financial status, adjustment to university, and support from peers, family, and university structures. The following is therefore an argument of how some of these factors may influence achievement.

### **Schooling Factors**

One of the evident features of under-prepared students which is also a feature of most UKZN SFP students is that the schools which serve them are characterised by poor academic attainment. This is due to multiple reasons including lack of teaching and learning resources, poor infrastructure, and inadequately qualified teachers. As a consequence these students experience lowered levels of academic preparedness, a factor which is crucial for their success in the higher education environment.

According to Hedges, Laine, & Greenwald (1994) there is a consistent and positive relationship between school resources and educational attainment. In a study conducted in schools in England by Bramley & Evans (2002), spending was increased in most deprived schools compared to most prosperous ones between 1996 and 2001 and as a result, an improvement in attainment levels during the same period increased more in the most deprived schools than in the most prosperous ones. Hence, Hedges et al (1994) argue that the results of the study indicate a positive relationship between educational spending per pupil and attainment level, and that deprivation and lack of resources can have a direct and negative impact on the overall school academic performance. It may thus be expected that students who attended schools where resources are limited, be academically challenged when they enter their first year of higher education.

Based on the quality of education received by learners particularly those from disadvantaged schools, it could be inferred that some if not most of the SFP students, arrive with limited experience to help them adjust to higher education academic demands. Their schools do not adequately prepare them to be competent in a highly academically and socially competitive university environment. They are thus likely to face more challenges in trying to negotiate their way through to university life than students from better resourced schools. As explained by Becker & Luthar (2002) the curriculum they are offered at school is usually geared toward lower order rote learning with emphasis on teacher-directed activities. These instructional shortfalls may be detrimental to student motivation and performance especially when they enrol for higher education studies where more independent and student-centred learning rather than rote learning is

emphasized. The level of academic as well social preparedness is thus seen to be compromised amongst most educationally disadvantaged students, impacting negatively on their success rate.

### **Financial security**

Feelings of financial insecurity reportedly also affect academic performance. According to Burdman (2001), students who come from lower-socio economic backgrounds are more likely to worry about financial aid for their tertiary studies than their financially secure counterparts. Consequently, with poor financial status these students are likely to be fretful about their physical needs as well. In a study to determine the causes of attrition amongst college/university students, Tinto (2000) established that a considerable number of students from low-income or disadvantaged backgrounds leave because they are unable to bear the university costs or are unable to attend when financial needs increase. Thus, financial constraints may further have an impact on the levels of attrition if not adequately addressed.

Bojuyowe (2002) explains that the majority of students in South Africa are faced with harsh economic circumstances and cannot afford the fees, factors which greatly interfere with their academic performance. Based on the study by the HSRC (Cosser & du Toit, 2000), it was found that more than a quarter of the South African disadvantaged learners live in informal settlements and that the majority of them live within the low socio-economic category. They further infer that for the majority of these learners, higher education is a gateway to employment, putting them under pressure to change their

families' economic status. They are thus likely to experience high levels of depression when faced with financial constraints during their university education, as this may constitute their only hope to attain financial freedom (Crosser & du Toit, 2000).

Another factor determined by the student's financial status is the quality of place where students reside during their studies. Living in satisfactory accommodation as argued by Tinto (1975) may contribute positively to the students' academic welfare. The opposite may thus be said if the students live in substandard conditions. Naidoo (1999) concurs that indeed the majority of black students from urban areas live in informal settlements. Children from informal settlements as home backgrounds may thus have experiences that are not adequate for learning which hinder their academic performances. Inadequate housing and overcrowding deprives them of privacy to study thus limiting their acquisition levels of learning.

### **Adjustment Difficulties**

According to Kantanis (2000), adjustment problems usually form the largest proportion of personal reasons for students' under-achievement, often regardless of their academic and social background. As Tinto (2000) argues, even the most academically gifted and socially mature students experience some difficulties making the transition from secondary school to the demands of the university. Coming from poor social and education backgrounds may make first year students feel even more alienated in socially and academically competitive university environments. Transition may prove to be more challenging for these students than for their more affluent counterparts. According to

Naidoo (1999) a significant number of students at South African universities particularly African students, experience notable levels of stress as they adjust to university environments and pursue academic goals. This is attributable to poor schooling, as it does not adequately facilitate adjustment to the demands of university life. These trends are also reflected internationally amongst students from educationally disadvantaged schools. For example, in a study conducted at Columbia University by Roeser, Eccles & Sameroff (2000), it was found that despite outward appearances of academic adjustment, many disadvantaged students experience considerable emotional distress as a result of poor emotional adjustment to a university environment.

First year students, especially those who experience the culture of university to be too different from school, may feel that they do not belong in the institution. According to Kantanis (2000), students are likely to experience academic failure if they fall short in negotiating initial feelings of alienation, isolation, dislocation, and dissonance. As Kantanis (2000) further points out, adjusting to the life and culture of university usually takes time and effort due to the substantial differences between educational environments of secondary school and that of university. He further asserts that students are likely to experience academic success and personal fulfilment if they are actively involved in learning communities, which involves 'co-registration' or 'block scheduling' which enables students to take courses together. According to Tinto, Russo, & Kadel (1994) students form their own supportive peer groups that extend beyond the classroom to enhance both their social and academic adjustment and transition. In this regard, SFP can be regarded to be a learning community. This learning community should endeavour to



lessen the experiences of alienation and facilitate transition of the students in the programme. Also as presented by Tinto (1998), the connected learning experiences amongst students enable them to learn and make friends at the same time, thereby bridging the gap between academic work and social conduct which frequently characterise student life. Because of this relationship their determination is likely to improve as they become academically as well as socially integrated in their new learning environment.

### **Support from Peers and Family**

According to Dennis, Phinney, & Chuateco (2005) support from peers and family are among the most common and important processes for adolescents and young adults and play an important role in academic outcomes. Pritchard & Wilson (2003) also view the development of interpersonal relationships with peers as critically important for student academic success. Tinto (1998) points out that the degree and quality of personal interaction with peers is of great importance when it comes to student persistence. He cites the lack of significant contact with other people on campus as the single most important predictor of eventual withdrawal. This implies that students with good support from friends on campus and family may have higher retention rates than students getting little or no support.

Hurtado, Carter & Fitzgerald (1996) report that peers provide the most support in their first year and that it is more closely related to social adjustment, whereas parental support may be a better predictor of emotional adjustment. Dennis et al (2005) further contend

that peers usually provide support that is helpful to academic outcomes by forming study groups, sharing notes and experiences, and giving advice about different strategies to use when studying or coping with personal problems. From a social constructivist point of view, learners like to interact with their peers and in doing so, construct meaning (Stears, Malcolm & Kowlas, 2003). In addition, as put forward by McRobbie (1997), social constructivism learning is a social activity in which learners are involved in constructing consensual meaning through discussions and negotiations. During these discussions, students can identify and articulate their own views, exchange ideas, and reflect on other students' views, reflect critically on their own views and, when necessary, reorganise their own views and negotiate shared meanings, McRobbie (1997). Hence, even though learning environments are personal, each individual's constructions are mediated by the actions of others in a social setting. Learning thus becomes a socially mediated process of negotiation of meaning amongst a community of learners.

Peer support could therefore be considered a stronger predictor of academic outcomes than family support (Dennis et al, 2005). Furthermore, students who experience difficulty in coping, often state they wish they had someone to provide help, guidance, and support (Dennis et al, 2005). This is an indication that they need some form of emotional support in order to survive in a competitive academic and social environment. Seginer & Vermulst (2002) suggests there is a direct link between support from peers, involvement by parents, the social background of the student, and academic achievement. Hence, Johnson (1992) expresses that at all levels, whether at individual or family level, school achievement is bound to be mediated by the total social context.

## **Student Counselling Unit**

One of the services used as a means to support students at most if not all universities is the Counselling service. The UKZN Student Counselling and Development Centres aim to cater for the educational and personal needs of students. Their main objective is to further the overall academic, vocational, and psycho-social development of students within the educational environment of the University, (UKZN, 2006c). They provide services like career counselling, curriculum counselling, personal counselling, crisis and trauma counselling, study skills, life skills, and diversity awareness. In addition to this university-wide counselling unit, the SFP offers an in-house counselling service exclusively to Foundation students. The unit aims to take a holistic approach in addressing students' needs. Both the academic as well as the personal and social aspects are given attention. As argued by Morrison, Brand & Cilliers (2006), there is a need for student counselling services and its support activities as they positively contribute to the overall student experience and throughput rates. Also, as put forward by Botha, Brand, Cilliers, Davidow, de Jager & Smith (2005), students from different social and economic backgrounds bring different kinds of problems and needs to campus which may result in increased drop-out rates.

According to the International Association of Counselling Services (2000), there are three roles played by student counselling and development units. The first one involves supporting and enhancing wellness and the healthy holistic growth and development of students through co-involvement of the campus. The second is a preventative role which involves assisting students in identifying and enhancing learning skills which will assist

them in effectively meeting their educational and life goals. The third role involves providing guidance, counselling and/or therapy to students experiencing problems that require professional attention. As argued above, in the South African context, the majority of students come from disadvantaged backgrounds and are therefore likely to experience problems in trying to adjust to the new environment and therefore require more of these counselling and development services. Rather than relying solely on the university-wide counselling unit, the SFP has an in-house counselling unit which aims to monitor students' progress.

As presented above, the literature seems to suggest that the interventions by the University Counselling services are consistently effective. There is less reporting on the limitations of the Counselling services, for example, why some students fail to utilise these facilities even when there is a need for them to do so. Hence, Lau (1995) suggests that as counselling services develop, it is important that providers find out how students perceive and evaluate them. For example, after conducting a study to understand what counselling means to Latino students, Lau (1995) established that regardless of whether a problem is personal or career-related, most students did not consult with the University Counsellors but rather their close friends first. For personal problems, parents and peers were the next two preferred groups for consultation, followed by siblings. Counsellors, other relatives, and lecturers were allocated a much lower priority. It was further reported in the study that some students indicated that they would consult nobody about personal or career problems, a behaviour hypothetically believed to be influenced by cultural factors (Lau, 1995).

## **Mentorship**

As highlighted above, in addition to Counselling units, some higher learning institutions offer Faculty peer tutoring programmes where senior students mentor first year students. According to Floyd (1993), mentoring involves the adult offering support, guidance, and assistance to a younger person as she/he goes through a difficult period, faces new challenges, or works to correct earlier problems.

The UKZN Mentorship programme (UKZN, 2006d) defines Mentors as senior students who are academically competent and socially adept in guiding students in their first year at university. The Student Mentorship Programme at UKZN has been specifically created to assist first entry students in adjusting to the University environment (UKZN, 2006d). Its primary objective is to maintain academic proficiency. It further aims to foster academic excellence amongst all first year students by creating an environment which is conducive to meaningful and effective learning.

The following are some of the Goals and Objectives of the Mentorship Programme at UKZN:

- *Entrench an environment where excellence underlines the endeavours of the programme.*
- *To primarily assist all students irrespective of race, gender and socioeconomic status with regard to academic performance.*
- *Programme resources are focused on student development; this includes the induction and socialisation of students. (UKZN, 2006d)*

From the above goals and objectives it is clear that mentors are intended to play a critical role especially when parents are unavailable or unable to provide responsible guidance for their children at university. The Mentoring programmes like those of Counselling also aim to improve students' overall academic achievement as well as their social enculturation.

### **Vocational Guidance**

From the UKZN SFP Counselling objectives, it appears that issues of career guidance are addressed. From its objectives, the Counselling unit serves to provide students with information on courses available, expose them to career options, and address issues of self-awareness in terms of individual potential.

According to Lau (1995), family, parents, and guardians play a significant role in the occupational aspirations and career goal development of their children. Children use parental approval and support to pursue certain careers. Baker (1997) found in their study that parents with university education were more actively involved in choosing career studies. As Baker (1997) contends, educated parents can actively manage their child's school careers. On the other hand, in the same study conducted by Lau (1995) with disadvantaged students, parents were not approached about career problems as much as personal problems. This may have been influenced by the gap between the education levels of the students and their parents. These students are likely not to have clear goals about their careers and may thus need to be career counselled. As argued by Ferry (2006) each individual undertaking the process of choosing a career is influenced by many

factors, including the context in which they live, their personal aptitudes, and educational attainment. This is in essence true for all individual students as their contexts may differ. For example in the same study by Ferry, it was found that youth in communities of more affluence had more family and school support in career exploration, which resulted in consideration of a wider range of career options. Parents and other family members provided valuable learning experiences through being role models, and through supporting activities that assisted in exploring career interests. This is obviously something that is lacking with students from parents with lower education levels.

**Educational Aspirations (self-esteem, self-concept/self-motivation and self-confidence)**

Another important factor that may determine the success of students is their level of motivation. According to Huitt (2004), motivation plays a key factor in learning. Motivation can be drawn from a variety sources: personal, academic, and social. According to Bronwyn & Luthar (2002) negative school experiences cause many students to feel powerless over their own learning capacity or potential. They further make a case that repeated failure may lead to a sense of learned helplessness among students and result in lack of motivation. Students' academic failures and lack of motivation which are often characteristic of the educationally disadvantaged or any students labelled 'at risk', are aggravated by their belief about themselves and about their ability to exercise a measure of control over their environments contends Bronwyn et al (2002). Consequently, levels of confidence and judgements about self-worth can certainly be predictive of academic achievement.

The concept of self includes self-esteem, motivation, and self-confidence. As Smith (2005) explains, self-concept means thinking highly of oneself; acknowledging your strengths, limits, and possibilities for growth, and change in relationships either in academia or in the job market. Huitt (2004) suggests that self-concept is related to self-esteem in that people who have good self-esteem may have a clearly differentiated self-concept and that when people know themselves they can maximize outcomes because they know what they can and cannot do. Huitt (2004) further puts forward that self-concept is perhaps the basis for all motivated learning. He claims that a positive self-concept creates the motivation for behaviour.

From the above discussion it seems clear that motivation reflects an individual's internal state or condition which serves to stimulate behaviour and give it direction. Different authors of motivation theories sometimes describe this condition as a need, desire, or want. One of the principal writers in the area of motivation, Maslow (In Huitt, 2004) proposes a hierarchy of human needs based on two groupings; deficiency needs and growth needs i.e. self-actualisation (development of competencies like knowledge, attitudes, and skills). Maslow argues that within the deficiency needs, each lower need must be met before moving to the next level and that once each of these needs has been satisfied; the individual will act to remove the deficiency. The first four levels are: safety/security needs, physiological needs, belongingness and love, esteem needs.

The majority of adolescents including students at university experience the above needs, particularly first year students. Bingham and Stryker (In Huitt, 2004) articulate that only



when adolescents feel self-sufficient, will they have a positive self-esteem and consequently feel motivated. Self-sufficiency according to them may include both emotional and social issues. Taking into account the socio-economic status of disadvantaged students; their lack of academic competence; financial insecurity; and physiological needs; they are more than likely to face serious challenges when it comes to levels of motivation. They may thus require more encouragement than less socially and academically challenged students.

## **CONCLUSION**

Social Constructivism provides the framework for understanding learning in context, as it takes into consideration not only the learners' educational environment but also their societal context. Hence, the literature points to a number of factors which shape the experience of the learners as they adjust to and engage themselves with the university environment. These factors, academic and social, may either positively influence achievement amongst the students or hamper it. The literature also indicates the importance of support from all stakeholders, i.e. parents, peers and student support structures. A shortfall in some of these support structures may contribute to students' underperformance. On the other hand, absolute engagement of students with the support structures seems to have a productive influence on performance. Schooling factors, educational aspirations, poor finances, and career choices of the students are additional factors that may determine levels of attainment, particularly amongst educationally under-prepared students. However, as highlighted by other studies, these are generic factors and not all of them may be applicable to students in Science Foundation

Programmes. As these programmes are currently introduced at almost all higher learning institutions, it is important that this aspect be investigated. Hence, in closing the gap in existing knowledge this research aspires to investigate and report on those factors pertinent to the Science Foundation students in order to inform both the existing and emerging similar programmes.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **INTRODUCTION**

This chapter provides details of the processes that were engaged in when the study was conducted. The research design, sampling procedures, data collection methods, and the process of data analysis are accordingly discussed below. Finally ethical issues and limitations of the study are discussed.

#### **DESIGN OF THE STUDY**

According to Terre Blanche & Durrheim (1999) a research design is a strategic framework for action that serves as a bridge between research questions and the execution or implementation of the research. It provides a plan that specifies how the research was executed in such a way that it answers the research questions. This study utilised a qualitative and an interpretive approach to investigate the experiences of students in the programme. Denzin and Lincoln (2000) define qualitative research as multi-method in focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them.

Creswell (1998) views the design in the qualitative context as the entire process of research from conceptualising a problem to writing a narrative. According to Bartlett, Burton & Peim (2002) qualitative research is concerned with life as it is lived, things as they happen, and situations as they are constructed in the day-to-day, moment-to-moment course of events. Thus, qualitative data allows for detailed descriptions of people, interactions, behaviours, and events. By using a qualitative research strategy, I was able to obtain a rich and in-depth understanding of students' experiences in the programme. Both the qualitative and interpretive approach as put forward by Neuman (2000), emphasize the importance of social context. The interpretive approach thus attempts to discover the meaning of an event or practice by placing it within a social context. Interpretation according to Cohen, Manion & Morrison (2000) involves giving meaning to data from the point of view of the people being studied. This is done by finding out how the people being studied see the world, how they define the situation, or what it means for them, (Neuman, 2000). This study thus attempts to understand the students' interpretation of their academic environment as mediated by the social aspect by examining their experiences. The research relies on first-hand accounts, and tries to describe what is reported in rich detail, as further expounded by Terre Blanche & Durrheim (1999).

## **CONTEXT OF THE STUDY**

The study was conducted at UKZN in the Science Foundation Programme, on the Westville campus. The purpose of the study was to investigate the students' experiences

in the programme. The participants in the study were students enrolled in the programme during the year 2006, and I was one of the tutors in the programme. With many of them having attended schools with poor resources, the study thus aims to identify the level of disadvantage that these students bring into the programme. It further aspires to understand their experiences in the programme, and how these experiences influence their performance. The research consequently explores how some of these experiences can be addressed to enhance performance.

## **SAMPLING**

De Vos et al (2002) define sampling as taking a proportion of a population and considering it representative of that population. Hence, Cohen et al (2000) mentions representativeness as one of the important factors that needs consideration during sampling. However, Terre Blanche & Durrheim (1999) reason that rather than insisting that samples should be representative, qualitative researchers ensure that their findings are transferable i.e. they help to understand other contexts or groups similar to those studied.

### **Sampling Strategy**

Another important aspect of the sampling is choosing the appropriate strategy. As explained by Denzin & Lincoln (2000), selection of a sample can either be random or non-random, i.e. probability or non-probability sampling. According to De Vos et al (2002) in probability sampling, every person in the population has the same known

probability of being sampled. In non-probability sampling however, the chances of selecting a person are not known because the researcher does not know the population size. An interpretive and qualitative research typically does not use random samples but uses various types of sampling like purposive sampling, quota sampling, dimensional sampling, target sampling, snowball sampling, and spatial sampling (De Vos et al, 2002).

This study used both volunteer and snowball sampling. Volunteer sampling consists of participants becoming part of a study because they were asked to volunteer. I asked students to volunteer for the study and those who were available to attend did. Snowball sampling on the other hand is a method of identifying and sampling the cases in a network. This form of sampling begins with one or a few cases and spreads out on the basis of links to initial cases (Neuman, 2000). For this study, students were informed about the nature of the research and had to volunteer to participate in the study. Other students were recruited by their friends to participate in the study.

### **Sample Size**

As argued above, when using non-probability sampling, the sample size cannot be estimated and is not known until all the members are selected. Selection proceeded until a sufficient number was identified. A sample size comprising thirteen students was thus considered sufficient for the study. Neuman (2000) indeed articulates that the sample size may also be influenced by the nature of data analysis that the researcher plans. It was anticipated that the study would produce large amounts of text; a fairly small sample size was thus also chosen on this basis.

## **DATA COLLECTION**

Gathering data for a qualitative inquiry involves use of different techniques and instruments that will allow the researcher to capture people's words and actions. The key ways of capturing people's language and behaviour may include interviews, observations, photographs, etc.

### **Data Collection Methods**

In aligning with the qualitative and interpretive methodological approach described above, the study employed a semi-structured focus group, as well as individual interviews to generate data. The study also used reflective journals as a means to generate data. In addition limited document analysis was employed to obtain data.

### **Interviews**

One of the major ways in which qualitative researchers gather data is through in-depth, intensive interviews. According to De Vos et al (2002) interviews create meaning that exists within participants, thus interviewing is a predominant mode of data collection in qualitative research because it allows the interviewer to gather specific information in order to understanding some particular phenomena. As explained by Neuman (2000), a semi-structured interview is a guided qualitative interview that allows the interviewer to generate his or her own questions to develop interesting areas of inquiry during the interview, thus opening room for further elaborations and discussions.

In gathering data, semi-structured, open-ended focus group, and individual interviews were utilized as they allow for flexibility for further probing during data gathering. An interview guide was prepared beforehand to ensure that the same basic lines of enquiry were pursued with each focus group and each individual interviewed. Focus group interviews were instigated first. This allowed for individual perspectives and experiences to emerge. As these experiences surfaced, certain individuals from the focus groups presented more intense experiences which exhibited potential for further probing. These individuals were then preferred for more detailed individual interviews.

As highlighted above, focus groups were also employed in the study. Kruger & Casey (2000) define the focus group as a carefully planned discussion designed to obtain perception on a defined area of interest, in a permissive, non-threatening environment. Focus groups are useful when multiple responses are needed for a specific topic of interest (De Vos et al, 2002). The purpose of focus groups is therefore to promote self-disclosure amongst participants who mostly share the same experiences and feelings. Because the interviewees were all registered for the same modules and therefore knew each other, homogeneity in the group allowed for free-flowing discussions as participants perceived each other as fundamentally similar, and thus spent less time explaining themselves to each other and more time discussing the issues at hand (De Vos et al, 2002).

In relation to size, focus groups of no less than four and no more than twelve participants are usually suggested in order to allow everyone to participate, while eliciting a range of



responses (De Vos et al, 2002). Guided by this information, focus groups comprising of seven participants were used in this study. Although Krueger & Casey (2000) contend that there is no hard-and-fast rule about the number of focus group meetings, they emphasize that the greatest amount of new information usually comes in the first two group meetings, with considerable repetition after that. On this basis, as there were two groups, two meetings were conducted with each focus group.

Upon interviewing the students, some significant information on the SFP counselling unit surfaced which necessitated an inquiry from the Counsellors' perspective. An interview was then set up with one of the Counsellors and the data gathered was used to bring forth some of the rather obscure responses from the students during their interviews.

### **Documentary source**

As a secondary source, a spreadsheet giving the profile of the UKZN SFP students was accessed from the Science Faculty office. This document contained information about their school background i.e. the school rating, and their performance in the SFP selection test.

### **Reflective Journals**

In addition to interviews, students were asked to give an account of their experiences of learning in the programme by recording their daily activities in reflective journals. Reflective journals are a tool that allows people to give a greater and an in-depth understanding of experiences, in particular, students, as they give them an opportunity to

reflect on their experiences. Reflective journals offered an opportunity for those participants who did not find it easy to respond orally as the reflective journal guidelines were centred on the same themes as those of the interviews. Themes that emerged as pertinent to the study include students' schooling background, financial status, family and peer support, educational aspirations, and student support services.

As seen above, a variety of methods were utilised in gathering data for the study. This is termed triangulation. According to Terre Blanche & Durrheim (1999), triangulation entails collecting material in as many different ways or from as many different sources as possible. This, they argue helps researchers to 'home in' on a correct understanding of a phenomenon by approaching it from different angles. This 'triangulation' broadens the scope of the study because information gathered using different tools might complement each other thus providing more substantive evidence. Furthermore, a variety of instruments in the study helps improve consistency and the trustworthiness of the findings.

### **Data Collection Instruments**

In order to facilitate the data collection, an interview schedule was prepared to provide a framework for my line of questioning. The guide ensured that the same information was gathered from a number of different participants whilst allowing me the flexibility to decide on the sequence and wording of the questions as the interview progressed. The interview guide (Appendix A & B) specifically developed for this study was informed by the interview guides of Krueger & Casey, 2000. Themes had been carefully built into the

interview as part of the questions. This allowed me to ask questions, probe, and explore each theme with the participants with the result that in-depth information was obtained about the topic of study. Reflective journals were used as the second instrument for data collection, while document analysis provided data with regard to one aspect, namely student academic profiles.

### **APPROACH TO DATA ANALYSIS**

According to Cohen et al (2007), “Qualitative data analysis involves organising, accounting for and explaining the data; in short, making sense of data in terms of the participants’ definitions of the situation, noting patterns, themes, categories and regularities” (p.462). The first step in the data analysis process was transcribing the interviews from audiotapes. Both inductive and deductive approaches were then carried out in analysing interview transcripts. A deductive approach involved constructing general themes and categories that had been derived from reading literature and carefully built into some of the interview questions. Other themes and categories emerged directly from the data and this involved use of an inductive analysis approach. This approach thus allowed for addition of more themes and categories as I proceeded with the analysis. In analysing data from reflective journals, an inductive approach was used. By reading through the text, key phrases were identified which eventually became themes, using a content analysis method. This method involves classifying text into significantly fewer content categories (Struwig & Stead, 2004).

Data from a one-on-one interview with the counsellor was analysed and classified as the ‘Counselling Unit’ category under the theme ‘Student support services’. Because the category had not been predetermined, analysis took an inductive approach.

### **Documentary analysis**

Using the spreadsheet showing the SFP student profile, a statistical analysis was done to show the level of school disadvantage for all SFP students enrolled in 2006. This was done by grouping them into three bands according to their school rating from the lowest to the highest. An analysis of how they fared in the SFP selection test was also performed. This was done by placing students in different performance bands to determine how many of them filled each band from the highest to the lowest marks, which gave an indication of their academic potential. This analysis provided some of the answers for the first critical question of this research study.

### **Critical question 1:**

- What academic disadvantage do students bring to the Science Foundation Programme?

Some of the answers for the first critical question were provided by students during focus group interviews. The second and third critical questions were answered by information from the reflective journals and both the focus group and individual interviews with students. The interview with a counsellor provided answers partly pertaining to the critical question 2.

**Critical questions 2 & 3:**

- What are the experiences of students in the Science Foundation Programme?
- How do these experiences influence performance/achievement in the programme?

The fourth critical question was answered by the data obtained from all sources as this allowed me to formulate certain recommendations.

**Critical question 4:**

- How can these experiences be addressed to enhance performance in the programme?

**ETHICAL CONSIDERATIONS**

An application for ethical clearance was made to the Ethics Committee of the University of KwaZulu-Natal and was obtained before the study commenced. A written consent which described the study and its purpose was presented and explained to each participant before the data was gathered. Participation in the study was voluntary and the consent letter specified this. The participants signed the letter before participating.

Prior to the interviews, it was explained to the students that they would be interviewed in groups and that those who did not feel comfortable discussing sensitive issues would later be interviewed individually. The participants were also informed that they would have to keep a journal for a month to record their daily experiences. The participants were informed that they would be allocated codes instead of using their names in order to ensure anonymity.

## **LIMITATIONS OF THE STUDY**

A significant limitation in the study was training students on reflective writing when making journal entries. Although students had been given a guide on how to record their experiences, the majority showed a lack of understanding of reflective writing. Some of them simply reported the events of the day/week without reflecting on those. Proper training on reflective writing would probably have yielded richer data. Despite this limitation, enough data had been generated from the interviews to draw valid conclusions. Another limitation was the number of students that volunteered for study.

Thirteen students may not be regarded as a representative enough sample considering that there were approximately 140 registered SFP students at the time of the study. However because this is a qualitative study and the interview questions were very detailed, it would have been very time consuming to have a larger sample. The sample size can thus be considered appropriate because it adequately answered the research questions.

## **CONCLUSION**

This chapter provided a detailed plan of how I systematically collected and analysed the data in order to ensure that the research questions were answered. The chapter also outlined the sequence of events which allowed use of more open, fluid, and flexible strategies, yet ensuring that sound conclusions were reached. A variety of instruments was explored to increase the trustworthiness of the data generated.

## **CHAPTER4**

### **DATA PRESENTATION AND ANALYSIS**

#### **INTRODUCTION**

As indicated in the previous chapter, data were generated from student focus groups and individual interviews as well as students' reflective journals. Other data were gathered from a documentary source and from interviews with the SFP counsellor. In this chapter the data are analysed and presented. As the data was viewed through the lens of social constructivism this enabled me to identify themes and categories that relate to the way students construct knowledge in social settings. Using social constructivism as a tool, the analyses of data took into consideration not only the context in which learning takes place but also the social context that the learners bring to their learning environment. Social constructivism views the background of the learner as an important aspect of learning as it helps to shape the knowledge that the learner constructs. Hence the theme 'schooling background' is presented first in order to elicit this aspect of the SFP students. Social relationships and interactions amongst students and with their instructors are also important themes that emerged as having an influence on achievement. These themes and categories are presented in the latter part of this chapter.

The chapter commences with a brief academic profile of the SFP students, outlining the types of schools they attended and their performance in the SFP selection test. Data collected on students' experiences in the programme are then presented. As explained in the methodology chapter, analyses of the data produced a number of themes and within

some of the themes, categories. The factors that emerged are those that have an influence on achievement, forming the themes and categories. Schooling background is presented first. Other factors influencing achievement are presented as the themes referred to above.

## **THE PROFILE OF UKZN SFP STUDENTS**

In order to be eligible to register for into the programme (BSc4/SFP) students must meet certain stipulated criteria. These criteria specify that students must have been educationally disadvantaged during their schooling years; must have achieved a minimum of 20 matriculation points; must have done and passed Maths (with a minimum F-symbol) and at least one science subject. After satisfying these criteria, they then write Mathematics and Science Selection Tests for which they must obtain a minimum score of 40% when combined with their matriculation score (comprising their Grade 12 symbols and points). To determine whether a student is from a disadvantaged school, a guide (provided by the department of education) is used which provides a rating for all the schools in the province according to their level of disadvantage. The rating scale ranges from zero to one (0-1). For example, a school that is highly resourced may have a rating closer to 1, e.g. a rating = 0.8. A school that is considered very disadvantaged will have a rating of closer to 0 e.g. a rating = 0.2. Thus, the most privileged school will have a rating of one and the most underprivileged will have a rating of zero. Students, who, based on the school ratings, come from advantaged schools, have to submit proof that they have been disadvantaged in other ways during their schooling. They may have been without a Mathematics or Science teacher for a few months or offer any other reason deemed fit in



terms of the Selection criteria. These students are admitted based on the Dean's discretion.

The following table shows the profile of the 2006 SFP cohort and their overall performance during selection.

Table 4.1 **Profile of the 2006 SFP cohort showing school rating and their selection test score**

<b>School Rating</b>		<b>&lt;0.3</b>	<b>0.3-0.6</b>	<b>&gt;0.6</b>
<b>No. of students</b>	<b>Score&lt;50%</b>	23	13	6
	<b>Score (50%-60%)</b>	42	33	17
	<b>Score&gt;60%</b>	1	3	0
	<b>Total</b>	66	49	23

From the above table it is evident that most schools from which the UKZN SFP students come are educationally disadvantaged, with the highest number of students taken from schools with the lowest ratings. Less than one third of the students come from fairly well resourced schools. Having studied the profile of the SFP students it was then necessary to interrogate how this schooling system affected their learning.

### **School Background**

When students were asked to describe their school experiences, it emerged that there was indeed a gross lack of resources, both human and material, making their academic backgrounds severely disadvantaged.

Of the thirteen students who were interviewed, at least nine confirmed that their schools were disadvantaged in more ways than one. The following excerpt from one of the interviewed students demonstrates a serious lack of resources in the school:

*“Well about my school, there was a laboratory but it was just a room with no equipment. We used this room sometimes for physical science and chemicals were very old. There was no computers and no library and there was maybe one book for each subject and everybody must use that book”.*

The shortage of resources is common to most South African rural schools, leaving both teachers and learners without any materials to supplement classroom teaching and learning. As argued above, these schools are not only characterised by a lack of educational resources, but also with shortage of suitably qualified teachers. Hence some schools resort to employing any teacher offered, regardless of their expertise, as long as the learners have a teacher. One student described the situation at his school as follows:

*“I remember when I was doing standard ten our Maths and Physical science teacher got pregnant and our principal organized a substitute. I think she was maybe qualified in commerce because she did not know Maths and Physical science. The other teacher (pregnant Maths and Physical Science teacher) got hired here in Durban and never came back”.*

Another student also confirmed this lack of qualified teachers and said:

*“I went to school where there was no library. We did not have anything. Chemistry (Physical science) was another story. Our Science teacher was not qualified, he*

*didn't know anything and we will tell the HOD but nothing was done until the end of year".*

The shortage of qualified teachers appeared to be a common thread running through most of the schools the students attended. In these schools subjects like Mathematics and Science are mainly taught by teachers who are neither qualified nor competent to teach them. All efforts to get adequately qualified teachers are exhausted and the schools eventually settle for any available teacher. This seems to have a direct effect on the choice of grade (standard or higher) that the learners take in Mathematics and Science. For example most students reported that they were encouraged by teachers to take their subjects on standard grade and not on higher grade. This is probably because the teachers cannot cope with the complexity of higher grade material, owing to their own low levels of qualification and knowledge about the subjects. As one student indicated, they were discouraged from taking certain subjects on higher grade because they were told they would fail.

In some schools, the problem goes beyond having under-qualified teachers, to having no teachers at all. One student related an almost dismal situation where there were five teachers in the entire school. There was one teacher to teach both Physical Science and Mathematics from grade 8 to grade 12. Hence the teacher had to prioritise and focus more on grade 12 teaching. This regrettably is the reality in some schools, sometimes because they are situated in deep rural areas where the infrastructure is so poor that qualified

teachers are reluctant to work there. Consequently, access to quality education for these learners is almost non-existent.

In certain schools however, as reported by students, an effort is made by teachers to provide extra academic support, particularly to Grade 12 learners. But this is not without technical hitches. As one student related, their school principal organised a generator from the Department of Education to run evening classes for Grade 12 learners, as there was no electricity in the community. The generator was provided, but the learners had to pay for fuel every time they needed to use it. It ultimately became impractical to run the evening classes as most learners came from homes that could barely afford to support their own families, let alone pay for other external expenses.

A few students who came from better resourced schools on the other hand, had minor problems to report, certainly nothing that would have academically disadvantaged them to the same degree as their counterparts from deprived schools. However, as presented in the categories below the 'not so disadvantaged students' also faced challenges in the new university environment. Although their problems were less likely social, academically some of them faced similar challenges as those of students from rural schools, with the exception of fluency in language of instruction, English. However from this account on schooling experiences, it may be argued that learners drawn from disadvantaged schools may be inadequately prepared for higher education.

## **FACTORS INFLUENCING PERFORMANCE IN THE SFP**

The factors pertinent to performance as revealed by the analysis of gathered data include adjustment problems, financial security, student support structures, peer and family support, and vocational guidance. They are presented as themes and categories below.

### **Adjusting to University Environment**

When asked how they experienced the change from school to university, most SFP students indicated that they found their new environment very different and challenging. They had difficulty adjusting to the academic demands of the university and most of them complained about the heavy workload, which they found difficult to cope with. Furthermore, some found the social environment highly competitive and felt they did not fit in. For most of them the university was their first experience of living away from home for an extended period of time. Their usual sources of support were no longer present to facilitate adjustment to the unfamiliar environment.

### **Academic Adjustment**

Most students said they experienced problems with the university teaching environment which they found to be at odds with what they experienced at school. They found it hard to adapt to the workload. It was evident from their responses that some had not been given any indication of the amount of academic work they might expect when they got to university. One student commented as follows when asked about how they experienced the university when they first arrived:

*“It was a huge change like when I came, there was too much to study. I remember early in March I failed all the tests but as time went by I adapted”.*

As recorded in one of the student journals, another student said:

*“I was so confused when I first came in such a way that I blamed myself. Why don't I go and try and find a job? This lead (led) me to fail all my first tests. At grade 12 I got an award for being the best learner. So I asked myself, what changed? I had so many things that confused and damaged my mind. What came to my mind is that I'm not the best student anymore”.*

Heavy workload appeared to be one of the major academic problems for all the students as they complained that they always have a lot to study to prepare for tests, complete assignments, and do homework. They felt that they were not allowed enough time to process new information because there was very little time left after attending lectures as they had to attend from 8 to 5 everyday from Monday to Thursday.

The students also found not being given all the information they needed, and being required to source information for assignments and projects on their own, very challenging - not only when they first arrive at university but throughout the year. One student related:

*“At school teachers were the ones who teach us and give us all information, here you have to find the information yourself. It is different from school, you have to read a lot of books and then it is very difficult”.*

The above excerpt displays heavy reliance on teachers for information. Although they find it difficult to source information on their own, they however appreciate the fact that there are various facilities available to them to access information, as opposed to their experiences at school. These facilities include the use of a library and Internet facilities. The majority of the students from poorly resourced schools are not exposed to the use of libraries and the Internet. It thus becomes an effort for them to maximise these facilities, at least until they have had fair exposure to them. Hence, the first set of lectures in the SFP is dedicated to teaching students how to access information. In almost all SFP modules this becomes an ongoing exercise where the students have to research certain topics and produce written work. The more time they spend engaging in these kinds of activities the more opportunity they get to advance their skills of accessing relevant information.

Another point of concern from the student interviewees was the poor co-ordination of assignment due dates, where every now and then there would be two major assignments due on the same date. This they felt doubled their workload and further denied them a chance to work thoroughly on one topic. They felt that this may have resulted in them performing poorly in the assignments in question. Besides getting low marks some indicated that they would occasionally find it difficult to concentrate during lectures and practicals if they had more than one assignment due on the same day, as a result of which they would give such lectures a miss to complete the assignment. Although this may be a genuine concern it also displays poor time management.

## **Social Adjustment**

Only a handful of students seemed to have adapted effortlessly to university social life. Most students felt estranged and intimidated by the university environment when they first arrive. Mainly students from rural areas felt alienated and thus took longer to adjust. As one student conveyed, he realised he needed to go back home and ask for new clothes to make him 'fit in'. Some needed to go back home and ask for more money to buy 'better food,' similar to what other students were eating. In essence, they needed to adjust their lifestyle in order to be acceptable to others.

One of the students, intimidated by the environment, said:

*“For me it was a big change. When I look at the buildings it is very big and is very different from school. Everybody was rushing”.*

Another student was however completely overwhelmed to the point of losing hope. He scribed in his journal:

*“Then the opportunity came for me to go to university but here I was even thinking to engulf (kill??) myself because this place was causing me a lot of stress at the beginning . And one thing I knew was that no one could help me. I did not even know how to tell my mother and father about this. One thing that was nice to them was that I was waking up going to school. But they did not know how bad my performance was. I felt like I was in a certain universe”.*

This does not only indicate poor adjustment, but also demonstrates feelings of despair and loss of hope. The student displays disorientation and alienation, subsequently resulting in poor performance. There is also an indication of lack of coping mechanisms



because the student perhaps did not want his parents to get the impression that he was not doing well. The fact that he pretended to be doing well, when he was in fact not, is an indication of both his and the parents' high expectations. Thus telling them he was not coping would be a disappointment to both himself and his parents.

On the contrary, one of the few students who had come from an urban area seemed to have adapted fairly well to university social life, compared to her counterparts from poorer backgrounds. She had good self-esteem and had positive things to say about the people around campus. She could express herself better than the other students and this is what she said about her new environment:

*“I think the campus is full of friendly people, they are so nice and I have never been in a place with such friendly people”.*

Although this student appeared to have experienced easier transition than the other students, she did however admit that academically, she was struggling and that she had in fact considered deregistering after first-semester examinations. Thus, regardless of having adjusted well socially, with the help of a mentor, as she revealed, she was still underperforming. This suggested other factors affecting her achievement. Upon further probing it emerged that the student had issues with her career choice, resulting from her parents' high expectations.

## CAREER CHOICES

As presented above, one of the interviewed students revealed problems regarding vocational guidance. When the participants of the study were asked why they chose or how they came to know about the SFP, the majority said they had been rejected from either Health Sciences or the Science and Engineering Faculties, where they were subsequently informed about the programme. Some had known about the programme from teachers and senior students. However one of the students claimed she was advised by her mother to do SFP in order to get access to a Science degree. She said that she personally did not want to do Science because she had been battling with Mathematics and Physical Science from school but that her mother insisted she registered towards a Science degree. This is the reason she gave for her mother's insistence:

*“My mother told me about SFP just because I did not pass well and my sister was doing science also. My mother says if my sister who went to UCT has a degree in science, then I can also make it”.*

A follow-up question confirmed that the student was really not inclined towards science, as she responded as follows:

*“I never had passion for science, but you know what's strange, in grade 8 and 9, I was one of the top students and then I go to grade 10 and 11, I don't understand what happened, I could not understand a simple equation and I still have that problem even now. Physical Science is bad but Biology is better”.*

From the above extract the student indicates that she had been academically underperforming especially in Mathematics and Science from school but had to persist regardless, to please her mother. Her mother failed to notice when she continued to under-perform during her first semester in the SFP. Even when she tried to communicate her lack of aptitude for Science, her mother instead took a different approach and asked if she needed more books. Her dismal failure in the end-year examinations is an indication of low aptitude to deal with Science subjects. The student as a result sought advice from the Counsellors after mid-year exams and was considering a career change. Once again when asked what they had learnt from the SFP, she said SFP had taught her that she really didn't belong to the Sciences, and that she was going to change her career. The question then is whether students should be made to spend an entire year before they themselves or their parents realise their lack of competence.

Another student, also from a fairly good school indicated she had always experienced problems with Science subjects at school, and hence, expressed feeling misplaced in the programme. She said she was not motivated and as result had also fared badly in her first-term examinations. She continued to under-perform and eventually failed at the end of the year.

Parents often make choices for their children when either they themselves had chosen the same fields of study or because their other children are doing Science. The same parents might fail to notice when their child is not performing academically as a result. They thus deny their child an opportunity to pursue careers of their choice. On the other hand though, children are not always compelled by their parents to register for certain courses

but do so because of lack of adequate knowledge. They take up courses they know about but without having the academic potential for such courses. Each individual student undertaking the process of choosing a career may thus be influenced by many factors, including the context in which they live, their personal aptitudes, educational attainment and their parents' aspirations. Students who were not career counselled prior to entering university are likely to have limited knowledge and experience about a variety of career options at their disposal, somewhat limiting their choices.

## **STUDENT SUPPORT STRUCTURES**

One of the most significant factors that the participants reported as contributing towards better adjustment and good academic performance was getting support from peers. When they were asked to talk about their experiences of the support services and structures made available to them, some students indicated that they formed study groups with their friends and classmates to assist each other with assignments, and learn for tests. Others generally sought help from friends about personal problems they encountered. Only two students had joined the mentorship programme, others had no proper knowledge of this service. SFP Counselling was considered by most students as more suitable for group counselling rather than something which should be sought individually, in spite of some students experiencing individual problems.

## **Peer Support**

As noted above, some students had formed study groups with their peers and felt they were benefiting from it. One student who had joined a study group had this to say:

*“I like to work in groups because there’s diversity, you get to know many things from different people and at the end you understand better”.*

Students explained how they used study groups to tackle their assignments and generally to deal with challenging material which they would often find difficult to deal with as individuals. They did however caution that for the study group to be effective, it had to be fairly small as it could result in more socialising than studying if it was big. Some students expressed appreciation of the academic help they receive from their more capable peers. One particular student explained that he had been performing poorly in his tests until he started studying with a brighter student who gave most answers during lectures. He explained that he studies very hard with his friend’s assistance and sometimes obtains almost the same marks in a test as him. This he said motivated him to study even harder and thus his performance had improved.

On the other hand it also emerged that students who were performing well are also motivated by peers in their study groups as they acknowledged their achievements. A typical ‘first generation student’ painted a picture of how his parents ‘have no clue what it means to pass well’ because they are illiterate and therefore cannot recognize it. He felt his peers are a good source of inspiration because they always acknowledge his achievements.

As it emerged from the data, support from peers takes different forms. Some students go beyond using their peers for academic support and also seek support for personal problems. One student reported that in the first semester when he stayed off campus, he experienced difficulty studying alone and making friends. In the second semester he got accommodation close to campus and said he experienced university life quite differently. For the first time, he made friends and could consult with other SFP students when he had homework. Life, as he explained, got a little easier as he could talk to them not only about academic work but most importantly about personal or social problems as well. He had some family issues that always bothered him but felt he was unable to share with anyone until he met his peers. He faced a lot of challenges ranging from family clashes to poor financial status and many more problems. He kept the information which haunted him to himself because he could not see any way out. It is only until he moved in with another SFP student and told him about his problems that he realised that his roommate also had family and financial issues although slightly different from his own. As they talked things through, they realised they were coping better as neither of them made judgements about the other.

Another student was adamant that one of the reasons he persisted with his studies when he would have deregistered was because of the support he got from friends and from other senior students on campus. He indicated that he was solely dependent on the university financial aid, as his parents were unemployed and as a result would often run out of food while waiting for the next deposit to be made in his account. His friends would share food and other basic things with him until he had his own. He said he

preferred asking his friends for help than for example seeking professional counselling because they provided immediate solutions to his problems rather than counselling. Hence, he explained that he stopped seeking professional counselling and relied mostly on his peers for support. Peers thus appear to be playing a central role in the survival and persistence, particularly of financially challenged students.

### **Support from Mentors**

Another form of support that some of the SFP students valued was that offered by the mentorship programme. Students affiliated with the mentorship programme felt they coped better both academically and socially after being assigned a mentor. Their mentor would be from the same faculty and therefore had an idea of what the expectations were and could advise them accordingly. One student had been regularly attending mentoring sessions and was assigned her own mentor. This is what she had to say about her mentor:

*“I have a mentor and my mentor phones me all the time to check how I am doing, she really is very caring. She sends sms’s (messages on her cellphone ) just to see how I am coping and she tries so hard to help and even ask about other students that I know who don’t go for mentorship. She helps me deal with emotional and academic issues”.*

Another student confirmed:

*“The mentors are like your friend, they advise you and tell you what is right and what is not right. They tell you how to study so that you pass and it helps me a lot”.*

These students felt that they benefited from mentorship as some of their mentors were registered for modules similar to theirs but at a higher level and could then assist them. They indicated that it was even a more of an advantage if their mentor stayed in the residences with them because they would occasionally take their difficult homework to them for assistance.

However, it appeared that most SFP students were not aware of the benefits of the mentorship programme, and therefore did not utilise this service. The only two students that said they were affiliated to the mentorship programme had done so because they took it upon themselves to find out about the types of services offered by the mentorship programme. The majority of the students had very limited knowledge about this service and hence did not use it. Although it has become a norm that during orientation of SFP students, representatives from the mentorship programme come to address the students, it appears that the majority of the students still do not know about the programme.

### **Support from Student Demonstrators**

Each of the SFP modules (with the exception of the Language modules as their classes are smaller) has a set of student demonstrators that assist students during tutorial and practical sessions. The demonstrators are usually senior students close to completion of their junior degrees or post-graduates from the Faculty of Science and Engineering. They are essentially a major academic support system as students consult them on a daily basis.

SFP students collectively agreed that demonstrator peers were their key academic support. They appreciated the hard work their demonstrators went through offering extra



tuition, although some students reported some dissatisfaction with regard to the demonstrators' levels of preparedness during tutorial and practical sessions. This was a concern as there would sometimes be contradicting explanations of certain concepts from different demonstrators. This led to confusion as they were never certain about the correct answers to some problems. For example one student described the situation as follows:

*“They will tell us different things, like the other one will say that this thing is done like this and the other one will come and say no this thing is not done like that it is done that way. You end up not knowing what to do”.*

The students were particularly unhappy with the attitude they received from some of the demonstrators. For example they described the demonstrators as being harsh on students who took longer to grasp certain concepts. These students would subsequently refrain from asking questions and preferred asking their peers. As one student relayed:

*“The attitude of the demonstrators was not good but they are the people who you work with all the times who come and give you instructions and for the rest of the prac you are with them. They acted like it was our faults that we were here”.*

### **SFP Counselling**

In addition to the university-wide counselling unit the SFP offers a counselling module that deals with students' personal and emotional matters as well as with their academic needs. The SFP counselling is delivered as a compulsory module, with focus given to the development of life skills like time management, and note-taking, and also on issues of vocational guidance, academic monitoring, and personal counselling. This is a vital component of the programme as it is meant to help students adapt and cope with the

demands of university life, helping them improve their confidence, sense of being, and self-esteem. Generally counselling services have a central role to play by providing a holistic support i.e. providing academic, social, and personal support to students to improve their academic success rates thus improving retention rates.

Interviewed students appreciated the effort taken by the SFP counsellors in helping them with strategies to adapt to university environment. One student wrote in their journal:

*“I think counselling is the good thing because we are coming from different schools and most of us come from disadvantaged schools so there are many changes when you reach university. You try by all means to adapt yourself to the environment and sometimes you adapt in wrong way like you select bad friends and counselling helped us choose good friends”.*

Another student for example acknowledged the role played by the Counsellors even regarding things that could be considered minor but had potential to cause anxiety. For example when their parents did not contact them for days or weeks, they would feel isolated and in despair, losing focus on studies. With the Counsellors discussing these issues with them, they would then understand that when their parents do not contact them, there are possible reasons other than that they do not care. This helps to give them a sense of relief and help them realise that their parents sometimes may not have the money to contact them. Even though this can be considered a trivial issue, the fact that it poses potential for anxiety, shows that it warrants attention.

In essence the students acknowledged that counselling played a vital role in facilitating their adjustment both academically and socially as it taught them different 'life skills' and survival strategies during their studies. These are dealt with in groups, where it is compulsory for the students to attend. For most students these group discussions were more than helpful, however a difference of opinion regarding individual counselling emerged. It became apparent from the interviews that the students were reluctant to seek individual counselling whether pertaining to academic or personal issues.

In the SFP for example, students perceived to be academically 'at risk' are identified from test results and then referred for consultation with the Counsellors. The Counsellors will then book these students for individual counselling to determine the nature of their problems resulting in poor performance. Most students admitted they regularly experienced academic and personal problems but never considered seeking counselling as an option, however did not cite any specific reasons why, except that they preferred to ask for advice or support from peers.

Following the interviews with the students, consultation with the SFP counsellors was undertaken to establish the extent to which this attitude towards counselling was perceived as a problem. The counsellors confirmed that there was indeed a lack of enthusiasm towards seeking individual counselling by some of the students. For example, the academically 'at risk' students were not willing to book appointments for individual consultations or even show up after they had been advised to do so. One of the counsellors consequently embarked on a study to explore students' attitudes towards

counselling services and the factors underlying such attitudes. An interview was then arranged with that Counsellor in order to get an in-depth understanding of this phenomenon.

The Counsellor reported students' lack of proper knowledge about the kinds of services offered by the counselling unit. She highlighted some of the students' misconceptions about the purposes of counselling. Some students for example believed counselling was for 'insane people', while others only knew about 'HIV/AIDS counselling' from their communities. Other students pointed out that seeking counselling would be confirmation that they really were 'mentally unfit to be at university' as other mainstream students considered them academically incompetent. Some students avoided going for counselling because of fear of exclusion. They feared that if they were seen by lecturers going for counselling, it would imply that they were not coping and that they deserved to be excluded. It also surfaced that more females than males were consulting with the Counsellors. As explained by the Counsellor boys did not seek counselling because they believed they would appear to be 'weak' whereas it seemed acceptable for girls.

Another feature that emerged from the interview was the view that academic and non-academic issues existed in isolation. Students did not see a link between the two and hence felt they could consult for issues relating to academic work and career guidance but considered personal or social problems as somewhat beyond the scope of the Counsellors. Some students for example could not consult about issues of death because

they considered it outside the capacity of the Counsellors and also believed that it would not make any difference.

The belief that problems are insignificant and manageable was another reason why students do not consider seeking counselling. They considered themselves coping and adjusting well and that with time their problems would go away. If they failed the first tests, they believed they would do better in the next one and therefore did not consider consulting with the counsellors. This seems to imply that students have rather unrealistic expectations.

### **Family Support**

The data reveal that most students were satisfied with the encouragement and support they received from their parents. Despite the fact that some of them had poor home backgrounds in which case, parents could not afford providing them with all the material things they required, they shared good sentiments about their parents' support. However, three students were not pleased with either the kind or the level of support they received from their parents.

For example while one of the students was pleased with the support he got from his parents, a part of him wished they were literate enough to understand what it means to be a high achiever, as he happened to be. He explained how well he had been performing at school (and still was), yet frustrated by his parents' lack of perception of his academic endeavours. This is how he expressed himself:

*“My parents (grandparents) are very supportive, just that they don’t understand, they appreciate but they don’t understand. They don’t have a clue. I tell them I pass Maths and they just don’t understand I pass well. I remember one day I showed them in September I got 97% and in the final exam I got 100%. Not even one person at home is educated, they just don’t understand. So even if I pass well they say yeh good! but they don’t understand that. I’d be more happy if I get somebody who is educated that can really understand that I passed well. Only here they take me serious because they know, but at home they don’t take me serious”.*

Although this student had made a career choice following his SFP year, he still expressed how he would have been happier if he could have discussed it with his parents. He instead consulted his peers and other senior students about his career options.

On a different level of parental support, one student indicated that she was underperforming but not getting the type of support she required from her parents. The manner in which her parents handled her academic incapability was not what she needed, especially given the fact that she was considering a career change. She had this to say:

*“I don’t think money solves the problems because my ma gives me everything I want but then I do not want that, I just need her support. I tell her that life is so difficult here and she just says “try” and that’s all. If I say Ma, Maths is so difficult, she says “oh do you need a book, must I buy you another book?” From school I had everything, all the books but I told her I do not understand anything, just that I have all the material things but what I need is emotional support and I’m not getting it”.*

This particular student appeared to be in need of more than just material things; she needed emotional support to will help her get through the university's academic challenges. She tried to communicate to her mother that she wanted to deregister after mid-year examinations as she could not cope with the demands and complexity of Science subjects but her mother did not take this seriously. She needed approval from parents in making decisions to change her career before it was too late.

Still on the issue of lack of parent support, another student also claimed she was not receiving any form of support from her parents. The following is an excerpt from that student:

*“I personally dread going home. Home is not the best place to be, I'm much happier here because I meet people who appreciate me. If I do something good, they laugh. If I pass, they congratulate me. At home you don't get that. Okay they are proud that you go to university but they do not show it. Maybe they don't know how to show appreciation”.*

The latter two students ultimately failed their year-end examinations and were excluded from the programme and the Faculty. During the interview, it emerged that these students were from the same school. Further probing revealed that they were amongst a few students that came from better resourced schools and that they did not come from poor family backgrounds. They both attested to the competency of their school teachers and did not experience any shortages in terms of school resources. As indicated above it appeared that theirs was an issue of vocational guidance.

## **FINANCIAL CONSTRAINTS**

Financial stability amongst SFP students appeared to be another major point of concern as it influenced the degree to which they persisted at university. Of the thirteen students who were interviewed, only five had secured financial aid. Two students from the group that did not get funding indicated that they were reasonably comfortable with their financial status. The rest needed financial assistance as they had either unemployed parents or only one parent employed. These financial constraints had a direct impact on a range of issues for example their living conditions, payment of fees, buying books, and general subsistence money.

### **Living conditions**

SFP students live either in the university residences or in private accommodation, depending on whether they have secured funding or not. From the interviews five of those that had secured funding lived in university residences. Those that did not get financial aid lived in private accommodation around campus, with the exception of one student who was living very far from campus with relatives. Neither of his parents was employed and he therefore could not afford to rent a place of his own. In the first semester he lived at a men's hostel with relatives. He would spend over an hour commuting between the hostel and campus. He reported more problems relating to his academic performance compared to students who lived on and around campus. This is how he described his living conditions:



*“Well I did not stay in residence, I was living in Jacobs hostel with some brothers and we all sleep in the same bed. I did not get FAB (financial aid) and it was bad there in the hostel. I never get time to prepare for tutorials because I’d maybe finish a practical at five and take a bus and I get home at seven and nobody is cooking, I’m the one to cook and I just finish cooking and I want to study. In the hostel there are many people and they are making noise at night and I cannot study and I just stop. Sometimes I just study for two hours in that noise. I told my mother that I can even suicide there and she said I must go and stay in Mayville in umjondolo (informal settlement), you know umjondolo? There were four of us in that mjondolo and there were three woman and children”.*

Even though he tried to move out of the hostel he still could not afford to pay for decent accommodation around campus. The living conditions were as bad in the informal settlement as in the hostel. His biggest problem was the fact that he had no space and time to study. As he relayed, he shared this tiny ‘umjondolo’ (small single room) with three other adults and children. Studying was an effort if not impossible in this new place. His performance in tests significantly dropped as a result of his living conditions. He could not study in the library because he would miss the bus. There was also not enough time during the day to study in the library as the timetable is packed. This as he explains is when he considered dropping out to go and get a job but decided to convince his father to take whatever money he had towards his accommodation. He was however pessimistic about this proposal to his father as he thought:

*“How can my father take me out of this place when he can’t even feed us?”*

Only towards the end of the first semester did his father eventually agree to pay for his accommodation nearer to campus. He did however point out that there was very little left for the ones at home to survive but he promised them an improvement in his performance. In the second semester he was fortunate enough to secure a sponsorship which paid off the remainder of his tuition fees. He now shared a room with another SFP student and said for the first time he had a good experience of university life. He was appreciative of the fact that he had enough time to access to the computer LAN, prepare for his tests, do his homework, and write assignments with the help of other students. Most importantly, he had found a friend to study with and with whom he also shared some of his burdens about home or simply anything that bothered him.

Another student also claimed to have experienced a poorer pass rate early in the year because of lack of finances. This is how he explained his situation:

*“The problem I had was that I didn’t have finance and how was I supposed to continue without money and that was the main, main problem. From February to March it was bad for me. I failed some of the tests because I was worrying about money. For me in terms of food, rent and other things it was difficult”.*

The SFP failed to secure financial aid for this student because he did not meet all the criteria to secure funding. After missing some lectures in the beginning of the term this student eventually approached the SRC which managed to get him financial aid. He however still struggled to cope with the volume of work and also failed his first tests like the student above. This unfortunately was not the end his problems because shortly

afterwards his unemployed parents got sick and he felt compelled to share his financial aid subsistence with them to seek medical help. This consequently left him without enough money to buy food and he had to ask for assistance from his friends. He, like the student above considered giving up his studies especially because he was under pressure from relatives to drop his studies and get a job to support his family. At certain times, he would contact his former school teacher to give his parents money whenever they got sick. He would then work for that teacher during vacation time to pay him back. He nevertheless persisted and continued sharing his allowance with his parents because his friends continued offering both material as well as emotional support, which he claimed kept him going.

## **CONCLUSION**

Although different students reported different experiences depending on their level of academic disadvantage and their socio-economic status, the data show that they share a number of experiences that impact on their academic performance, albeit in different ways. In the next chapter I will attempt to interpret the results reported in this chapter.

## **CHAPTER 5**

### **FINDINGS AND RECOMMENDATIONS**

#### **INTRODUCTION**

The purpose of this study was to explore the experiences of SFP students who join the programme at UKZN bringing with them considerable academic disadvantages. A further objective of the study was to examine how these experiences influence achievement and to explore ways in which these experiences can be addressed to enhance achievement in the SFP. The profile of the UKZN SFP students was analysed to partially determine the level of disadvantage of these students. Using interviews and reflective journals, the experiences related to achievement in the SFP emerged as hinging on different academic, social, and personal factors. The main findings are provided in this chapter.

#### **SFP STUDENTS' LEVEL OF ACADEMIC DISADVANTAGE**

Based on the quality of education of most of the SFP students as revealed by the data gathered during interviews, it is clear that most of them arrive at university with very limited experience to help them adjust to higher education academic demands. Their schools do not adequately prepare them to be competent in an academically vigorous and socially competitive university environment. They face more challenges in trying to negotiate their way through university life than students from better resourced schools or students who have better academic records. Their schools are characterised by lack of

resources and incompetent staff, which make it hard to adapt to more developmentally responsive instruction. As argued in the review of literature, the curriculum they are offered at school is usually geared toward lower order rote learning with the emphasis on teacher-directed activities, (Becker & Luthar, 2002). These instructional shortfalls prove detrimental to SFP students' performance, as evidenced by their poor adjustment to more independent and student-centred learning promoted by the programme. The level of academic development seems to be compromised amongst most educationally disadvantaged SFP students, impacting negatively on their success rates.

## **A NEW BEGINNING**

When these students are accepted into the SFP programme their expectations are raised. They arrive at university expecting an improvement in their academic, financial, and social circumstances. A bright future lies ahead of them; academic success will eventually lead to success in other spheres of life. New beginnings signal change, growth, independence, and responsibility for the SFP students. As they cross the threshold to higher learning, their experiences are less positive than expected. They feel lost in the network of buildings, new faces, and new subjects. Every day, they are challenged to learn a new, more effective way to keep the learning environment motivating and worthwhile. These new beginnings are demanding for most of the SFP students.

### **Unrealistic Expectations**

It is known that most students admitted into the SFP come from disadvantaged backgrounds, but are selected because they demonstrate academic potential. Having come

from such backgrounds, they thus have expectations about what the programme will offer them. However, they seem unable to recognise that they also need to make a concerted effort in order to accomplish their goals. Although the majority of the interviewed SFP students claimed to have passion for science studies, their prospects about the academic and personal accountability expected of them, seemed to have been underestimated. Part of this comes as result of them attending educationally disadvantaged schools, where learning was pitched at a minimal level. This leaves them unprepared for the realities of university life and hence they find it difficult to adapt to the rigour of the programme. Their lower level of academic rigour results in a mismatch between their expectations of the programme and what they are in fact expected to put forward to achieve their targets.

In addition, as some of them under-perform due to poor academic adjustment or other factors, they fail to see that they are contributing to the problem and instead continue hoping things will improve without seeking appropriate help until they eventually fail. Hence, there is a clear disparity between the programme's expectations of them and what they themselves are prepared for. Their level of preparedness coupled with their expectations seems to be one of the determinants for their success in the programme.

On the other hand, a few SFP students had to submit to their parents' aspirations rather than choose what they personally would have opted for career-wise, which negatively affects their performance. The findings demonstrate that sometimes when students are forced by parents to take up certain courses they are not intellectually inclined towards, their performance might be compromised. Hence one of the sources of poor performance by some students in the programme may be attributed to parents' unrealistic ambitions

for their children. This is indeed supported by Baker & Stevenson (1986), who report how some parents actively manage their children's school careers, to the extent of overriding the school's recommendations which may in turn result in poor educational achievement. Parents' high expectations is thus another stress factor for some of the SFP students as they are subjected to undue pressure to perform even when circumstances are not favourable.

### **ENCOUNTERING A HOSTILE ENVIRONMENT: OBSTACLES TO PROGRESS**

As first-year entrants, the SFP students are faced with a range of new experiences, social, academic, and personal. Moreover, as many of them are under-prepared, they encounter a host of difficulties because of the many shortcomings they bring along.

#### **Academic adjustment**

From the findings, it is evident that the SFP academic setting presents challenges to students, as it is more demanding and requires that students take responsibility for their own learning and progress. At school, they often knew exactly what they needed to study, but now they do not receive everything they require in class or from their lecturers. Much learning is expected to be done outside the classroom. SFP students are expected to access and process information by themselves in the course. Although they spend more time in classes, they are still expected to do much self-guided study. Thus they need to exercise some level of self-managed and independent learning. Also, with large volumes of work, they need to learn to manage their time properly. Yet most of the interviewed SFP students demonstrated very low levels of preparedness to deal with these academic

demands as imposed on them by the programme. Hence they feel intimidated by the intensity of the study required in relatively short periods. As the literature reports, under-prepared students struggle with the concept of independent learning, finding it unstructured and dissonant with their previous educational experiences (Harrison, 2006). As they fail to cope with the workload and the depth of preparation required in the programme modules, they subsequently fail their tests. A further factor appears to be the pace at university as so much more material is covered in a short space of time. This leads to a feeling of being overwhelmed as students struggle to complete assigned tasks in time.

### **Socio-economic conditions**

Socio-economically, things are not easy either for some of the SFP students. In an effort to adjust to the university social life, they face a lot of challenges. This is more pertinent to those with poorer socio-economic status than those from more affluent backgrounds. This is most evident as some of them struggle with finances which affect their living conditions. Financial constraints for some of the SFP students reduce their chances of seeking accommodation that would be conducive to studying; the core business of students registered at a tertiary institution. Judging from the picture portrayed by one of the interviewed students, it is clear that his living conditions were unfavourable and hence it would be expected that his academic activities be compromised. Even the most intellectually gifted student would have been equally challenged in such bad living arrangements, hence his consideration to withdraw from the programme. An analysis of the effect of financial factors on students' persistence by Braunstein, McGrath &



Pescatrice (2000) also reveal that students from families with greater incomes tended to persist with their university studies while those from poorer backgrounds tended to drop out.

Depression and anxiety about economic status goes beyond some of the individual SFP students; they are also concerned about their destitute families back home. This is another stress factor that emerged as having an effect on students' performance as one of the students took time off to work as a means of supporting ailing parents. Missing lectures for longer periods proved disastrous for this student. Withdrawal was a possible way out for this student as well. Constant thoughts about dropping out are therefore another stressor amongst the financially constrained SFP students as they are likely to lose focus in their studies.

### **Student demonstrators**

The demonstrators' unfriendly attitude towards students was yet another major concern for students' performance. As indicated in the data analysis, demonstrators are central to students' academic support. Following lectures, more time is spent in tutorial and practical sessions with the demonstrators. These sessions are lengthy enough for students to detect negative attitudes from their demonstrators. While some of the demonstrators may be supportive, others seem to have little patience for the students, in particular for those who require more academic support. Students' ultimate withdrawal from asking questions due to fear of humiliation is likely to have resulted in lowered levels of performance in practical and tutorials assessments.

### **Misconceptions about counselling**

As it emerged from the data, the academically ‘at risk’ SFP students and those experiencing personal problems did not seek help from the counselling unit. In order to lessen the impact of their problems, these students would have been expected to consult with counsellors, however, they did not. Misconceptions in relation to the nature of services provided by the counselling unit were the main reason that prevented students from seeking individual counselling. As some of the SFP students associated SFP counselling with HIV counselling, they avoided individual consultations even in times when they were experiencing difficulties. Hence, they assumed that such support was not intended for them. These students failed to recognise that the context of counselling is now different. What they know and experienced from their communities is not necessarily applicable in their present situation.

For some, seeking counselling would have been confirmation that they were not coping. Fear of being stigmatised was therefore another deterrent from utilisation of the counselling services by individual students. Feelings of embarrassment for their inability to cope particularly if they believed they should have been coping better also stopped some of them from asking for advice. With some of the SFP students believing counselling had nothing to offer with regard to personal problems, it is likely that some of the SFP students exit without having sought help.

Literature does however provide an explanation for the behaviour and attitudes highlighted above. For example, it was observed that most ‘at risk’ students who

withdraw from university tend not to have sought professional help (Morrison et al, 2006). Another perspective was provided by Lau (1995) namely that counsellors and lecturers were generally not preferred if personal disclosure was required. In dealing with personal problems students may thus prefer their peers because they are likely to be experiencing the same problems and can relate better to them than the professionals.

As some SFP students believed seeking counselling was a sign of weakness and not appropriate for boys, this brings to light the sentiments shared by Mori (2000), who explains that certain cultural factors inhibit students from seeking help even when they experience distress and know about such services. Hence, different cultural backgrounds and values may influence how students seek support. These students refrain from counselling services because they view emotional problems as a weakness and sense there is a stigma attached to using psychological services. It may also be that they view seeking help as a sign of immaturity and as negative to their self-esteem.

Furthermore most SFP students come from backgrounds where such services are not rendered or where it is considered as a weakness to seek counselling, yet during interviews it was apparent that they are the ones in desperate need of help. This is a matter of concern, as these students are likely to withdraw from university without having exhausted all the support available.

As seen from the above argument, some interesting trends emerged regarding personal counselling which suggests a need for close examination of the effectiveness of this

component of the unit. At a much narrower level, this debate should help bring about an understanding of why some of the UKZN SFP students who perform poorly academically and those who experience personal problems fail to maximise use of this in-house counselling unit in order to address their problems. At a broader perspective this argument will potentially open a discussion and thus lead to an expansion of knowledge about the limitations of the counselling services and how they should be dealt with to improve efficiency.

### **Family support**

It is known that support from family plays a key role in motivation for educational goals. Although many of the students were content with the emotional support from their parents, the study however revealed that ‘first generation’ SFP students were not getting significant academic motivation from their parents. This is mainly because their parents lack the knowledge to understand and advise them appropriately. Students who are the first children in the family to enrol for higher education and whose parents are not educated, may thus not get as much academic support and encouragement as the children of educated parents. Very limited involvement can be offered by illiterate parents to their children’s educational endeavours. As a result, these students indicated that they relied mainly on their peers for academic motivation. This lack of apparent interest seemingly affects all students, not only those who are performing poorly. This is supported by the case of the student who was performing well, but experienced his uneducated parents’ lack of insight and interest extremely negatively, resulting in a certain degree of demotivation.

The lack of parental support with regard to career guidance also impacted negatively on students' experiences of tertiary education. This is supported by findings in a study by Ferry (2006), where it was found that youth in communities of greater affluence had more family and school support in career exploration, which resulted in consideration of a wider range of career options. Parents and other family members provided valuable learning experiences through being role models and supporting activities that assisted in exploring career interests. This is an obvious lack in the experience of students from parents with lower education levels. These findings point to the need for greater effort to motivate SFP students to attend career guidance sessions. The timing for offering vocational guidance thus needs to be looked at very closely, especially given that some students only realised that they needed a career change in the middle of the year.

Contrary to the literature, the two students who came from better educated families were not getting the kind of support they required. They too appeared less motivated and were not coping with the academic demands of the programme. One of them was adamant that her parents had no interest in her studies, or if they did, that they failed to show it. Instead, friends showed more interest and appreciation of her academic efforts. Lack of support may therefore be viewed to be related to lowered levels of motivation. Hence, lack of family support may not distinctly affect performance but rather lower the motivation levels.

A number of factors that impact negatively on the SFP students' experiences of academic life at UKZN have been identified. These factors are not restricted to the academic

context but include students' economic and social environments. If academic performance of students in the SFP is to improve, it is incumbent on the university to pay attention to the broader social environment of these students.

## **DEVISING POSITIVE STRATEGIES**

The discussion in the previous section highlighted the serious challenges that the SFP students face. Nevertheless, a number of students have managed to negotiate means to diminish these obstacles, thereby reducing their perception of a hostile academic environment. They have developed strategies that allow them to achieve despite these obstacles. Such strategies include identifying university structures and using them to their own advantage.

### **Peers**

It constantly emerged from the data that when students had problems relating to academic work or simply experiencing personal problems, the first people they consulted were their peers. This implies that support from peers is one of the most significant factors for SFP students' determination for both their academic endeavours as well as their personal wellbeing. The underperforming students consulted with their more talented peers for academic advice and their performances improved as a result. Some students convened into small study groups to discuss homework, tackle assignments, and prepare for tests, and their performance was enhanced as well. From a social constructivism perspective,

learning is indeed a socially mediated process of negotiation meaning something that takes place amongst a community of learners.

As revealed by the study, SFP students also consulted peers about personal problems ranging from sharing family burdens to asking for socio-economic support in times of need. This situation clearly indicates that friends are viewed to be more able to provide the support and resources needed for certain specific challenges faced by students. One possible explanation as revealed by the study is the students' fear of judgement if they seek help from people outside their inner circles, including professional counsellors. Their preferences indicate that they are more at ease with their peers than with professional advisors, however skilled the latter may be in dealing with personal issues.

### **Mentorship**

Support from senior students also emerged as playing a positive role in assisting with student persistence in the programme. Mentors may play a critical role particularly when parents are either unavailable or unable to provide responsible guidance and motivation for their children. This became evident as the few students who had been allocated mentors pointed out some benefits of mentoring, a significant one being that of sharing a residence with their mentor, especially if the mentor was attached to their faculty. Meeting with the mentor is thus not only convenient for these students but consultation is feasible and meaningful. The fact that most interviewed students had no knowledge about mentorship implies that many of the SFP students missed out on an important kind of

support. They had no senior students to look up to and ask for advice and assistance, whether on personal or on academic matters, as mentors usually offer both.

### **Counselling**

SFP counselling however important, appeared to be preferred by most students as a group activity. This however does not rule out the fact that some students find individual counselling beneficial. Because of certain cultural factors and fear of embarrassment a portion of the SFP students do not use this important facility. It appears that there is rather an informal order of preference followed by certain students in seeking help. This practice relegates counsellors to the bottom of the list with regard to personal consultation, implying that some students may not use this aspect of the service at all.

## **RECOMMENDATIONS**

The following recommendations are made from the study:

### **Orientation with regard to academic responsibility**

It is a cause for concern that SFP students have such unrealistic expectations about the programme. As highlighted above, this is mainly an issue of poor academic preparedness which is usually not dealt with properly at school level. It is thus imperative that students be prepared for the intensity of academic material they would be expected to cope with at higher institutions.



Programmes dealing with first year students like the SFP should orientate students early in the year with regard to the amount of work they will be exposed to and have to deal with. This may not necessarily improve their performance but should at least make them aware of the rigour expected of them as they take on their first year modules. For instance, having been made aware, some students may decide early in the year to make adjustment to their social life in order to free up adequate time for their academic work rather than finding out too late, as most students are usually caught off-guard. As one SFP student scribed in his journal, he was ‘shocked’ everyday when he went for lectures and looked at the amount of work covered in just one lecture. Hence, a hint of what they are about to experience in relation to their academic work is critical, obviously without intimidation as this may cause anxiety.

### **Students’ misconceptions about personal counselling**

Creating user-friendly counselling services which are designed to give students confidence and inspire their trust, is imperative. The misconceptions and beliefs about some services of the counselling unit need to be discussed openly with the students. Students need to be enlightened about the nature of the services offered to encourage them to seek the necessary help in order to improve retention and academic success rates. All of this should however be done without discouraging students from seeking help from their friends as this is one of their major support systems. Because in certain instances students are merely looking for moral support and not professional counselling, it might be impractical to expect students to go for individual counselling. They instead must be encouraged to consult with their friends rather than to keep their problems to themselves.

In addition counsellors need to be informed of the different cultural perceptions of what counselling entails.

### **Addressing Financial issues**

When students are financially burdened, there is a cause for concern about their academic performance. However, if the financial aid awarded to a student is shared amongst other members of the family, it is even more distressing. As one of the students disclosed, a choice had to be made between dropping out to get a job or sharing the meagre financial aid with the ailing parents back home. In the light of this, it is important that students' financial status be given very close attention. It may not be practical that all financially needy students be awarded sponsorships, but it is a matter that needs to be considered very closely to improve retention rate, at least amongst the most financially vulnerable students. One way of supporting students may be to ensure that they secure places in university residences, and subsidising residence fees.

### **Mentorship**

Mentorship is an important component that should be encouraged amongst university first year students. This is particularly significant for the SFP students since the majority of them are 'first generation students' who are likely to perceive their peers as better able than their family to provide the support they need in order to do well at university. Fostering mentor support amongst SFP students could lead to positive outcomes both in terms of their social and academic adjustment to university. Although mentors are called in during SFP orientation, it appears that a close follow-up and monitoring of this

programme needs to be done by the SFP office itself rather than allowing it to be solely controlled by the mentorship office. Residential mentors need to be put in place to ensure continuity and efficiency.

### **Peer groups**

The study has shown that peer support is one of the most significant factors that impact positively on students. Programmes should therefore be established that make use of this positive group dynamic to support students academically as well as emotionally. Students who affiliate with study groups derive an invaluable benefit from them. Collaborative learning therefore needs to be promoted amongst SFP students, however without compromising independent learning. Students need to be encouraged to team up with other keen students with heterogeneous aptitudes to ensure reflective progress even among the less competent. Not only should the SFP office take this up, but the practice could be extended should most or all SFP students live in residences. Peer groups could be placed together under the guidance of mentor students in support of the various strategies discussed.

### **Demonstrators**

Demonstrators certainly play a critical role in shaping SFP students' academic performance. It is for this reason that their attitude towards students should be attended to, to ensure that they provide the support students require to increase their performance. This suggests that a rigorous screening of the demonstrators may be required in order to improve delivery. Also, it is crucial that demonstrators selected be made aware of the

nature of the students they are offering tuition to. Although the overriding factor in the appointment of demonstrators may be their academic merit, their personal attributes may also require a close scrutiny because it is this aspect that some SFP students are discontented with.

It is worth mentioning here that the matter of student demonstrators was reported to the SFP counsellors during the course of this study as the students had expressed concern about the consequences on their academic performance. The problem was thus dealt with as a matter of urgency and judging from the responses given by students during the evaluations of the demonstrators at the end of the following semester, there had been a fair adjustment in their attitude and their levels competency. Stricter measures have thus been put in place when selecting student demonstrators.

### **Vocational guidance**

Given that some of the students displayed a desperate need for career counselling right in the middle of their SFP year, it seems vital that entrance vocational guidance be offered early in the year if it cannot be done prior to acceptance in the programme. This may help to confirm if students are indeed inclined and interested in this field of study. This may be particularly important as some of the students may have missed the opportunity to make an informed decision about their career aspirations or have been compelled by parents as revealed by the study. Hence, asking them whether they were prepared for mainstream studies revealed for some, that they were in fact misplaced and that they needed to pursue other streams after their SFP year.

## **CONCLUSION**

In this study I have attempted to show how various factors impact on the experiences of students in the SFP. Some of these experiences are academically related while others are of a social, economic, and emotional nature. While it is without doubt that poor schooling impacts negatively on SFP students' attainment levels, adjustment problems, in particular, the academic also prove to be a major hitch in SFP students' performance. The incongruence between SFP students' expectations and the academic demands of the programme are an additional feature that hinders their academic progress. High educational aspirations by parents pose another threat for students' survival in the programme. Although student support services have potential to improve adjustment and persistence in the programme, lack of proper knowledge about mentorship programmes as well as misconceptions about seeking individual counselling deter students from accessing and utilising these important support services to capacity. However, with all these negatives, some of the students have learnt to negotiate means of surviving the challenges, peer support being a major factor. It may therefore be concluded that promotion of the positives be at the forefront of the objectives of the programme in order to counter-act the negatives.

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## APPENDIX A

### FOCUS GROUP INTERVIEW SCHEDULE

#### **A: School Background**

- As majority of you come from schools that were under-resourced (not enough resources like libraries, laboratories, qualified teachers, etc.) Did you usually have a full day of school? Did you have teachers for all subjects? Is there anything else you would like to talk about?
- Did your teachers give support besides teaching? What kind of support did they give? Please elaborate on this.

#### **B. Registration into the programme (SFP)**

- Think back to when you decided to enroll in the Science Foundation Programme. What motivated you to join the SFP/ how did you get interested in this programme? Who motivated you to attend? Was it your teacher, or friend or parent influence/motivate you?
- Please tell me about your experiences during registration for SFP.
- Some of you may have attended the SFP orientation programme before registration. If you did, please tell me about it. Did you find it useful? If yes – explain why?
- Do you have any suggestions on what the SFP could do to assist students during orientation?

### **C: Experiences of students after registration**

- How was the change from school to university? What did you find very different?
- How did you handle this change?
- After you had registered for the first semester, you were divided into groups and allocated classes, and teaching and learning commenced. Please describe to me your experiences in the SFP during the first semester? Was it a good or bad experience?
- If these experiences were not good, do you think they might have affected your performance in the SFP?
- In what ways would they have affected your performance? Please explain.
- How did you address these challenges? Who did you approach to in the SFP to sort them out? (e.g. did you approach the SFP counsellors, lecturers, tutors/demonstrators, Head of school, etc.)
- Did you find it useful approaching those people? Were your problems attended to in a satisfactory manner?
- Was the experience in the second semester different from the first semester?
- As some of you had good experiences in the time they have spent in the SFP, do you think these experiences improved your learning as well as your performance? Please explain your answer.
- What most rewarding or satisfying experience can you recall that you think helped you in learning the most in the SFP? Please tell me more about this good experience.

- During your interaction with other students and staff on campus as a whole, did you encounter any problem or was everybody helpful? If you did encounter problems, what kind of problems were they and how did you handle them?
- The university offers a variety of programmes to assist students in learning, e.g. mentorship. Have you been participating in any form of learning activity (e.g. mentorship, study group etc) at the university community (outside SFP)?
- Has that experience improved your learning in the SFP? If yes, in what ways? If not, what was the problem?
- Do you have any suggestions in your opinion should be done by the SFP to help students deal with problems affecting their learning in the programme?
- Would you consider the year spent in the SFP having prepared you for mainstream? Please explain your answer.
- Would you recommend this programme to any potential students in the future?

## **INDIVIDUAL INTERVIEW SCHEDULE:**

- Where do you live while you are attending university?
- Do you have your own room in campus?
- Are you able to study where you live?
- How do you get to campus everyday?
- Do you always have enough money for bus fare (if they stay off campus)?
- Where and how do you obtain your meals? Do you always have money for food?
- Do you have responsibilities at home – eg sick relatives or family members who are out of work and don't have money?
- Are you able to attend all lectures or are you often called home to attend to family matters?
- If yes, how have you managed to continue learning in the SFP with these challenges?
- Has this had any effect on your performance? Please explain.

## **APPENDIX B**

### **INFORMED CONSENT FORM (FOR ADULT STUDENTS)**

#### **Title of Research Study**

Science Foundation students' experiences at a tertiary institution

#### **I HAVE BEEN INFORMED THAT:**

Ms Keke Bulelwa, who is a student at UKZN and also a tutor at the Science Foundation Programme, Westville campus, has requested my participation in a research study at Science Foundation in this institution.

The purpose of the research is to investigate students' experiences in the Science Foundation Programme and how these experiences influence achievement. It is hoped that the study will elucidate these key experiences in order to monitor successful transition and adjustment of students in the programme in contributing to successful learning. A sample of fourteen participants will be chosen voluntarily for the study.

My participation will involve answering interview questions and making entries on a reflective journal about my daily experiences in the programme. Focus group interview sessions will last for two hours. I have been informed that interviews will be audio-taped with my permission. In cases where I don't give permission for use of tapes, notes will be taken. I have also been informed of my right to withdraw at anytime of the study at any stage and for any reason without being penalized.

There are no foreseeable risks or discomforts if I agree to participate in this study.

Although there may be no direct benefits to me, the possible benefits of my participation in the research are that the study will assist SFP staff in understanding some of the experiences for monitoring future SFP students.



The results of this research study may be published but my name or identity will not be revealed. To maintain confidentiality of my records, the researcher has promised to assign me a code number instead of using my name; store all data at a secure place, away from work environment and that only she will have access to the information with my identity

There will be no payments made for participation in the study except for my travel expenses to the interview venue.

**Declaration by participant**

I \_\_\_\_\_ hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

SIGNATURE OF PARTICIPANT

DATE

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## APPENDIX C

### SAMPLE STUDENT REFLECTIVE JOURNAL ENTRY

29/08/06  
It was Tuesday when I asked another demonstrator <sup>to help me with</sup> a sum (mathematics) and the demonstrator help me but I didn't understand and I call another demonstrator to explain it to me in more detail. When the second demonstrator started helping me, the first demonstrator that I called before told me that why I didn't asked him, if I didn't understand and told me that I must never asked him to help me again. There is a demonstrator that rushes us when we are writing a tutorial test and not give us enough time

## APPENDIX D

### ETHICAL CLEARANCE



RESEARCH OFFICE (GOVAN MBEKI CENTRE)  
WESTVILLE CAMPUS  
TELEPHONE NO.: 031 – 2603587  
EMAIL: ximbap@ukzn.ac.za

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4 MAY 2006

MS. B KEKE (203513102)  
EDUCATION

Dear Ms. Keke

**ETHICAL CLEARANCE APPROVAL NUMBER: HSS/06121A**

I wish to confirm that ethical clearance has been granted for the following project:

**"An investigation into students' experiences of the Science Foundation Programme (SFP) at a tertiary institution"**

Yours faithfully

  
.....  
MS. PHUMELELE XIMBA  
RESEARCH OFFICE

**PS: The following general condition is applicable to all projects that have been granted ethical clearance:**

**THE RELEVANT AUTHORITIES SHOULD BE CONTACTED IN ORDER TO OBTAIN THE NECESSARY APPROVAL SHOULD THE RESEARCH INVOLVE UTILIZATION OF SPACE AND/OR FACILITIES AT OTHER INSTITUTIONS/ORGANISATIONS. WHERE QUESTIONNAIRES ARE USED IN THE PROJECT, THE RESEARCHER SHOULD ENSURE THAT THE QUESTIONNAIRE INCLUDES A SECTION AT THE END WHICH SHOULD BE COMPLETED BY THE PARTICIPANT (PRIOR TO THE COMPLETION OF THE QUESTIONNAIRE) INDICATING THAT HE/SHE WAS INFORMED OF THE NATURE AND PURPOSE OF THE PROJECT AND THAT THE INFORMATION GIVEN WILL BE KEPT CONFIDENTIAL.**

cc. Faculty Research Office (Derek Buchler)  
cc. Supervisor (Dr. M Stears)