# EXPLORING FOOD INSECURITY AND SOCIO-ECONOMIC FACTORS AFFECTING ACADEMIC PERFORMANCE: A CASE STUDY OF FIRST YEAR STUDENTS ON PROBATION AND AT-RISK OF ACADEMIC EXCLUSION.

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## ABSTRACT

Since the democratic transition, South Africa has come a long way in paving a path that enables citizens to take advantage of education. Within universities, certain overlooked socio-economic and food security factors affect academic performance. The prevalence of food insecurity and factors affecting academic performance was investigated in the context of underperforming first year students. A mixed methodology was used where questionnaire, focus group discussions and key informant interviews were used to collect in depth information. The individual dietary diversity score (IDDS) and household food insecurity access scale (HFIAS) were used to assess the severity of food insecurity.

Fifty-three per cent of students came from disadvantaged socio-economic backgrounds characterised by unemployed parents and a high dependency on government grants. Twenty per cent of students regularly send remittances home, diverted from their scholarships/ bursaries and study loans thus leaving little for students to survive on. HFIAS results showed majority of students were food insecure as 80% experienced anxiety about food availability and accessibility and 54% had periods of complete inaccessibility to food. The majority of students proved to lack skills in grocery listing and financial management skills. Affordability and storage facility challenges led to students consuming nutritionally poor foods which compromised their health status. The IDDS showed 92% of students consumed bread, rice and maize; 70% ate foods with high levels of sugar, 71% ate foods made with oil, fat or butter; 66% ate meat; 58% ate vegetables, 50% ate fruits. This showed students' diet is lacking in diversity as they resort to rich, energy-dense and cheap foods found at cheap prices. This robbed students of essential nutrients. Students who lived in university-owned residences were at higher risk of food insecurity. A significant proportion of study participants had substandard secondary school education. The shift in the Language of Learning and Teaching (LoLT) created challenges evident in lack of classroom engagement and lack of efficiency in communicating answers in tests and exams. Student accommodation and its proximity to learning facilities also affected performance negatively.

The study therefore recommends, among other things, that university-owned residences reintroduce and/or subsidize dining halls to increase food accessibility, availability, quality, quantity and dietary diversity challenges. Food coupons could be introduced to low socio-economic students to purchase food from supporting grocery stores. Mandatory attendance of first year students to specialized programs organized by faculties and Student Counseling Centre to improve preparedness of students is needed. The UKZN LoLT policy needs to be implemented effectively so that the performance of second and third language speakers is improved. Translated material and academics who can speak the main local language is encouraged. The use code-switching techniques for the benefit of second and third language speakers are also encouraged when academics can use the main language.

**Key words:** Food security, socio-economic factors; Individual Dietary Diversity Score, Household Food Insecurity Access Scale, undergraduate students, academic performance, inclusive education.

## DECLARATION

I, Mbalenhle Gwacela, declare that

1. The research reported in this mini dissertation, except where otherwise indicated, is my original research.
2. This mini dissertation has not been submitted for any degree or examination at any other university.
3. This mini dissertation does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.
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……... ……

Mbalenhle Gwacela Date

As Research Supervisor, I agree to submission of this mini dissertation for examination:

…….. ……

Dr Unathi Kolanisi Date

As Research Co-Supervisor, I agree to submission of this mini dissertation for examination:

…… ……

Dr Joyce Thamaga-Chitja Date

## DECLARATION - PUBLICATIONS

**Draft Manuscript 1 (work in progress)**

**Gwacela M; Thamaga-Chitja JM & Kolanisi U.** The socio-economic factors affecting academic performance: The case of underperforming 1st year students at the University of KwaZulu-Natal.

*Author contributions*:

GM conceived paper with JTC and KU. GM collected and analysed data, and wrote the paper with the direction and guidance of JTC and KU. JTC and KU contributed valuable comments to the manuscript.

**Draft Manuscript 2 (submitted to SAAFECS Journal in 2013)**

**Gwacela M; Kolanisi U & Thamaga-Chitja JM.** Exploring the state of and factors affecting food security: A case study of first year students on Probation and At-risk of academic exclusion.

*Author contributions:*

GM conceived paper with JTC and KU. GM collected and analysed data, and wrote the paper with the direction and guidance of JTC and KU. JTC and KU contributed valuable comments to the manuscript.

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## LIST OF ABREVIATIONS AND ACRONYMS

| | |
|---|---|
| **ADO** | Academic Development Officer |
| **DoE** | Department of Education |
| **DUT** | Durban University of Technology |
| **FAO** | Food and Agriculture Organization |
| **HET** | Higher Education and Training |
| **HFIAS** | Household Food Insecurity Access Scale |
| **HPI** | Human Poverty Index |
| **HSRC** | Human Sciences Research Council |
| **IDDS** | Individual Dietary Diversity Score |
| **IFSS** | Integrated Food Security Strategy |
| **LAN** | Local Area Network |
| **LEC** | Learner Enhancement Checklist |
| **LoLT** | Language of Learning and Teaching |
| **NMMU** | Nelson Mandela Metropolitan University |
| **NSFAS** | National Students Financial Aid Scheme |
| **NSSE** | National Survey of Student Engagement |
| **RSA** | Republic of South Africa |
| **SADTU** | South African Democratic Teacher's Union |

| | |
|---|---|
| **SCC** | Student Counseling Centre |
| **SFP** | Science Foundation Program |
| **SPSS** | Statistical Package for Social Sciences |
| **SRC** | Students Representative Council |
| **UCT** | University of Cape Town |
| **UKZN** | University of KwaZulu-Natal |
| **UNDP** | United Nations Development Program |
| **WFP** | World Food Program |
| **WSU** | Walter Sisulu University |

# CHAPTER 1: THE PROBLEM AND ITS SETTING

## 1.1. Introduction to the research problem

Since the democratic transition, South Africa has come a long way in paving a path that enables citizens to take advantage of their education. The government sees its investment in education as a strategy towards reducing poverty and accelerating long term economic growth (Letseka & Maile, 2008). Generally, access to an education is seen as a gateway to a rewarding and fruitful life by developing social and human capital (Hughes *et al,* 2010; Jones *et al.,* 2009 & Ngidi, 2010). The South African constitution has engraved education as a basic human right thus the state is mandated to make education resources available and accessible to achieve the intended constitution objectives. Letseka and Maile (2008) highlight the South African university graduation rate of 15 % as one of the world's lowest. Although South Africa sees the long term growth prospect through investing in education, there still remains other crucial areas such as food insecurity in universities, poor academic performance and a low graduation rates which hinder development. These alarming areas need to be addressed by the state as well as support institutions and stakeholders. Indeed, such problems present considerable policy planning and implementation that will promote the socio-economic development agenda based on tertiary education. It is therefore important to bring to the fore socio-economic factors which give rise to student food insecurity, as well as the often overlooked socio-economic factors which affect academic performance if South Africa is to see a positive return on the investment in education.

A significant proportion of South African students entering university come from previously disadvantaged backgrounds (Letseka, 2007; Naidoo, 2008) characterised with burdens which cannot be ignored. A useful analogy that could be used to describe such students is that of "baggage" (Atherton, 2011). This is an overarching term, under which there is a myriad of social, economic and cultural complexities encompassing the life of a student (Letseka, 2007). Most of these complexities are informed by one's background (Fowler, 2003 and Atherton, 2011). Students' "baggage" can directly or indirectly affect students' academic advancement (Chaparro *et al.,* 2009). Because "baggage" forms an integral part of students' lives, academic advancement is thus affected as students bring their socio-economic issues into institutions of higher learning. Some of the factors affecting baggage are financial factors (Naidoo, 2008), social factors including linguistic limitations (Boughey, 2000, Pretorius, 2002), environmental

factors (Winter, 2003) and institutional and family support (Mohamedbhai, 2008; Terenzini & Pascarella, 2005) factors informed by the previous high school attended by students (McGregor, 2007) as well as accommodation challenges (Department of Higher Education and Training, 2011; Budny, 2001), amongst other issues. It should be noted that "Baggage" experiences differ from student to student and so do coping strategies applied (Atherton, 2011). At tertiary level, students are expected to be able to cope and deal with baggage factors in pursuit of education. However, the main problem that this research presents and seeks to investigate is the socio-economic factors that affect students' food security and academic performance. This study hypothesizes that once those factors are addressed, academic performance will improve, thus enabling students a more successful tertiary experience less impacted upon by problematic socio-economic factors.

### 1.2. Importance of the study

South Africa contributes a great magnitude of gross domestic product to education compared to other African countries however it has the lowest academic performance levels (World Economic Forum, 2012; Higher Education and Training, 2009). This raises a concern as the education serves as a country's investment expecting to cash in on its returns. Lower academic performance especially by first year students needs to be investigated. Faculties experience high dropout rates, increasing cases of failed courses and growing numbers of students on probation and at risk of academic exclusion, amongst others due to these complexities. It is therefore the interest of this study to investigate the myriad of complexities which arise when students enrol at tertiary institutions (Sekhukhune, 2008).

This study carries a strong assumption that students bring with them the situations and burdens from where they come from). The assumption is founded on significant research results conducted on local tertiary institutions highlighting socio-economic factors affecting academic performance negatively (Atherton, 2011, Brits *et al.,* 2011). On the other hand there is little or no research conducted on food security amongst the students (Chaparro *et al.,* 2009). Socio-economic factors and food security status form part of a student life and it is impossible for them to leave them behind once they enrol into a tertiary institution.

Students from socio-economically poor and under-resourced backgrounds will constantly be confronted by issues stemming from baggage particularly throughout their first year of university

(Brits *et al.,* 2011 & Prinsloo, 2009). This is relevant in the South African context as a bulk of students is first generation students (Naidoo, 2008). Until appropriate measures are taken to assist students, they will continue to underperform with little likelihood of them reaching their full potential and progressing timeously into completing their degrees (Jones *et al.,* 2009). This study is important as it will paint a picture of the severity of food insecurity amongst students at UKZN's College of Science and Agriculture in Pietermaritzburg campus and similar students elsewhere. In doing so, it will bring to the fore the food security and socio-economic issues which could directly or indirectly affect academic performance. In highlighting these issues and discussing their impacts, this research will suggest interventions that can be applied by the institution and other supporting stakeholders. As a result, the interventions proposed are anticipated to address the problem of food insecurity, thus enhancing students' academic performance.

### 1.3. Statement of the research problem

Overlooked food insecurity and socio-economic issues faced by first year students affects their academic performance. Concerted efforts by all stakeholders need to proactively engage with the university to improve academic performance. Once a circle of excellence is formed, the joint union will be able to support students facing various challenges.

### 1.4. Research objective

The purpose of this study is to explore food insecurity and its severity amongst first year students from the College of Science and Agriculture in the University of KwaZulu-Natal, (Pietermaritzburg campus); to investigate the socio-economic factors that affect academic performance.

### 1.5. The Sub-problems

Sub-problem 1**:** What is the state of food insecurity in the College of Science and Agriculture?

Sub-problem 2: What are the socio-economic factors that affect food security?

Sub-problem 3: What are the socio-economic factors that affect academic performance?

Sub-problem 4: What interventions need to be in place by universities and related stakeholders to address the problems?

### 1.6. The Study's Limits

This study was conducted in the University of KwaZulu-Natal (UKZN), and will thus be limited to first year student participants from the College of Science and Agriculture. Furthermore, the study sample will be limited to students who are on "probation" and "At-risk" (students at risk of academic exclusion).

### 1.7. Hypothesis

Overlooked food insecurity status and socio-economic issues faced by first year students affects their academic performance.

### 1.8. Study Assumptions

This study was based on the assumption that participants truthfully and correctly answered questions asked in key informant interviews, questionnaires and focus group discussions.

### 1.9. Dissemination of research results.

The results of the study will be submitted to journal for consideration. These papers will also be availed to the College of Teaching and Learning academic leaders. The researcher has already been to present the research preliminary findings at the Annual Teaching and Learning Conference in September 2011 in UKZN Westville. The researcher has also presented the full study findings at the South African Association for Family Ecology and Consumer Sciences and the International Federation for Home Economics Africa Region in February 2013. The full study will also be in the dissertation sections of UKZN libraries which is also availed online as a PDF file.

### 1.10. Structure of the document

The current chapter outlines the problem and its setting. Chapter two contains a review of related literature. Chapter three contains the Draft Manuscript 1 addressing the socio-economic issues affecting students' academic performance. Chapter four contains Draft Manuscript 2 addressing the state of, and factors affecting food security. Finally, Chapter 5 presents the conclusions and recommendations.

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## CHAPTER 2: LITERATURE REVIEW

### 2.1 Introduction

Since the democratic transition, South Africa has come a long way in paving a path that enables citizens to take advantage of education. Section 29 of the South African Constitution spells out that; "*everyone has the right to basic education, including adult basic education and further education, which the State, through reasonable measures, must progressively make available and accessible,*" (RSA, 1996). The government sees the investment in education as a strategy towards reducing poverty and accelerating long term economic growth (Higher Education and Training, 2009). Access to an education is seen as a gateway to a rewarding and fruitful life by developing social and human capital (Hughes *et al.,* 2010). However, the low graduation rate of 15% has been noted as one of the world's lowest (Letseka & Maile, 2008). The development route which the state has taken in making higher education available and accessible is noble, yet it faced with a myriad of resource challenges in South Africa is a cause for great concern.

A significant proportion of students entering university come from previously disadvantaged backgrounds (Letseka, 2007) characterised with baggage challenges. As students enroll into tertiary institutions, one needs to acknowledge that they are not blank slates. A useful analogy that one can be used to describe such students is "baggage" (Atherton, 2011). This baggage can be used as an overarching term, under which there is a myriad of social, economic and cultural complexities which encompass an individual. Such complexities are a product of where an individual comes from. Some of the serious realities informing student's baggage hinder student's learning process (Chaparro *et al.,* 2009).

Some of the factors that comprise baggage are financial challenges, linguistic limitations, environmental factors, institutional limitations, family support as well as factors informed by the previous high school attended by the students. Such issues may lead to students being preoccupied with external concerns (Atherton, 2011). Furthermore, anxiety, stress, substance abuse and depression may be a result of the inability to deal with baggage issues as expressed by mental health care professionals (Steptoe *et* a*l.*, 2004). Experiences brought about by baggage differs from student to student, however, it can be noted that dealing with some of the above-mentioned issues whilst striving to obtain a university qualification (which is the ultimate goal

for every student) may lead to poor emotional health (Steptoe *et al.,* 2004) which negatively impacts on overall academic performance .

The inability for students to deal with some of the issues that are informed by their backgrounds may become the root cause of depression. Sekhukhune (2008) explain how depression is a significant problem faced by young people at universities as it affects academic performance. In his study, (Steptoe *et al.,* (2004) he investigated two variables which are associated with student's depression which is low socio-economic status and perceived lack of control. This study sees the need to tap into some of the factors informed by student's baggage which may give rise to depressive symptoms as these may be associated with academic impairment. This is important as studies have noted that depression contributes to decreased productivity due to the missing of classes, alcohol abuse and an increased likelihood of dropping out of university (Meilman *et al..,* 1994).

This study investigated socio-economic factors that affect food security and performance of first year underperforming students in the College of Science and Agriculture, at the University of KwaZulu-Natal in Pietermaritzburg campus.

**2.2 Factors affecting food security status of students.**

Food security is considered as a basic human right in South Africa (HSRC, 2007). This is addressed in Section 27 (1) in the constitution (RSA Constitution, 1996) as well as the Integrated Food Security Strategy (IFSS, 2002). The State of Food Insecurity in the World conference, hosted by the Food and Agriculture Organisation (FAO), defined food security as a state "*when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active lifestyle*" (FAO, 2002). Food insecurity thus results from a condition whereby individuals have constrained or no resources which will enable them to be food secure (Bickel *et al.,* 2000).

Ensuring a food secure status among people is a major global challenge, especially in the developing countries including South Africa (Food and Agriculture Organisation and World Food Program, 2009; Altman *et al.,* 2009). Globally, South Africa is renowned for its rank among the countries with the highest income inequality rank (Altman *et al.,* 2009). In addition, its state of poverty and hunger are particularly an outline of the legacy of apartheid (Koch, 2011).

As a country, South Africa has the ability to produce sufficient food nationally. (Altman *et al.*, 2009). However, major food insecurity challenges persist at household and at individual level (Altman *et al.*, 2009). South Africa's Human Poverty Index (HPI) ranks 85 out of 135 countries (UNDP, 2009). Furthermore, 14.3 million South Africans were found to be vulnerable to food insecurity in the year 2000. Those at greater risk were rural area dwellers who are further disadvantaged by their lack of buying power (Koch, 2011). This severe state of food insecurity then poses serious implications on citizen's basic rights; that of access to sufficient food and water. The government has resolved and assigned itself to halving poverty between 2004 and 2014 and addressing food security remains central in meeting this objective (Altman *et al.*, 2009). Food insecurity is a major challenge to South Africa as it has implications not only on economic development; but on the well-being of its citizens across the board, especially the overlooked food insecurity amongst students from institutions of higher learning.

In South Africa the food insecurity at school level has been made a high priority, applicable interventions have been implemented and noted on country's national the food security strategy (DoE, 2008). The South African government has introduced school feeding schemes as a strategy of addressing poverty in public schools where poverty is seen through children coming to classes on empty stomachs (Seoketsa, 2007). Implementation of the strategy produced successful results as provision of free meals at schools (feeding scheme) and planting of vegetable gardens has increased the school attendance and strengthened the concentration of the learners (Seoketsa, 2007; DoE, 2008).

University students are known to have always survived on less-than-nutritious food and are greatly affected by the price of food which makes it difficult for them to secure their next meal (Shreeves, 2010). If food insecurity is a condition in which its subjects do not easily talk about (Altman *et al.*, 2009), it can only imply that even university students do not openly speak of food insecurity, and this is possibly due to the negative connotations attached to food insecurity (Rondeau, 2007). A lecturer from San Diego City College reported of the growing trend of hungry students on campus that frequently came to class hungry and would ask for something to eat and these students would not see their lack of food accessibility as a problem (Robbins, 2010). Even after the campus 'Food Closet' project was launched, which was aimed at supporting food insecure students; students were embarrassed to be found or seen in the closet (Shreeves, 2010). Similar views were shared by interviewed staff members from the Student

Counseling Centre. Khanyile (2011) from the Centre noted that one of the problems they face are students not acknowledging that they have a problem accessing food, which makes it harder for counseling staff to assist students.

In as much as food insecurity is a problem faced in many developing countries; it is also seen as a problem in developed economies as well (Chaparro *et al.,* 2009). An Australian study investigated the prevalence of food insecurity and the factors contributing to food insecurity amongst students. A University of Hawaii study concluded that students having part-time jobs or relying on others for financial assistance were some of the factors generally associated with those students experiencing food insecurity (Hughes *et al.*, 2010). In addition, 21% of students were food insecure and these findings further confirm that food insecurity amongst students is a problem across all types of economies. Chaparro *et al.,* (2009) advocate for the establishment of student gardens and food banks in order for food availability and accessibility to be increased for food insecure students. Numerous studies have reported on campus food banks as a response to the growing numbers of food insecure students on campus. The University of California launched the 'UCLA Food Closet Program' to address food insecurity as a response to most students surviving on one meal per day (Robbins, 2010). This project is supported by charitable donations and reported of the growing number of undergraduates going to the food bank. Most students using the food bank are said to be food insecure due to financial issues and tough situations faced at home.

South Africa does not have accepted means of measuring and monitoring food security (Altman *et al.,* 2009). However, food security is acknowledged as an important nutrition concern especially amongst the young and socio-economically disadvantaged groups (Hughes *et al.*, 2010). Low income background has shown to negatively impact students' food security status because of the compromised nutritional value (Rose, 2010; Kirkpatrick & Tarasuk, 2008b). This is directly related to the insufficient support coming from students' families, thus significantly diminishing their purchasing power (Bozik, 2007). This is especially significant for students with no financial aid from bursaries, loans and funding schemes. For students that have secured funding means, their food insecurity is triggered by the manner in which they manage their finances (Hughes, 2009). Students' lack of financial management skill such as budgeting and grocery listing, contributes to the misdirection of funds towards other items which are not as important as purchasing healthy food (Tomaselli, 2010). In addition to lack of financial

management skills, the type of accommodation occupied by students is known to affect food security. Hart (2009) and Tomaselli (2010) found a negative relationship lying between communal kitchens used by on-campus resident students. This was a result of increased cases of food theft. An Australian study by Hughes (2010) as well as the National University of Singapore documented similar findings about food theft in university residences. Similarly, students that reside away from home, for example, renting or sharing private accommodation, are also prone to food insecurity (Hart, 2009). Burns & Inglis (2007) and Rondeau (2007) highlighted the link that lies between food utilization and the type of environment that students are in. Food utilization is one of the pillars of food security that needs to be considered when investigating food insecurity amongst university students. The impact on students' financial background and how they manage their finance affects the type of foods they are accessible to. In addition, the living conditions and environmental factors associated with where they reside also affects food access, which then informs the nutritional value of their diets as a whole (Rose, 2010).

### 2.2.1. Impact of family's financial background on student's food security status

Being in university is extremely costly for all students across the board (Chaparro *et al.*, 2009). If students from developed economies and some with secured funding face difficulties in securing food, it implies that students coming from low socio-economic backgrounds face even greater challenges in making ends meet. Research has shown that there lies a link between household income and food security. The high cost of tuition brings about direct effects on food insecurity, leading to serious implications on students, especially those from lower socio-economic backgrounds. High income households are prone to purchasing healthier and higher quality foods whereas lower income households purchase cheaper, refined grains, added sugars and foods richer in vegetable fats (Kirkpatrick & Tarasuk, 2008b; Tarasuk, 2009). The financial positions in which students come from also has implications on their food security (Chaparro *et al.*, 2009). The majority of university students in South Africa come from extremely poor families where parents and guardian's income ranges between R400 to R1 600 (Letseka, 2007). Those with some funding are faced with inability to cover the additional costs, including the cost of food (Letseka, 2007 & Naidoo, 2008). With the accumulated costs of tuition fees, residence fees, textbooks and stationery, transport, and other expenses further pile up onto financial burdens (Naidoo, 2008), leading to food insecurity.

Students with very low income backgrounds and are without adequate funding are at the receiving end of the negative impacts of food insecurity as they are more susceptible to consuming cheap foods which are deprived of nutritional value (Rose, 2010). These types of foods are usually ready-made, saturated in fats and dense in energy. Rose (2010) states that low income individuals often find it difficult to access fresh fruits and vegetables and as a result, they opt to purchasing cheap foods. Rose (2010) further adds that such cheap foods further poses as a health hazard to these individuals. When adequate nutritional needs are not met; student's health status is at risk since the probability of contracting diet-related diseases is increased (Hughes *et al*., 2010).

One of the components of food security is the food utilization dimension of food security which the metabolism where the body converts consumed food into nutrients (Rose, 2010). High food prices and low income restricts the purchasing power of students (Naidoo, 2008), thereby paralyzing their ability to buy healthy and nutritious foods and thus affecting food utilization. This brings forth a possible relationship that exists between utilization, poor diet and how it affects academic performance.

Furthermore, because of the low socio-economic background which majority of students come from; a significant proportion of students further face food insecurity resulting from sending their funding home as remittances. In an ideal condition, the money sent home would have been used for purchasing groceries and ensuring sustained food supply for the students (Tomaselli, 2010). It has been noted that students (especially from low income backgrounds) struggle to concentrate on their academic work as they do not have the adequate purchasing power to feed themselves (Naidoo, 2008). It is also noted by Shreeves (2010) that students that come from low socio-economic background are aware of their financial situation and do acknowledge that their parents have few resources to assist them. This highlights the competing demands between students and funds.

### 2.2.2. Students' financial mismanagement

It has been a longstanding issue for students to effectively stretch available funds from a variety of sources including financial aid sources, wages from part-time jobs or allowances from home, for a wider range of expenses (Shreeves, 2010). Students from financially secure households

including full scholarship/bursary holders can afford the combined costs of tertiary education. Ideally, these students should not be insecure since they receive income (e.g. in the form of meal allowance) and are at a better position of purchasing nutritious food. However; students lacking in the ability to manage funds may find themselves in a food insecure position. At the fourth Annual Teaching and Learning Conference, held in the University of KwaZulu-Natal (UKZN), Tomaselli (2010) reported on the findings of a case study which was conducted by the African Centre for Food Security. This study revealed that students mismanage funds by purchasing clothes, alcohol and other forms of entertainment, rather than purchasing healthy food (Tomaselli, 2010). Similar results were also found by Letseka (2007), where a large proportion of students (particularly first years) overspent funds on designer clothes, consumed liquor irresponsibly and excessively attended parties. When students live independently in university residence and other types of rented accommodation, they are at liberty to spend money at their own discretion and tend towards spending more on luxury items (Hayhoe *et al.,* 2000). Such students need to be vigilant about how they spend their money, and hence the need to be educated about the fundamentals of financial management (Meldrum & Willows, 2006).

A study by Meldrum & Willows (2006) evaluated the adequacy of student loan funding in addressing the risk of food insecurity. This study concluded that shopping and budgeting skills are an important tool that could positively affect students' food security status (Meldrum & Willows, 2006); however, they also found that the risk of food insecurity also existed, despite some students having better shopping and budgeting skills. Lack of budgeting is a serious issue which is underestimated by university students (Meldrum & Willows, 2006). Rather than spending wisely or even saving the money that is available; students are led into the trap of buying discretionary items having been enticed by marketing strategies aimed at university students (Hayhoe *et al.,* 2000). Similarly, less secure students fall into the same trap. Consumer research notes that banks have a huge interest in university students as they are known to use available credit which will lead to students being long time customers (Pinto & Mansfield, 2006 & Mae, 2009). Students have access to grants, loans as well as other types of funding sources for their tuition which may pave a way for them to access varieties of traditional and alternative financial products without them familiarizing themselves with the rules for advantageous use (Jackson, 2012). Jackson (2012) writes that full time students form part of an enormous buying power in which businesses can make money from. This has a great potential of leading students

into debt as debt is created with the aim of covering increasing tertiary expenses. Living away from home and the likelihood of having part-time jobs in between classes may also motivate students into over spending and creating more debt (Hayhoe *et al.,* 2000). When students buy into marketing strategies and fall into debt traps in university; financial stability is affected which then affects their ability to purchase food, thus affecting food security.

The outcomes as a result of student's mismanagement of funds undermine the money available for nutritious and sufficient food supplies; which then impacts on food utilization (Booth & Smith, 2001). This fact also correlates with utilization and poor diet brought about by lack of resources. Lack of nutritious food also leads to illness which affects academic performance as students miss lectures and other academic commitments such as tutorials and practical's as time is taken off for medical assistance or for recuperation at home (Tweenten, 1999). The mismanagement of funds spell out the need of educating students about eating disorders, the importance of health and nutrition, food preparation and skills regarding budgeting and managing finances as well as with shopping skills.

### 2.2.3. Students' accommodation and its relationship on food availability and accessibility

South African tertiary institutions welcome students from within cities and far out in the country, as well as from other countries (Higher Education in Context, 2011). To accommodate students coming from far, accommodation is provided for students to access. The communal kitchens in place for students to make use of, are known to increase the risk of food theft amongst students and this has direct impacts on students' food security (Hart, 2009 & Tomaselli, 2010).

A case study conducted by the African Centre for Food Security amongst UKZN students revealed that theft in residences contributes to food insecurity due to the loss of food items (Tomaselli, 2010). Hughes *et al*., (2010) found that there was a higher prevalence of food insecurity resulting among those students who were boarding, renting or sharing accommodation with little financial support from home and financial assistant schemes from government. Hughes *et al.,* (2010) study conducted in Australia, found that 40 percent of the students lived with their parents and they were less likely to be food insecure. The National University of Singapore campus newspaper documented numerous accounts of food theft that occurred in many of the student residence (Verbatim News, 2010). Hughes *et al.,* (2010) documented that students perceived food theft as impossible to prevent as the communal areas are open to

everyone – hence even if they label the food items in the common fridge, it will still be stolen (Ngidi, 2010). This shows that the type of accommodation occupied by students and the available food storing facilities does have an impact on food security.

When students are confronted with issues of food instability and availability; various coping strategies are used, and food theft is done as an emergency measure to acquiring food (Hughes et *al.*, 2010 & Aaron, 2012). Theft of food in residences affects food stability and food availability which are important components in ensuring food security (Hart, 2009). Unstable food supplies will prevail until arrangements are made to place that which has been stolen. Therefore, the problem of food theft will keep surfacing until food insecurity is addressed in university residences.

### 2.2.4 Environmental Factors

The environment with which students are associated, affects the types of consumed food which also impacts food utilization (Burns & Inglis, 2006; Rondeau, 2007). Where students reside closer to fast food outlets, they are more susceptible to purchasing unhealthy foods compared to students who are situated near a supermarket where there is a better choice of healthier foods (Raphael, 2009a). A recent study concluded that urban school children's tendencies to purchase at corner shops greatly affects obesity and health status because they frequently purchase energy-dense and low nutritive foods and beverages (Borradaile *et al.*, 2009). Burns & Inglis (2006) note that the type of food consumed is not only affected by the environment and perceptions; but cultural background also affects students. For example, if students are accustomed to consuming certain food, when they move away from home to stay in university residences and cannot easily get access to that particular food type; it can be harder for them to adapt and find other equally nutritious sources that they have never been exposed to and are therefore deprived. Most students are not aware of how the environment they are in affects their food security, and therefore easily succumb to the "ways of living" informed by environmental conditions. This is likely to have knock-on effects on students that reside in the city where there are numerous fast-food outlets that sell rich and energy-dense foods at cheaper prices (Rychetnik, 2003). It is commendable if students can maintain food security without resorting detrimental coping strategies in the face of conflicting environmental conditions.

Within university campuses, there are cafeterias where students can quickly purchase food during the course of the day. If one does not know the importance of nutrition then they are at risk of consuming low quality foods in the quest of satisfying their hunger, thereby increasing diet-related diseases and fatigue (Booth & Smith, 2001). Even with the presence of shopping centers and other types of corner shops; students need to be aware of the dynamics of food security and nutrition, if they are to consume healthy food and increase productivity (Hughes *et al.,* 2010). There is the need to educate students with regards to health and food security so that students overcome environmentally informed limitations and strive towards becoming healthier and food secure (Hughes, 2009).

Despite facing socio-economic factors that affect their food security, students further face socio-economic factors that affect their academic performance (Rondeau, 2007). A recent study conducted in Australia found those students which are experiencing increasing financial stress and poverty had an increased likelihood of being food insecure (Fentiman *et al,* 2008; Grant *et al.,* 2004; Fredman, 2004 & James *et al.,* 2007). Much research still needs to be documented about the relationship between food insecurity and academic performance of university students (Chaparro *et al.,* (2009). Given the large inequalities in the South African society, this is critical. Indeed a new population of students who have benefited and succeeded in primary and secondary school due to government support such as social grants and the school feeding program are likely to be with little support at tertiary institutions since they are not guaranteed financial support through the National Students Financial Aid Scheme (NSFAS, 2010).

Food insecurity is known to reduce one's physical and mental ability (Booth & Smith, 2001), which has adverse effects on students' potential for economic and social development. This results from reduced social partaking in tertiary education resulting from diet-related illnesses (Booth & Smith, 2001; Vic Health, 2005). Maslow (1954) presented a model containing a hierarchy of needs, subdivided into basic needs. Namely, these needs were biological and physiological, safety, love and esteem. The basis of the hierarchy was on the notion that an individual must satisfy their lower level basic needs, before progressing onto the higher needs presented in the hierarchy (Maslow, 1954). In order for one to reach the highest level in the hierarchy, which is self-actualization, they need to have fulfilled the basic need which is their

biological and physiological needs (McLeod, 2007). Similarly, if students' primary need (i.e. food) is not fulfilled, other functions related to long term academic performance can be severely impeded. The root causes of food insecurity problems present a series of challenges for university students in their quest for knowledge. It is important to ascertain the prevalence of students who are at risk of suffering the consequences of food insecurity, given the potential correlation that lies between academic performance and food insecurity. There are numerous socio-economic factors which need to be addressed for students to be food secure and for the achievement of good academic results. There is a need for students to acquire financial and time management skills, for example, budgeting time for the preparation of meals, stretching groceries at the end of the month as well as the inability to manage finances (Anderson & Swanson, 2002).

Some empirical findings have been documented from some studies about food insecurity showing negative impacts on the academic performance among children and adolescents (Kleinman *et al*., 1998; Alaimo *et al*., 2001; Winicki & Jemison, 2003 & Jyoti, 2005). In these studies, food insecurity was associated with some attention and behavioral problems (Kleinman *et al.,* 1998), learners being absent from school and/or being tardy, psychosocial dysfunction (Kleinman et *al.,* 1998) as well as low mathematics and reading marks (Alaimo, 2001; Winicki & Jemison, 2003; Jyoti, 2005). In addition, these learners were likely to repeat their grades and had an increased likelihood of being suspended from school (Alaimo *et al.,* 2001). These results are in accordance with several different samples of children and adolescents who participated in research initiatives across the United States of America (Chaparro *et al*., 2009).

A reciprocal relationship exists between nutrition and effective learning (Jukes *et al.,* 2005). This relationship was found among Tanzanian school-going children (Jukes *et al.,* 2005). In university settings, some of the factors known to impact student's performance are namely; students' inability to adjust to university culture, social incongruences between university culture and home, divergent study habits and parental involvement (Nettles *et al.,* 2003). First generation university students are those "*whose parents have not attended college and/or have not earned a college degree"* (Engle, 2007). Henceforth the term "first generation" will be used. If the negative factors are prolonged; students may see poor academic performance which may result to exclusion from university. First generation university students are more susceptible to the negative factors brought about by nutrition and effective learning in the face of inadequate

financial aid (Raychaudhri *et al.,* 2010)..This has detrimental consequences as one's potential for economic and social development is restricted.

### 2.3. Socio-economic factors affecting academic performance

There are numerous inter-linked socio-economic factors, which affect students' academic performance (Chaparro *et al.,* 2009). The quality of education obtained from previous high school, language and technological barriers, the institutional support as well as residential dynamics are just some of the countless socio-economic factors which are faced by students which affect their academic performance. This study investigated the five challenging factors affecting first year's academic performance.

#### 2.3.1. Impact of students' family economic background on academic performance

A 2006 study conducted by the Human Sciences Research Council in South Africa in seven local universities showed that most tertiary dropouts and failures were first generation students, who came from families with low incomes and low literacy levels (Naidoo, 2008). Similar results from a recent study conducted by the Vaal University of Technology were also documented by Brits *et al.,* (2011). McGregor (2007) and other researchers confirm that the financial pressure experienced by students is one of the forces behind the increasing rate of undergraduate dropouts. Such students are classified as "high risk" due to the fact that they lack the finances for tuition fees and to cater for other needs.

The majority of new students enrolling into South African universities today come from low socio-economic backgrounds, most of whom are first generation individuals (Letseka, 2007 and Naidoo, 2008). Financial access in university is important as it means students are able to provide for their needs. When students have little or no support from home or funding schemes, this makes survival difficult while attending university (Fowler, 2003). Furthermore; students with limited support tend to seek employment and try to manage their time work and academics which is known to influence the time spent on academic work and subsequently affects academic performance (Nugent, 2011) as they try to work around a limited time frame (Singh & Vickers 2008). The income obtained from employment does make a significant difference; however, the pressure of being employed adversely affects students' academic performance (Brookman, 2008; Singh, 1998; Jones *et al,* 2009). A South African study conducted by the Human Science Research Council on the reasons why university students drop out found that it was due to

financial issues and that 70 percent of South African students who drop out come from low income homes (Letseka, 2008). In addition, those students have parents or guardians earning R1 600 or less per month, which is insufficient for the support of a university student and family needs. University expenses are steep, especially for the poor who have limited or no financial support structures in place such as student loans, government funding or bursaries. Upfront registration fees, accommodation and meal expenses, book, stationery, clothes etc. form part of a students' budget which does not work in favour of the economically disadvantaged (Jones *et al*, 2009; Naidoo, 2008; Fowler, 2003). As means to access finance, students from economically poor backgrounds are known to take part-time jobs to make ends meet (Benson, 1998).

When it comes to employed students; the time spent working displaces the time that ought to be spent on academic activities such as assignments, studying and other activities (Singh & Vickers, 2008). A Melbourne University Study revealed that students can work a maximum of 12 hours per week before hindering academic potential (Brookman, 2008). Hughes (2009) conducted a study which aimed to reveal the prevalence of food insecurity among Australian university students. Results revealed that 70 percent of students were employed so as to cover some living expenses, with 73 percent of them reporting that having employment reduced their study time. Students work around a limited time frame. The lack of time invested in academic activities impairs on the individuals overall performance.

South Africa is faced with a serious challenge of high unemployment rates which has serious implications on the success rates of tertiary students as literature has revealed how financial background can affect students' academic performance. It has been proven that financial pressures experienced by students weakens academic performance and exacerbates undergraduate drop out (McGregor, 2011; Brits *et* al., 2011). These realities begin to question the readiness and role of universities and relevant stakeholders in this rather major challenge. They further provide enough reason for institutions, the state and support stakeholders to seek and implement means `of financially assisting "high risk" students.

### 2.3.2 High school preparedness for tertiary education.

High school education is important in equipping learners for tertiary education; however, South Africa's education landscape is faced with numerous flaws (Jansen, 2011). Such flaws affect

students as they pursue further education in tertiary. It can be argued further that due to the low standard set by the public secondary schools, private secondary schools may be at an advantage in preparing their learners for universities as they are at liberty of setting their own standard of achievement. Letseka (2007) notes that the majority of South African university students come from socio-economically poor backgrounds, and because of the significant difference between private and government schools, the quality of education obtained is not of the same standard. VOA News (2012) writes that there are numerous flaws in the education system whose effect can be seen at tertiary education level. As a result, universities find themselves compelled to give students support and bridge courses so that they can improve their skills to the required level in order to understand the course originally qualified for (Roberts, 2009).

Owing to the legacy of the Apartheid era, is the regard in which teachers were trained as it was according to the different systems in which teachers belong. Similarly, learners belonged to different schooling systems according to race (Walton *et al.,* 2009). The three different systems that existed had their own standards attached (Walton *et al.,* 2009). However, when the systems integrated into one, little attention was paid into ensuring that teachers obtain training which was of the same standard. Township and rural school teachers are poorly trained and under-resourced which contributes to the low matriculant pass rates derived from rural area high schools (Naidoo, 2008). In a recent study, South Africa's Institute of Justice and Reconciliation concluded that education of "poor quality" is offered in 80% of schools in South Africa (McGregor, 2007). Bloch (2009), an education policy expert further states that 60%-80% of South African schools are dysfunctional due to numerous factors such as poorly performing teachers and government officials, as well as socio-economic challenges faced by learners. John Lewis, spokesperson of the South African Democratic Teachers' Union (SADTU) notes that teachers are given little support in implementing a curriculum that keeps changing (McGregor, 2007). McGregor (2007) further notes that further training is needed for education authorities.

Lack of uniformity in the quality of education due to historical circumstances and lack of teacher training does create problems for students as they enroll into tertiary institutions. There is a need to investigate whether these historical factors and the type of schools attended by first years affects their academic performance. Support programs and bridging courses are sometimes offered to students to equip them with skills required for the courses that they initially qualified

for (Roberts, 2009). Mentoring such students has been proved to have positive impacts (Mlambo, 2011). An arguable point can be made about the money and time which has to be spent on compensating the skills deficit of such students. The unpreparedness of students further puts pressure on academic staff, e.g. increase in class size lengthens the time of completion costing both the government and the university more resources. The importance of having bridging and support courses in place for ill-prepared as well as all 1st year students that will assist in the smooth transition from high school into university can be highlighted.

### 2.3.3 Language of Learning and Teaching (LoLT).

Students' epistemological access informs the way in which students learn and further suggests that in order for students to develop coherent ways of understanding and engaging with different learning areas; learning ought to be structured for this to be fulfilled (Pendlebury, 2009). This improves students' chances of success in education. Some writers have argued that academic literacy in students' mother tongue is or ought to be a pre-requisite for epistemological access in higher education (Keeple, 2012). This was Mgqwashu's (2011) central point in which he also suggested the use of indigenous language teaching for them to be more relevant and engaged in academic institutions. Thamaga-Chitja & Mbatha (2012) documented students' responses regarding academic literacy. First language isiZulu students commented that the type of isiZulu in academic discourse and spoken when lecturers teach in university is not the same as they type they speak every day. Further challenges were also encountered by students trying to process information. This was due to students' notion on the shift from code-switching technique used in their secondary school to formal English in university. It is apparent that students from low socio-economic backgrounds are greatly affected by language challenges experienced at universities. According to (Scott, Yeld & Henry, 2007); this concern may also be racially differentiated as Black students have been seen to perform far worse than White students in majority of disciplinary fields. The Language of Learning and Teaching (LoLT) may however be too simplistic to associate with poor performance and increased dropout rate of African students, especially when the LoLT used in institutions is not their mother tongue (Mgqwashu, 2011).

South African students who speak Afrikaans and English as first languages are noted to have been experiencing and enjoying epistemological access as early as primary education level and

throughout their education history; they have enjoyed the benefits of being taught in their mother tongue (Prah, 2002). However, even English speaking students may be challenged by academic literacy, especially those from lower socio-economic background (Boughey, 2000). This is a different case for non-English speakers such as those of isiZulu – who constitute a large majority of UKZN students- as a first language. Mgqwashu (2011) adds that for isiZulu learners; if their mother tongue was used as part of the LoLT, this would greatly contribute towards increased understanding theoretical concepts better and the application of epistemologies in their own language. In addition; this would be an important milestone reached by UKZN in implementing the bilingual Language Policy. However, much more thought must be taken into account since a university is an international place where language speakers exist, including those from other South African provinces.

The Language-in-Education Policy encourages multilingualism in South Africa (Molefe, 2009), while the Education Labour Relations Council alludes to schools having the right to use their LoLT which must be implemented through the promotion of multilingualism, as expressed in the South African Constitution (1996). As teachers exercise the right to teach using multiple languages, this does however bring about a dichotomy between learning in the mother tongue and learning in English. In addition, colloquial and mixture of home and English at high schools and the transition to formal English, combined with "foreign" accents may possibly create problems for many students, leaving students whom English is not a first language with a double-edged sword, contending with difficulties brought on by English such as LoLT and poor academic literacy.

Communication in the classroom between the teacher and the student acts as a connection between the two which can be enhanced by language through communication and interaction. According to Gutteridge (2009), language used by the lecturers is important as it gives directions; leads class discussions as well as guide students' knowledge constructions. Gutteridge (2009) further highlights the importance of language as a cognitive organiser that increases the quality of teaching thereby assisting in developing thinking. Language does not only play a role in reading and writing, but has a significant impact when students engage in the classroom. For example the exchanging of ideas with fellow peers, through the use of language, learners shift from one state of knowing to the next state, since learning is an additive process (Molefe, 2009). As a result, students are then able to become active partakers in the knowledge

construction process (Molefe, 2009; Gutteridge, 2009). When English is used as the Language of Learning and Teaching (LoLT), second and third language speakers have difficulties in expressing ideas and knowledge in academic writing (Jones *et al.*, 2009). One can then note that the linguistic challenges experienced by students pose restrictions on the additive process of learning as well as on academic performance.

The South African education system is characterized by numerous flaws and inequalities seen in the LoLT (Setati, 2005). Such inequalities give rise to sub-standard quality of education for the disadvantaged students mostly from rural areas (Thamaga-Chitja & Mbatha, 2012). Language cannot be dismissed as one of the major tools required for learning in the classroom. Flaws of LoLT are evident in students experiencing difficulties in learning. This is further exacerbated by the poorly implemented multilingual policy in universities (Chitja & Mbatha, 2012). The feasibility factors in educating teachers for linguistic diversity need to be taken into consideration if the policy is to be effectively implemented. Dynamics such as which language should be included or excluded, means of training teachers in being competent in the selected teaching languages as well as the financial implications thereof need to be considered. Mgqwashu (2011) advises that for meaningful and successful engagement with students' mother tongue will rely entirely on the implementing strategies by education practitioners. He further adds that this will help in developing its academic discourse.

Some of the difficulties experienced in university classrooms where students are not proficient in English, is that of limited participation. For example, when English is the LoLT, it creates some communication and participation barriers for those students who are not proficient in English. According to Molefe (2009), in order for the additive process of learning to take place, learners are required to be active participants in classroom discussions and activities in secondary school classrooms. A similar trend can be said to apply in university classrooms. This finding can be related to university classrooms as identical processes take place when students learn. In Setai *et al.,* (2007) paper about teaching mathematics in a multilingual classroom, it was noted that during activities such as group discussions, students' participation increases as they communicate using both English and their home language(s). Furthermore, students are prone to speak in their home language(s) when making an input in the public domain but when the usage of English is insisted upon by the teacher, they refrain from making inputs or asking questions

(Molefe, 2009). These are some of the challenges experienced in the classroom which contribute to difficulties in learning. The Rural Education Access Program recently documented that a vast majority of rural students experience difficulties reading and writing in a second or third language, which impedes greatly on academic performance (Jones *et al.,* 2009).

Linguistic incongruities that exist between secondary schools previously attended by students and the university generate challenges for first year students. Because many of the first generation students come from low socio-economic backgrounds (Letseka, 2007), majority are likely to have attended local high schools where their native tongue was used as the LoLT (Nettles *et al.,* 2003). This creates a problem in a university that only uses formal English as the LoLT, as compared to combining English with students' mother tongue with the use of multingualism. There is a need to learn from students who have experienced this transition in order to ascertain the manner in which learning and academic performance is affected. Thamaga-Chitja & Mbatha (2012) indicate that students who have relied on code-switching (use of two languages in the classroom) benefited some students in high school. Such students struggle at university since there is no code-switching between English and isiZulu (Thamaga-Chitja & Mbatha, 2012). This would explain students' tendency in struggling to understand concepts and thus academic performance is affected. Mgqwashu (2011) adds that there remains a gap in progressive research into the study of indigenous languages as a discipline in universities. He also alludes that the development of indigenous languages needs much attention if they are to eventually become included in the LoLT formal education.

In addition to the linguistic difficulties confronted by students; students coming from schools with poor educational infrastructure and lack of technological use further face additional problems. Pendlebury (2009) documented in the Meaningful Access to Basic Education publication that in South Africa; only 7.2% of public schools have stocked libraries and rural schools are even worse off when it comes to educational infrastructure. This reality had serious implications on learners' preparedness for tertiary education. Those learners who have had the advantage of using technologies and libraries in their former high school can quickly settle down with their academic work in university. This is different for most other unfortunate students who still need grapple with the new systems in place which may be a daunting exercise in the absence of institutional support.

### 2.3.4 Institutional Support

First year students deal with various kinds of social, personal and academic difficulties in the midst of pursuing their studies (Letseka, 2007). Students need to cope with being away from home, peer pressure and adjusting to a new system of learning in a new environment. In the face of depression, health and social challenges; tutoring and counseling services is extremely important as a supportive measure (Malefo, 2002). With regards to some problems faced in the classroom, College assistance and/or mentors play a very important role. It then becomes important for the university community to put in place 'responsive counseling services' where lecturers, mentors and/or counselors serve as a support system that would assist students in the difficulties they face that negatively affects academic performance (Malefo, 2002). However, where challenges are of a material nature and can be alleviated by material solutions, seeking partnerships from support stakeholders could help in addressing the problem.

Academic support programs exist in many institutions of higher learning in South Africa and they are generally defined as 'institutional programs, services, learning opportunities and interventions that are aimed at enriching supplemental learning and students' personal development' (Kuh *et al.,* 2006; Terenzini & Pascarella, 2005). They serve to correct academic as well as personal knowledge shortfalls (Kuh *et al.,* 2006). Furthermore, academic support programs serve to prevent the occurrence of academic difficulties in such a way that students' experience of university is more enjoyable (Sirin, 2005).

The Walter Sisulu University (W.S.U) developed policies and strategies for learning and teaching development (W.S.U., 2006). In place, they have the Orientation Program which is done during the first academic week. It assists students with various issues including course selection prior registration. Based on the theoretical principle of collaborative learning; the W.S.U. has the Supplemental Instruction (SI) in place where junior level students are assisted by senior student who had performed well on those particular courses. These students are paid by the university upon their appointment as S.I. leaders. The university also has mentorship programs, academic literacy support courses as well as Writing and Reading Centers that students have access to (W.S.U., 2006).

The University of KwaZulu-Natal implements a structured Orientation Program, which aims at familiarizing first years with the university environment and essential information that needs to be known by incoming students. Researchers have documented that first semester success can lay an important foundation for degree attainment (Wintre, Galander & Yaffe, 2000), it is very important that support systems be put in place at an early stage. Some of the key areas of struggle for students are linked to the past and current educational landscape of South Africa (Department of Education, 2002). Some of these struggle areas are language and general poor quality of education which may be a result of deep resource inequalities in schools, including no exposure in key areas such as laboratory exposure. Therefore, pursuing a degree which requires laboratory work might pose some challenges for such students. Structured support is therefore needed to address these key elements as a way to improve students' chances of performing well academically and adjusting to a new system of learning.

In UKZN, there have been efforts aimed at assisting students who need assistance both socially and academically. This has been realized through the use of academic coordinators, Dean's Assistants as well as academic mentors and tutors in place during the course of this study. In the Pietermaritzburg campus, the Mentorship Programme, directed at first years, seeks to help students with their academics as well as to facilitating the socio-academic integration in the university environment (Khuh *et al.,* 2006). It also assists with students who are at risk of academic exclusion for various reasons. The importance of academic monitoring systems has also been realized throughout higher learning institutions in South Africa.

#### 2.3.4.1 The Robot System

The Academic Monitoring and Redirection System, also known as the "Robot System" is a student support system initiated by the University of KwaZulu-Natal. The aim of the "Robot System" is to provide early warning, monitoring and support for students' academic performance. There are three academic categories in which students performance is classified (UKZN SRC & SCC, 2009). The traditional colours of traffic lights also known as robots are used to indicate progress and danger of academic progressing during the degree progression. The colours green, orange and red respectively indicate safe or good academic standing, caution and danger.

The ‘green’ stage is the starting point for every student in which they need to strive to remain. These are students who are on good academic standing, i.e. students must have passed 70% of the registered credits for a semester and have at least passed 15% of the credits which are expected by the College at a particular point in order to complete the degree in the minimum time. The ‘orange’ stage is categorized as ‘at-risk’ of academic exclusion. These are students who have either passed less than 70% of semester’s credits or have passed less than 75% of credits expected by the College at a particular time in order to complete the degree in the minimum time. The ‘red’ stage is categorized as ‘danger’ and is further sub-divided into two categories (UKZN SRC and SCC, 2009). The first red means the student is severely underperforming and academic progress is below minimum College requirements after two full semesters of study. One or a combination of three steps can then be taken. Firstly, the student is placed under strict probation for a semester if they are allowed to continue studying in the present College. Secondly, the student may need to attend academic and personal/career counseling that is compulsory. Thirdly, the students may be advised to change Faculties. If these steps fail, the student proceeds to the second red category, which means failure to achieve the probation targets and leads to academic exclusion (UKZN SRC & SCC, 2009). This is an effective strategy whereby students who are struggling with their academics are assisted through monitoring, counseling and tutoring facilities provided by the university before they get to the excluded stage.

South African institutions of higher learning have also adopted strategies or typical interventions that can assist students in their first year of study (Ngidi, 2006). Some institutions have been noted to facilitate interaction amongst students because this affects the manner in which students interact with the institutions as well as how they perceive the campus environment (Brits, *et al*., 2011). This is where institutions commitment to the wellbeing of students plays an important role (Prebble, Hargraves. Leach, Naidoo, Suddaby & Zepke, 2005). The way in which students in South African universities interact with the universities has an impact on how they perform academically (Harvey-Smith, 2010). Student services on campus such as tutor and peer monitoring systems have been implemented and are running in many institutions in South Africa including UKZN. These programs are inclusive of academic tutoring, peer tutoring, mentoring and training-related tutoring (Sima *et al.*, 2008). In addition, dedicated faculty academic development practitioners have been commended for their contribution in assisting at-risk

students (Eiselen & Gerber, 2003). UKZN has established Academic Development Officers (ADO) for various Colleges to assist with meeting the academic requirements of students. The aim of these development practitioners is important in assisting the types of students enrolling into universities in South Africa. These are first generation students from lower socio-economic backgrounds (Naidoo, 2008; Letseka, 2007), who need the type of academic assistance that will facilitate the transition from their former secondary schools into the university learning environment. These development practitioners strive to "*support students with regard to study methods, time management, reading skills, improvement of English proficiency, comprehensive academic skills assessment through identification of at-risk students as well as tutorial classes, etc*." (Sekhukhune, 2008:60, 61). Strategies have been implemented at institutional level with the aim of assisting students with their academic performance, amongst other important issues pertaining to higher education. However, the involvement of parents in their children's performance, as well as their living environment plays a significant role in the life of a student. These are other factors that need to be investigated so as to obtain a holistic understanding of how these factors affecting academic performance.

### 2.3.5 Parental involvement and students' living arrangement.

Parental involvement in students' academic life plays a big role in encouraging optimal performance and it has been proven that a positive relationship exists between proper parental guidance and students' academic performance (Raychaudhuri *et al.,* 2010). Living condition and parental presence are important in young people's education (Budny, 2001). However, this can also be negative for first generation students where parents lack exposure about the demands of university life and education. In such cases, parents are not equipped to give the appropriate support (Mlambo, 2011). First year students go through a myriad of mixed feelings during their first encounter of university: the overwhelming lecture halls, the thrill of living independently while some learn to adjust to new house/ room-mates, getting to know the academic staff as well as getting grip of the course load. For most first year students who are staying away from home (e.g. residence), that marks a significant movement from family and compliance to independence where some level of assistance is necessary to accommodate the change. These are some of the elements occupying students' minds, and unless they are supported, they may lose focus of why university is important. Families of higher socio-economic status are at a favourable end as researchers such as Considine & Zappala (2002) have noted that this cultivates higher levels of

psychological support for their children and subsequently higher levels of achievement. When parents offer support, they can easily share relevant and useful information about university to their child. This may not be the case for majority of students that come from families with lower socio-economic statuses. This is because the support, motivation that students receive from home contributes significantly towards academic achievement, as some researchers have found (Mlambo, 2011). According to Letseka (2007), with the type of students enrolling into universities are first generation students from low socio-economic backgrounds and this is where student support services plays a vital role in attending to the needs of such students.

The relationship between parental involvement and academic performance has been attributed to the fact that a family environment with defined work ethic and enforced standards of conduct would enable student to implement ways in to ensure success (Malefo, 2000; Mlambo, 2011). Some of the facets in which parents can be involved with are through their investment in time by means of assisting with academic work and communicating with their child, being an appropriate role model and also the expectations that parents have are said to have a significant impact on academic achievement (Noble *et al.*, 2006; Henderson & Mapp, 2002). This is also because parents are seen as important factors in student's perception formation, therefore communication and expectations can be easily communicated between the two (Marl & Hansberger, 2000). A study conducted by Jeynes (2005) investigated parental involvement and student academic achievement found those students whose parents were involved in their academic activities had higher scores than their counterparts whose parents were less involved. Similar findings were also documented in Noble *et al.*, (2002) and Malefo's (2002) study where students whose parents were involved in their education performed better than their counterparts that obtained no support. In addition, Sirin (2005) found the socioeconomic status of students and their families to have a strong relationship with academic performance. Those of a higher socioeconomic status performed better than their counterparts from lower socioeconomic families. Conversely, there are students that come from "educationally well-off" homes with well-educated parents but still struggle with their academics. Even though having educated parents and support from home is essential in complementing academic achievement, it does not determine good academic achievement for all students.

In addition to parental support playing a significant role in students' academic performance; students' living arrangement also needs to be considered as a factor affecting performance. An empirical study from Colombo carried out by Weligamage (2007) investigated the relationship between the type of students' living arrangement and academic performance found that students who resided at home with their parents showed better academic performance than students who lived independently. The type of living arrangement that accommodate students was found to have significant effects on academic performance. A study carried out in the Vaal University of Technology in South Africa found resident accommodation to provide a better study environment for students as they had access to study space and in close proximity to facilities and support. In addition, this factor alleviated problems brought about by transport (Brits *et al.*, 2011). It has been said that new environments can take their toll on students due to significant, often trivial, changes which are significant (Budny, 2001).

Most universities have a difficult time in accommodating undergraduate students due to limited resources such as funds and available accommodation (Weligamage, 2007). Due to lack of resources, most students from low socio-economic backgrounds and are first generation may be compelled to find alternative (or private) means of accommodating themselves, should they be residing away from home. The safety and appropriateness of alternative accommodation is questionable. Economic safety and security become important factors which cannot be overlooked. Assessing how the type of residences occupied by students affects academic performance may help university administration when planning alternative accommodation facilities and policy implementation that will be favorable to students, especially first years.

**2.4 Summary**

Higher education in South Africa has opened its doors to all citizens, regardless of race and socio-economic statuses. However, literature has shown that some setbacks still exist, which are evident in the performance of students from lower socio-economic background. Food insecurity amongst higher education students is said to be a result of their family's financial background. This affects and also determines the extent of financial support students are able to obtain from their family. A significant proportion of South African students entering university for the first time are first generation students who come from families with lower levels of income. This

affects students' purchasing power, and ultimately their state of food insecurity. Students also have various ways in which they obtain financial support such as study loans, bursaries and scholarships. Money can be mismanaged if students do not have budgeting and financial management skills, which significantly contributes towards food insecurity. A relationship lies between food security and students' accommodation by affecting students' availability and accessibility to food. This is especially applicable if they are squatting, residing privately or in university-owned residences. Finally, environmental factors significantly contribute to students' food insecurity as they affect the types of food consumed, which then determines the fourth pillar of food insecurity which is utilization, thus referring to the actual digestion of food that has been consumed.

In addition to the socio-economic factors affecting food insecurity amongst students, the current study also explored several socio-economic factors affecting academic performance. This included the impact of students' family economic background on academic performance. It has been brought to the fore that finances available from home to support students affect their purchasing power in terms of tuition, academic material, stationery, food and basic sustenance. The lack of financial support from home, coupled with the absence of financial support from funding institutions negatively affects academic performance due to stress and anxiety weighted upon the student. The quality of high school preparedness for tertiary education directly affects performance as this plays a significant role in equipping learners for higher education. This is however slightly problematic as many flaws have been identified in the South African secondary education sphere with. Directly related to tertiary education preparedness is the Language of Learning and Teaching LoLT, which serves its importance as students' epistemological access to education is informed by the way they communicate and excel in the classroom. This is influenced by the language medium used at school. However, major problems arise when learners transit to tertiary institutions where academic English is used, second and third language speakers can face difficulties in communicating, and expressing themselves which affects how they perform academically. The type of support that is put in place by the institution of higher learning plays an important role in student performance. The presence of support programs can prevent the occurrence of academic difficulties which are present in students who are ill-prepared for tertiary. Lack of support also negatively affects performance amongst students. Finally, the role of parents in a student's life cannot be separated with their performance. Parental involvement plays a significant role as they offer encouragement and support.

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## CHAPTER 3: DRAFT MANUSCRIPT 1- SOCIO-ECONOMIC FACTORS AFFECTING ACADEMIC PERFORMANCE: THE CASE OF UNDERPERFORMING 1ST YEAR STUDENTS AT THE UNIVERSITY OF KWAZULU-NATAL.

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### Abstract

The South African university graduation rate of 15% is one of the lowest in the world. This study hypothesizes the failure rate as an outcome of universities' weak support of socio-economic factors affecting academic performance. Suggestions to be implemented by institutions and support stakeholders were recommended. A mixed methods approach including questionnaires, focus groups, key informant interviews and observations were employed in the study. Data from 1st year students on academic probation and at risk of academic exclusion was obtained through questionnaires. Focus group discussions and key informant interviews were conducted to obtain an in-depth understanding of emerging issues.

Fifty-four percent of the interviewed students come from poor socio-economic background characterized by unemployed parents and dependency on social grant support. The majority of students attended secondary school in the rural and township where learning conditions are generally poor. The lack of preparedness at secondary school cultivated problems as students were admitted without the necessary skills to meet university demands. The shift in the Language of Learning and Teaching also posed communication challenges in the classroom. The ability to answer efficiently in terms test and exams and engaging with study material which is mainly Anglo-Saxon was poor since many students partially used formal and academic English in secondary school. Although student accommodation was not a major problem directly affecting performance, the proximity of accommodation from learning facilities such as the libraries, computer LANS and study venues seemed to restrict access afterhours for those residing in far residences and homes. It is argued in this study that ensuring access to education alone is insufficient without the support to facilitate the full participation by undergraduate students from low socio-economic backgrounds. This finding is supported by various inclusive education experts on showing that several socio-economic and socio-cultural factors affect access to education. This study proposes the enhancement of already existing holistic augmented

programs for determining risk students and administering targeted assistance for effective impact. Moreover, mandatory attendance of first year students at specialized programs should be organized by the Student Counseling Centers, the Academic Support divisions and support stakeholders to improve the preparedness of students from rural and township schools and to supplement underprepared students.

**Keywords:** Socio-economic factors, academic performance, Language of Learning and Teaching, institution, inclusive education.

### 3.1. Introduction and background

Investment in increasing access to higher education and training is viewed as one of the key strategies towards reducing poverty and accelerating economic growth in South Africa (National Planning Commission, 2011). Education is indeed a gateway to a rewarding and fruitful life through developing social and human capital (Hughes *et al*, 2010; Riley, 2007). It seems justifiable for the state to make education available and accessible, provided its intended objectives are met.

A significant proportion of students entering university South Africa come from previously disadvantaged backgrounds with numerous burdens which can no longer be ignored (Letseka, 2007). South African universities are faced with poor academic performance and low graduation rates, among other issues (Letseka & Maile, 2008). Students are not blank slates when they arrive at university. According to Reggy-Mamo (2008) and Atherton (2011), the term "baggage" is suitable for describing the myriad of social, economic and cultural complexities encompassing a student's life. The inability for students to cope with socio-economic factors they are presented with at university and the lack of appropriate support obtained from the institution brings about negative effects such as depression and poor emotional health which compromises the learning process and subsequently affects performance (Steptoe *et al.*, 2004). Performance declines as students become preoccupied with external issues (Reggy-Mamo, 2008).

Although South Africa's prospects for growth and development are seen through investing in education, access to education (especially tertiary education) without support impedes on the intended outcomes. This paper questions whether South African universities are geared up to provide comprehensive support for students from challenging socio-economic backgrounds. Students' socio-economic background, the strength of secondary school preparation for university, the Language of Learning and Teaching (hereafter LoLT) as well as the availability of institutional support are areas which the current study has identified as important for improved student success. Further policy planning and implementations are deemed important to promote the support of students from low socio-economic backgrounds.

#### 3.1.1 Socio-economic factors affecting academic performance

Within the South African landscape of higher education, there are many socio-economic factors that affect students' academic performance. Due to time and resource constraints, this research

has focused on factors such as; students' economic background, secondary school preparation and the LoLT. The study also reviews existing support structures and their role in student's lives at university.

**(i) Economic background**

Finances play an imperative role in a university student's life. Students need money to cover costs of registration, accommodation, text books, stationery, essential learning material, as well as meal and transport costs. Researchers have shown that students' socio-economic background is known to negatively affect academic performance (Brits *et al.*, 2011). Prinsloo (2009), also adds that undergraduate drop out is also influenced by finance and other socio-economic factors at an institutional level. Therefore, students from low socio-economic backgrounds who do not have financial aid are greatly disadvantaged as financial stresses are known to cause waves of negative effects that impede on performance (Jones *et al.*, 2009). Such students are identified as victims of psychological stress (Sekhukhune, 2008), and are prone to drop out in comparison to their higher socio-economic status counterparts. The majority of individuals coming into universities since 1994 in South Africa come from poor socio-economic backgrounds where households earn as little at R1 600 per month; thus making financial support extremely difficult (Letseka, 2007; Roberts, Gouws & Van der Merve, 2006). Increased financial pressure on students has been identified as one of the main driving forces behind increasing drop-outs during undergraduate years (Benson, 1998). Even when they acquire financial help such as scholarships and government study loans, they send a considerate portion of the bursary to their households to take care of several needs including health care for sick household members (Brits *et al.*, 2011). Secondary school learners from socio-economically poor backgrounds were found to be challenged by sick family members or siblings, which affected school attendance and academic performance (Nelson Mandela Metropolitan University, 2010). As students enroll into tertiary institutions, these are some of the realities they also need to face. At university, students from low socio-economic backgrounds do struggle with additional responsibilities, including looking after sick family members and earning an income from part-time employment (Nugent, 2011). Various coping strategies are sought by students in the face of financial difficulties. Getting part time employment is one of popular means of acquiring income whilst studying; however, as a coping strategy it presents some challenges on their time (Malefo, 2002). A recent study conducted in Melbourne University in Australia found that students can work a maximum of 12 hours per week before hindering their academic potential (Brookman, 2008). Furthermore,

students work around a limited time frame (Singh & Vickers, 2008), and the time spent at work displaces time that ought to be utilized on various academic activities. Consequently, the time spent on academic activities is fractured which affects performance. One of the motivating reasons for students seeking part time employment is due to lack of financial aid (e.g. National Student Financial Aid Scheme or NSFAS, bank loans, bursaries and scholarships) (Hayhoe *et al.*, 2000). It is possible for those students with secured partial financial aid to receive insufficient support money and therefore seek alternative means to cover the gap. An Australian study confirmed students' tendency to seek employment due to insufficient government funding (Benson, 1998). Pinto and Mansfield (2006) reported that sometimes students engage in dangerous and unsustainable means of acquiring money such as prostitution, theft and borrowing high-interest money that they fail to pay back. Resulting stresses may have an impact on their psyche and consequently on academic performance.

Students from lower socio-economic backgrounds, especially those from rural areas, have a difficult time finding part-time employment in urban settings due to possible environmental, cultural and linguistic shocks and limitations, compared to their fluent and well-read counterparts from more developed areas (Anonymous, 2002). These students, especially those from low socio-economic background need to quickly establish new networks and skills in order to get jobs for financial security (Robinson, 1999 and Anon, 2002).

**(ii) Preparedness for tertiary education.**

Approximately 80% of South Africa's schools offer education of "poor quality" (McGregor, 2007). Ramphele maintains that poverty and inequality is a generated by the poor quality of education in South Africa (Bernstein, 2012). In another publication, Ramphele compared South Africa's state of education to that of a sinking ship (Kotze, 2012) and emphasized that its quality needs to be improved. According to the latest Global Competitiveness Report, South Africa's education and basic training system ranked 132 out of 144 developing nations. South Africa was also beaten by the likes of Lesotho with a ranking of 140 out of 144 countries regarding the quality of higher education (World Economic Forum, 2012). This raises alarms about the current public education system that is responsible for masses of South Africans, almost after two decades after the demise of Apartheid.

These alarming statistics may be attributed to the pre-democratic government where the education system operated in different geographic areas according to racial groups – all which had their own service and quality standards (Roberts, Gouws & Van der Merve, 2009). According to the former Population Registration Act (no. 30 of 1950) (The Apartheid Museum, undated.), South Africans were grouped according to racial categories where the Educational needs were measured and delivered according race. This was a major contributor of the poor quality of Black students' Education due to the existence of sub-standard teachers and lack of teaching resource allocation when compared to White urban schools according to Van Heerden (1995). Subsequently, it might be argued that these historical and socio-political differences that may exist presently in secondary schools are the cause for majority of socio-economically poor Black students' under-achievement at university. It can be noted that operating an education system according to race or gender does not necessarily lead to education of double quality; however, this may be relevant in the case of Apartheid and the disparities that existed in resource allocation of high schools. A significant proportion of South Africans prior 1994 remained relatively poor and poverty stricken which was worsened by the numbers of unemployed citizens (Terreblanche, 2002). Even after the dawn of democracy after 1994, the economic landscape was still unstable, with large income disparities and increasing unemployment rates (Terreblanche, 2002). This affected household income adequacy in supporting first generation university students due to lack of available resources.

Although Apartheid laws have been repealed and amendments being made in the form of policy implementation at various scales in the Democratic Age educational system; Jansen (2012) raises critical observations from the current system where Grade 12 results appear to be getting stronger with the increase in pass rates; while there are large pools of students struggling in their first years of university. It can be concluded that matriculants are not adequately prepared for university and hence their inability to reach university standards. Furthermore, 60-80% of South African schools have been reported as dysfunctional due to poor performance by teachers (largely resulting from lack of support in implementing ever changing curriculum) and inefficient government officials coupled with the socio-economic challenges faced by learners (McGregor, 2007). The 30% pass mark recognized by the schooling system has been criticized by many leaders in society. Professor Jansen (2012) asserts that this pass mark digs the country further in into the sinkhole of mediocrity. If university standards are increasing while secondary schools remain below standard; students will not only have false expectations of higher learning,

but universities will continue to grapple with poor performance and high failure and drop-out rates.

Secondary school as a phase before university is important as it lays foundations for further education and training which manifests itself at university level. It is unfortunate that South Africa's education system has numerous flaws which indirectly affect learners' preparedness for tertiary (Jansen, 2011). The low skill levels and low academic preparation from secondary schools in South Africa indeed catches up with many students who enroll into tertiary institutions (Nelson Mandela Metropolitan University of Technology, 2010). How well a student does academically in their first year can, to a large extent, be attributed towards their preparedness for tertiary education. It is evident that the challenges faced by education authorities have ripple effects which are rested on learners, thus impacting on their readiness for further education and training (McGregor, 2007). Perhaps education authorities need to revisit specific areas so as to obtain positive results directed at equipping students for tertiary education success.

**(iii). Language of Learning and Teaching in university classroom.**

Tertiary institutions are a hub of linguistic and cultural diversity where students come from a variety of cultures, religions and countries; all with their ethnic languages. In South African schools, teachers are constitutionally given the right to teach in multiple languages (Molefe, 2009), which brings about a dichotomy between learning in the mother tongue and/or in English. Language difficulties do not start at university, but arise as a result of the type of domestic environment that students are product from which is largely related with the socio-economic factors (Thamaga-Chitja & Mbatha, 2012). Furthermore, the manner in which language is used in academia does to a certain extent present obstacles for students of low competence in the Language of Learning and Teaching (LoLT) (Boughey, 2000). There is a general concession that academic literacy contributes towards epistemological access towards academic discourse, but the majority of South African students still struggle to acquire academic literacy (Pretorius, 2002). In addition, a significant proportion of low socio-economically students grew up in environments where reading matter was absent, where parents were illiterate, thus affecting the child at school and later in university (Van Heerden, 1995). It is therefore safe to conclude that parental literacy or adequate interest in in children's schooling gather that having literate parents and available reading matter are important cultural goods essential for language preparation.

A South African study by Brock-Utne (2007) concluded that African students express themselves far better when permitted to use their home language; a language familiar to them, but are challenged when forced to use a foreign language which they hardly use as a LoLT. Furthermore, other research has proved that children from low-status classes being taught in their mother tongue contribute towards better general school achievement, (Skutnabb-Kangas, 2000). The LoLT problem has also been observed in the developed world. It is further argued that students from lower income households, should be allowed to study in their own language (Brock-Utne, 2007; Skutnabb-Kangas, 2000). Not only would this ensure the survival of indigenous languages, but will increase school enrolment, ensure improved academic achievements at school (Skutnabb-Kangas, 2000) as multi-lingialism provides learners a fair chance of academic achievement at school. This also has long term outcomes of eradicating poverty, according to Amartya Sen (1985).

As students enter university, having come from a school where the mother tongue was used becomes a challenge when they need to adjust and learn formal academic English as the LoLT. Tertiary institutions are said to poorly implement the multilingual policy (Thamaga-Chitja & Mbatha, 2012), which may contribute significantly towards students facing difficulties in learning.

Communication in the classroom is extremely important as it acts as a connection between the teacher and student, which is enhanced by language through communication and interaction. Language gives direction, guides learners' construction of knowledge and is a cognitive organizer which adds to learning by developing thinking (Gutteridge, 2009). When English is used as the LoLT, second, third and even fourth language speakers experience difficulties presented by academic literacy and discourse as found by Boughey (2000) in a University of Zululand study. Khanyile (2011) from UKZN's Student Counseling Centre (hereafter SCC) highlighted that English is a powerful language and fluent students are at an advantage compared to their counterparts who are not confident in communicating in English because their English is seen as sounding "different" than theirs. Students from other African countries need to be considered as well when using a multi-lingual approach in the classroom so as to avoid the exclusion of students who do not understand the local language used in conjunction with English. The majority of students come from poor socio-economic backgrounds and have expressed their difficulty in reading, writing and expressing ideas through an additional

language, which impedes negatively on academic performance (Jones *et al.*, 2009). Identifying the different learning problems of university students can be a helpful in determining problems and raising awareness to students. One way in which this may be helpful is through the developing of support tools. Such tool is the Learning Enhancement Checklist (hereafter LEC). This is a program developed by the Nelson Mandela Metropolitan University which is a 4-phase program used by counselors from UKZN's Student Counseling Centre and the Science Foundation Program as an assessment, diagnostic and developmental tool aimed at supporting first year students who are struggling with their academics. The students are grouped and obtain assistance from counselors (Nelson Mandela Metropolitan University, 2011). Numerous universities throughout South Africa have also used the LEC in assisting students. In 2011, the UKZN LEC findings from the Science Foundation Program reported 54% of students could not express themselves verbally in English (e.g. speaking up in class and oral presentations) and 16% of students in could not express themselves when writing academically in English (SFP, 2011).

The challenges brought about by language should drive institutions and support stakeholders to come up with innovative ways of addressing communication issues so that its negative impacts on academic performance can be curbed. Multi-lingualism has been identified as a major contributor towards academic achievement as a result of learners' ability to express themselves (Thomson, 2009 & Boughey, 2000). In this way, the socio-economic agenda based on education and poverty eradication is realized. The development of indigenous languages in tertiary education is encouraged in South Africa. However, researchers note that second and third language speakers in South African tertiary institutions experience a myriad of challenges, especially students from disadvantaged secondary schools due to lack of preparation (Thamaga-Chitja & Mbatha, 2012). Supporting multi-lingualism in South African tertiary institutions is one aspect, but ensuring effective implementation, capacitating and practice is a direction that needs to be holistically and intentionally explored if academic literacy is to be reaped.

**(iv) Living environment and proximity to learning resources**

South Africa's universities are heavily challenged when it comes to the provision well-managed student accommodation, resulting in repeated boycotts and protests over the conditions in student residences (DoE, 2011). The Department of Education's (2011) report from the Ministerial Committee for the review of the provision of student accommodation. Furthermore, students were living in inhabitable and appalling conditions. It can be noted that although students were

found to be living in such conditions, there were still expected to do well in class and that institutions were not investing in infrastructure. The report also found that there is a pressing need for more first year students to be accommodated on campus and within close proximity of learning resources (DoE, 2011). These findings mean there needs to be urgent investments in student accommodation across the country. Students living in safe, well-managed residences perform better academically and socially (DoE, 2011). A South African study also confirms that resident accommodation does provide a better learning environment for students, and it also eliminates numerous problems including transport issues (Brits *et al.,* 2011). Perhaps this factor can be attributed to students minimal time spent commuting to and from campus, and the academically conducive environment. Not only should this finding be the basis for accommodating all first year students as they are the most vulnerable, requiring a lot of assistance in their academics (Terenzini *et al*., 1996); but this should also serve to inform the quality of housing in terms of planning and monitoring (Sebokedi, 2009).

Studies conducted from higher learning institutions do highlight the importance for first year students to occupy on-campus accommodation. Perhaps students' socio-economic background needs to be considered, as this greatly affects affordability of accommodation. Research findings note how new environments can take their toll on students due to significant changes (Budny, 2001). This is particularly important in the case of first generation university entrants from low socio-economically poor backgrounds, as stressed by the Minister of Higher Education (DoE, 2011). The 2011 UKZN's LEC findings found that 20% of students faced challenges in studying in the environment where they live, a further 16% expressed that their present accommodation does not allow them to access the university and learning resources after hours. Furthermore, 16% of students' accommodation does not have adequate facilities such as electricity, ample space and adequate levels of -silence. The UKZN's LEC (2011) found that the type of living arrangement occupied by students has significant impact on academic performance.

Students living at home and those living in off-campus in private accommodation had conditions which affected their time spent with their books. For example, students living at home can be challenged if and when they are compelled to do chores and other household activities, thereby leaving little time for academic work. These challenges may possibly relate with the Eurostudent (2011) finding that students' socio-economic background has an impact on the type

of accommodation a student occupies. This is due to the affordability factor, largely dictating what type of accommodation one is likely to gain access to. The proximity of on and off-campus accommodation to learning resources and student services is a factor that needs to be considered when housing students (Knight & Parr, 2010). Kirmani (2008) found that students' academic performance significantly correlates with the academic environment. Students engage in academic activities that require resources such as libraries, computer Local Area Networks (LAN) and study venues in order to carry out certain tasks. If students reside in locations that are far and occupy below standard accommodation with no essential resources, that may create challenges. Ali *et al., (*2012) also confirm that students' use of facilities provided by the institution positively affects academic performance.

Students struggle to secure convenient accommodation due to both financial constraints and lack of proximity. Sometimes they resort to "unauthorized occupation" (students with friends who are officially accommodated which is commonly known as "squatting." Kent-Smith & Lister (2009) describe unauthorized occupation as any kind of possession by an occupier (in this case student) which may be forbidden or requires approval by residence officials or landlord which has not been approved. This can also be labeled as illegal sub-letting where there are students living in a group in units which have been legally assigned to one person who rents from residence officials or landlord. Students living under these arrangements have restrictions in terms of space, privacy, safety and security. Members of Parliament have concluded that cohabitation by students is unsafe and risky, especially for female students (Parliamentary Monitoring group, 2012). The 2011 Ministerial Committee's investigation concluded that insufficient and lack of affordable student housing forced students to occupy sub-standard accommodation off-campus (Department of Higher Education and Training, 2011). South African universities face challenges when it comes to accommodating the surge of students from far away locations in rural areas due to lack of resources, and these are the people at most need of accommodation (Department of Higher Education and Training, 2011).

The Higher Education and Training Minister Dr Blade Nzimande stated that the characteristics of student accommodation ought to be accessible, safe, decent and conducive for studying across South Africa's institutions of higher learning (DoE, 2011). He further adds that students' living environment is an important contributor in the success of students from rural and low socio-

economic backgrounds. This further confirms the importance and relationship between well-managed, on-campus accommodation and academic performance (Knight & Parr, 2010). A study by the University of California concluded that the chances of first year students finishing university are increased by up to 12% if they are living on-campus (Pascarella & Terenzini, 2005).

The significance of providing students with well-managed and administered accommodation cannot be over-emphasized. Given the high levels of poverty in South Africa, coupled with the majority of students coming from homes whose environments are not conducive for academic endeavors; Professor Ihron Rensburg, attested that in some contexts, accommodation needs to be provided for 100% of students (DoE, 2011). The problem arises when it comes to students' ability to afford accommodation as a significant proportion of students come from low socio-economic backgrounds (Letseka, 2007). Students may then resort to having to work in order to cover expenses of rent (Eurostudent, 2011), which has further implications on time and academic achievement.

### 3.1.2 Institutional support

One of the prominent characteristics of African universities is the parallel increase in student enrolment and the increase in access to education (Mohamedbhai, 2008) which is a fundamental aspect of development. Even though the increase in student enrolment is evident, institutions' responsiveness accompanying this phenomenon with increased in institutional support for students in terms of financial, physical and human resources appears inadequate thus influencing academic performance and students' quality of life (Mohamedbhai, 2008). As first year students acquaint themselves with new living arrangements, they are further confronted by a convolution of social, personal and academic complexities. For example, students need to cope with being away from home, peer pressure and adjusting to a new system of learning in unfamiliar surroundings. In the face of depression, health and social challenges; supportive measures such as tutoring and counseling are crucial. It is important for higher learning institutions as well as support stakeholders to understand the type of students enrolling into the institution. This makes it possible for planning and considering the type of support that ought to be extended. This is particularly important for first generation students from lower socio-economic backgrounds since

most of them have lower levels of campus engagement compared to their counterparts, which also influences their success in their first year (Terenzini *et al*., 1996).

The UKZN has some measures in place to assist students. In some faculties, Academic Development Officers (ADO) engage in building relationships with struggling and low SES/first generation students. One of the development officers in the College of Science and Agriculture who was responsible for student support in 2010 and 2011, operated by inviting students through weekly email invitations to consult with regarding areas of struggle faced by the student. This development officer innovated these weekly meetings where often Student Counseling Centre participated by being in joint consultations and by attending to referred cases. The Science Foundation Program (hereafter SFP) also assists students from lower SES backgrounds with insufficient points for the particular courses under the Science program who need further mentoring and supervision for one year before enrolling into the main stream. The Orientation Program is also one of the ways of acculturating students into the university environment, and laying the necessary foundations of tertiary living. This initiative is however for a short and fixed period taking place at the beginning of the year. The Student Counseling Centre facilitates workshops and voluntary counseling sessions upon student bookings. In such cases, assistance is entirely reliant on the student coming forth for assistance. Students who are shy or ignorant of such, for example, forfeit support. At times, institutional programs aimed at assisting students may have gaps in planning and implementation, or may lack effectiveness, thus requiring institutions to look into a 'best-practices' approach where tertiary institutions learn from each other.

South African institutions could learn about institutional support experiences from other countries, whilst contextualizing some strategies (Muhamedbai, 2008). South African institutions are challenged by different factors which hinder growth and development when it comes to the support of students within universities. Students from various backgrounds now have increased access to universities, unlike the Apartheid government, where some students were racially excluded from the system (Engelbrecht, 2006). In accepting more students into institutions, there arises the need to cater for diverse student needs. Evident from the increasing dropout rates from universities (Letseka, 2007); South African institutions of higher learning may need to improve on the support structures already in place, and perhaps even implement

new ideas. This has brought about diverse student needs, and the change in accommodating every learner. The National Survey of Student Engagement (NSSE, 2012) and the College Student Experiences Questionnaire Research Program based and administered at the Indiana University assesses how the institution gets student participation in initiatives that contribute to student success as one of the main focuses of the projects. (NSSE, 2012) This is based on the phenomenon that student involvement and their engagement with the institution is influenced by how institutions allocate their resources and organize curriculum, other learning opportunities in place as well as support services (NSSE, 2012). Results of these programs give insight as to where the institution is performing well, and the different areas that could be adjusted so as to improve undergraduate experience (Kuh, 2003). Pike & Kuh (2005) strongly advocate for institutions to ensure that first year students, especially first generation from low SES families live on campus residences at least during the first year of university. Furthermore, these students should be given special attention into being equipped for survival in a new environment. This can be done through designed presentations and publications that would emphasize commendable behaviors and trends to complement their studies (Pike & George, 2005; Wintre, Galander & Yaffe, 2000).

Responsive counseling services where lecturers, mentors and counselors serve as part of a support system that would assist students in the difficulties they are confronted with has been identified as important as it would address those factors that negatively affect academic performance (Choy, 2001; Horn & Nunez, 2000). Muhamedbai (2008) advises that institutional support ought to be inclusive of both College staff and students with the aim of a vibrant and productive education sector. Perhaps some of the contributing factors to poor performance are the myriad of social problems that students are silently dealing with, which promotes added stress that one has to deal with (Pike & George, 2005). A supportive campus environment has been proven to improve student performance. In such environments, students are likely to be more satisfied about the institution and increase their commitment to succeeding in their studies (Kuh, 2003).

### 3.1.3. Inclusive education in higher education and training.

Institutions of higher learning in South Africa are increasing in diversity, as more students from diverse socio-economic backgrounds are enrolling into higher education (Letseka, 2007). An

inclusive education and training system acknowledges the differences amongst learners, whilst it builds on their similarities; it supports all learners and teachers, thereby ensuring that teachers develop ways in which learners' needs will be met sufficiently (Pottas, 2005). In essence, inclusive education focuses on overcoming and eliminating the barriers that prevent learners from succeeding which are evident in the education system (Engelbrecht, 2006).

The Apartheid education system termed learners with learning difficulties and/or disabilities as 'learners with special education needs' in which only a small number of learners received support (DoE, 2002; Engelbrecht, 2006). Special education and support services were provided on a racial basis whereby the best resources went to the White learners (DoE, 2002). Overall, the system and curriculum failed in responding to the diverse needs of South African learners which resulted in increasing numbers of drop outs, failures and learners being pushed out of schools (Englebrecht, 2006). The end of the Apartheid administration saw a new democratic government that committed itself to transform the education system (Engelbrecht, 2006). In 1996, the Ministry of Education in South Africa sought out to do more about the needs of those learners who experienced learning difficulties and learners with disabilities (DoE, 2002). The National Commission on Special Needs in Education and Training and the National Committee on Education Support Services as formal teams brought about the introduction of what was called 'special needs and support services' in education and training. The amalgamation of these two groups drafted reports for the Department of Education in 1997, which crystallized into policy and structural decision-making that proactively addressed the shortfalls of the past disjointed educational landscape (DoE, 2002). The Department of Education made a new policy titled 'Education White Paper 6 on Special Needs Education: Building an Inclusive Education and Training System'. This policy has been effective in giving all learners equal opportunities in obtaining education (DoE, 2002).

This current study acknowledges inclusive education as a means for students to access education in universities (Engelbrecht, 2006). Inclusive education is also acknowledged for its significant contribution in enhancing students' academic performance (DoE, 2002). Access to higher education in South Africa has been extended to students from different social classes who vary in academic preparedness (Letseka, 2007 & Naidoo, 2008). In addition, institutions of higher learning are accepting students who are first in their families to enrol in universities (DoE, 2011).

These factors combined call for institutions to explore the different ways in which they can recognise the differences that lie amongst their students so that suitable support mechanisms can be implemented along with support stakeholders. It may also be noted that support efforts be extended towards lecturers in the same way so that they too can be capacitated to meet the different needs of their students (Harvey & Knight, 2006). Inclusive education may add value to institutions by proactively addressing those barriers that hinder students' academic achievement.

### 3.2. Methodology

Participants were recruited at the University of KwaZulu-Natal, Pietermaritzburg campus within the College of Science and Agriculture in 2011. A mixed methods approach was employed for this research which a survey using open-ended self-administered questionnaire, focus group discussions, observations and key informant interviews. The population of students in the risk category was 511 students, of which 19.2% (n=98) participated in the study leading to positive generalization. The Dean's Assistant who had established a relationship with this category of students invited the total population to participate through email. Thereafter, confirmed students were then gathered into a single venue, assured anonymity and were requested to complete a self-administered survey which was then returned to the researcher upon completion.

The questionnaire was developed encompassing closed and open-ended questions for additional information (De Vos, 2002; Doughlah, 2002). It included demographic information, study dynamics, use of support services on campus, students' accommodation, transport and financial dynamics. The questionnaire was on hard copy and took ten minutes to complete. Students were also invited to participate in focus group discussions which took place over a period of three days. Discussion topics included emerging themes from questionnaire responses.

In order to obtain an overview as well as in-depth understanding of some of the emerging issues regarding socio-economic factors affecting academic performance; questionnaires, focus group discussions and key informant interviews were used to collect complementary data. Closed-ended responses were categorized and analyzed using the Statistical Package for Social Sciences (SPSSv18). Data was coded and entered on SPSS. Frequency tables were used to analyze variables and severity of specific cases. Cross tabulation was used to analyze one variable in

relation to another. Open-ended questions and focus group discussion responses were analyzed through content analysis.

### 3.3. Findings and Discussion

The findings presented in this section will provide information regarding the underlying factors that appeared to have an impact on students 'academic performance. This information can then serve to create awareness on what students are dealing with, and how universities and policy makers can design and adjust programs in place to yield better performance outcomes.

#### 3.3.1 Demographic profile of sample

A total of 98 students completed questionnaires and a total of 27 students participated in the focus group discussions. Three focus groups discussions were organized of which there were nine participants in each. Ninety-three per cent (93%) of participants were South African students, while 7% were international students. The gender ratio showed that there were 63% female and 37% male students. Half of the sample (50%) comprised of first generation individuals to enroll in university from their families. Sixty-two per cent of students were between the age group 17-20, 31% were between ages 21-23 and 7% were between 24-27 years old. A large proportion came from secondary schools in rural (45%) and township (44%) areas, with a smaller proportion attended a secondary school from the more developed suburban areas (9%) and "other" area being 2%. Table 1 below illustrates the demographic characteristics of the study sample.

**Table 1: Demographic characteristics of students from the study**

| Demographics | | Count | Percentage |
|---|---|---|---|
| Nationality | South African | 84 | 93 |
| | International | 6 | 7 |
| Sex | Male | 33 | 37 |
| | Female | 57 | 63 |
| Age | 17-20 | 56 | 62 |
| | 21-23 | 28 | 31 |
| | 24-27 | 6 | 7 |
| Year of registration | 2011 | 27 | 30 |
| | 2010 | 36 | 40 |
| | 2009 | 23 | 25 |
| | prior 2009 | 5 | 5 |
| Secondary school location | Rural | 41 | 45 |
| | Township | 40 | 44 |
| | Suburbs | 8 | 9 |
| | other | 2 | 2 |

n= 98

The gender ratio presented in the study does not differ from the common pattern that presents women within vulnerable and underrepresented groups (Pike & Garry, 2005). Literature further notes that students from historically underrepresented groups are first generation students (Terenzini *et al.*, 1996). This was also reflected in this study where 50% of students were first generation that was dominated by Black females. This indicates additional responsibility and family expectations carried by students as opposed to purely focusing on academic responsibilities which should be their primary focus. During focus group discussions, students expressed how proud their families were since their enrolment and this gives them motivation to succeed, irrespective of familial financial challenges. One student expressed that; "*When you know that there are people at home, who are relying on your success at varsity so that you can make the situation better and provide essential things for your family in the near future; that encourages us to work harder, even if some courses are difficult to get through."*

First year university students are expected to be within the age group 17-20, but a significant number of students were between the ages 21-23 and 24-27 years old. This indicates the

possibility of students enrolling into university at a later age rather than straight after secondary education. Focus group discussions disclosed the occurrence of students finding employment and saving money, before enrolling into university due to financial constraints. Some students explained that changing degrees set them back at first level of study due to enrolling for different courses. When students refrain from asking necessary questions about their course choices, or not offered career counseling in secondary schools, they are then more susceptible in finding themselves doing courses they would not have opted for (Brits *et al.,* 2011). This increases the occurrence of students reshuffling modules and changing courses during the year. Prinsloo (2009) and Brits *et al.,* (2011) agree on the importance for first year students to obtain career counseling before they enroll at universities. These findings explain the frequencies of students between the ages 21 – 27 who are doing their first year of study as they may have made degree and/or curriculum changes which took them back to doing their first year.

Academic progression was investigated to elicit possible challenges students faced in pursuit of completing their degrees. A significant proportion of students were still in their first year of study, even though they registered for those particular courses in the previous year of 2010 (40%) (See Table: 1). Twenty-five per cent of students registered for their first year courses in 2009, and 5% registered prior 2009. This indicates that a significant number of students are struggling to move onto their successive years of study. The impacts thereof do not only accrue to the student, but there are interlinked rippling effects including negative returns on investments for the country (Riley, 2007). Student failure brings about added financial strains in terms of the availability of student funding. Although Mohamedbhai (2008) suggests that governments should subsidize higher education and that student fees ought to be accompanied by loans and scholarships supporting disadvantaged students; if those student already holding these benefits and are not progressing further, it will negatively affect new students that also require assistance. On the other hand, students who are failing courses also need financial support and cannot be neglected. If this were the case, it would create difficulties especially for students coming from disadvantaged backgrounds. Studies have shown that lack of financial assistance might lead to increases in the drop-out rates (Letseka, 2007 & Brits *et al*., 2011).

Student failure impacts on what economists call “positive educational externalities” (Riley, 2007). In other words, although the student individually acquires education and other associated

benefits; these are not restricted only to the individual, but gradually produce ripple effects over to others as well. This then contributes to macroeconomic advantages (Riley, 2007). South Africa as a country may forfeit or delay to reap these advantages due to student failure. South Africa is likely to obtain increases in productivity resulting from increase in human capital arising from graduates. In the long run, the combined student failure might cause the country to lose out on investments and technological advancement and development (Riley, 2007).

It can be said that institutions need to be more attentive to underperforming students. Degree attainment has numerous social benefits including the state's increase in the provision of public goods and services (Riley, 2006). In terms of gender, although women have been identified as amongst vulnerable groups; literature notes that women hold more financial benefits of completing a degree compared to men, according to a study conducted in a 1st world country (Riley, 2006). This finding may possibly be related to women in developing countries due to the comprehensive roles they play in their households, communities and work places.

The historical picture of South Africa needs to be incorporated when understanding the dynamics of student failure (Letska & Maile, 2008), especially in this study where a vast majority of students are Africans from low socio-economic backgrounds. The current study had a significant majority of students from rural and township schools that experienced lack of resource allocation. Arising from Apartheid legislation, the allocation of educational funding was in schools according to race and was unequally distributed (Roberts, Gouws & Van der Merve, 2009). For example, in 1993, Whites, Indians, Coloureds and Blacks received R4 504, R3 625, R2855 and R1532 respectively. The amount of funds received linked directly to the type and quality of education received which led to a certain degree of readiness for higher education. Student failure and underperformance is a serious issue which affects the growth and development of the country as a whole. It can be highlighted that institutions should pay closer attention to students who are struggling academically.

### 3.3.2. The characteristics of the socio-economic background of students

Fifty-seven per cent of students did not have financial aid to assist with payment of tuition and living expenses. Fifty-five per cent perceived themselves as coming from a disadvantaged background in terms of income. Even though students did not set a fixed figure on how much

income determines being disadvantaged, however, all discussion groups described what they perceive as coming from a disadvantaged home. The following characteristics describe students that come from a disadvantaged background, according to focus group discussions: i) students with little or no financial support from home throughout the year, ii) if students need to support their family financially from their bursary money or part-time job, iii) if parents or guardians are dependent on pensions and social grants, iv) if parents or guardians are unemployed; and v) if students come from a historically disadvantaged secondary school where the local language was used more than English as a language of instruction. Forty-two per cent of parents were reliant on social grants for income and 41% of parents were employed, which included casual employment. Eight per cent were informal traders (e.g. street vendors) while 9% was in the 'other' category. Fifty per cent of students were first generation individuals to enroll into universities from their families. A large proportion came from secondary schools in rural (45%) and township (44%) areas, with a small percentage having attended secondary schools from the suburbs (9%) and other areas being only 2%. During focus group discussions, students expressed feeling inferior, overwhelmed and lacking confidence, due to schools that they came from in comparison to other students. During focus group discussions, students came from schools in townships and rural areas felt anxious about how they will perform throughout the year and were generally resistant in participating in class as well as with making new friends. During a focus group discussion, one student shared that; "*When I came to this university, I saw so many students who spoke better than me and wore trendier clothes, I could not even greet them in class. I felt better when I saw more people like myself, who speak the same type of English.*"

### 3.4 Academic performance determinants

The section below unfolds some of the determinants that affected students' academic performances namely; financial challenges and students' additional responsibilities; accommodation type and environment and accessibility to learning resources, non-proficiency in the LoLT and lastly, insufficient secondary school preparation.

### 3.4.1 Financial Challenges

Results showed that 57% of students are did not access financial aid or bursaries. This means they accessed finances for their education from parents or personal savings. Forty-two per cent face difficulties when buying textbooks, 32% are unable to afford stationery and 51% face difficulties when purchasing printing credits for printing of assignments and class notes. During the focus group discussions, all groups reported of spending most of their money on food and rent. These were students living away from home.

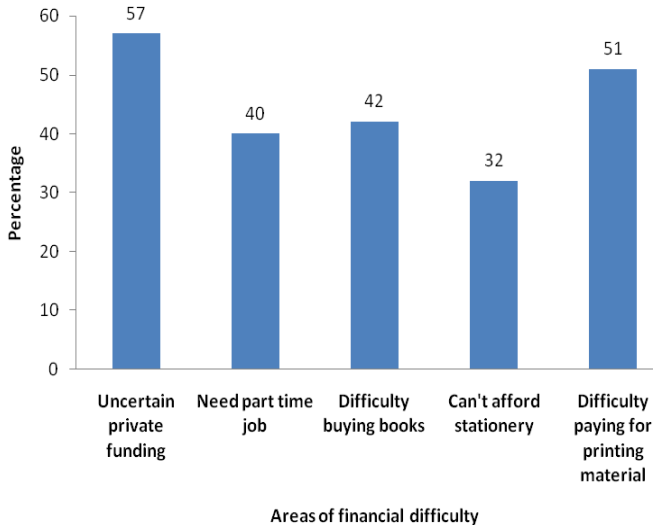


**Figure 1: Areas where students face financial difficulties**

Whatever is left over is allocated to stationary, printing credits and books. Students expressed that it was a challenge for them to buy all recommended books because they are expensive. Students then rely on borrowing books from peers, or refrain from using them due to inaccessibility. Figure 1 shows the different areas where students face financial difficulties which directly or indirectly affect academics.

Textbooks are an important asset for students, and those who cannot afford them need to make arrangements to obtain the information they might be missing. This indicates that financial challenges greatly affect academic performance. Although the university libraries run a short-loan system where students can use a textbook for a short period (45 minutes) and then return it, students who live at home or far off-campus are at a disadvantage as they cannot easily stay after

hours to access library resources. The continuous difficulties faced when printing assignments is also a major problem when one considers other costs that students are confronted with the rent, transport and groceries. Success in university is therefore negatively affected by insufficient funds needed for necessary tools required for optimal performance. In the face of financial difficulties, 40% of students reported that they needed part-time employment whilst studying. During discussions, already employed students reported that it is "*strenuous to be employed, and also make time for studies. I need money, at the same time I need to consider my studies*". These documented experiences are in line with Singh (2008) and Brookman (2008) findings. Another student who is employed part time commented that; "*When I have money, it makes me feel better knowing that I can afford some of the things I need because I cannot always borrow money. Paying it back is difficult*." Some parents go to the extremes of borrowing money from neighbors and illegal money lenders (loan sharks) for their children. One of the focus group participants further shared that; "*The financial pressure from loan sharks does bring about anxiety because you don't control when they will repossess goods from home. Sometimes, I put the blame upon myself when things get to that stage."* Focus group participants commented that this familial financial stress is one of the motivators for them to succeed, but it creates tremendous amount of stress as they are pressurized to get out of university and repay those debts.

The high unemployment and poverty rates in South Africa further worsen the problem of finances amongst students (Terreblanche, 2002). This further complements Letseka & Maile (2008) findings about the low-socio-economic standing of many South African households making it difficult for students to thrive in university. There seems to be an increasing need for students to acquire financial management skills. One of the key informants who are academics at the UKZN expressed that; "*It is not only students that come from socio-economically disadvantaged backgrounds that face financial challenges, but it is students across the board*" (Gutteridge, 2011). Information gathered at focus group discussions revealed that some students are misallocating their funds which lead to money running out before the end of the month which then worsens financial standing. The Student Counseling Centre offers services such as workshops on budgeting skills. These sessions could be improved so that they accommodate students with different financial needs, i.e. students with NSFAS (National Students Financial Aid Scheme), bursaries or loans as well as those privately funded. Students who are employed can also benefit with time-management workshops. Financial problems faced by students cannot

be completely eradicated as it is a major issue, however, the institution and support stakeholders can implement strategic and context-related interventions which will be further discussed in the recommendations section.

### 3.4.2 Additional Responsibilities

This study found that additional responsibilities carried by students lead to anxiety, stress and depression which affected academic performance. Students take responsibility for the welfare of their families by setting aside money and sending it home as remittances welfare for household. This was confirmed by focus group discussions and questionnaires. Questionnaire analysis showed that 20% of students send remittances home. Fifteen percent of these students send home between R100-R300 and 5% send home between R301-R500 per month. The bursary advisor from UKZN Financial Aid Office stated that NSFAS funded students receive R628.25 four times per semester for meals. Study findings confirmed that amongst those students sending remittances home, are those who are funded by NSFAS. The meal allowance of R658.25 by itself may not be sufficient to cover nutritious meals for a whole month. If this amount is further deducted for remittances, the amount of money students are left with is unreasonable for sustenance.

According to focus group discussions, remittance money was sourced from monthly bursary allowance, NSFAS book and meal allowance as well as income from part time employment. During discussions, students described main features of families receiving remittance. These were families dependent on government social grants, had other children at school who also needed financial support as well as families that relied on informal trading/street vending for income. Remittance from students is critical for relieving the family of some financial stresses and providing for their needs due to the low socio-economic status of most South African families as described in literature (Letseka & Maile, 2008) and in the present study findings. Those who sent remittances stated that "*Sending money home is a problem, especially with the small amount we receive from NSFAS and Bursaries*." "*I feel guilty when I know what the situation is at home so I am compelled to send them some money.*" Students who send money home said they face anxiety and stress due to parents borrowing money for them which created pressure upon them to finish studying quickly and find employment in order to repay those debts. During focus group discussions, students shared the pressures felt from owing relatives money

and how that leads to family tensions. This is worsened by their lack of understanding of the university demands, for example, completing a degree in three years or four if it is an augmented program. This disturbed students psychologically because home visits meant a surge of questions relating to employment and when they are completing their degrees as relatives anticipate the return of money due to them. For some households, borrowing money from loan sharks is their only option as they do not qualify for study loans from banks. Loan sharks put added pressure as they threaten to repossess household goods if the debtors do not honour their payment. All these financial arrangements appear to be unsustainable and add to students' disruption of peace, to some extent. Steptoe *et al.,* (2004) found that anxiety, stress and depression are some of the challenges faced by university students. Furthermore, these depressive symptoms are said to affect academic performance of students (Steptoe *et al.,* 2004).

Approximately 32% of students noted dealing with sick family members at home and 46% said that they were dealing with personal problems while studying which contributed significantly to depression. Furthermore, discussions showed that some students carried a responsibility of taking care of their siblings at home which was common amongst students with unemployed parents. With such pressure added on by personal and familial problems, it can be predicted that majority of students are regular visitors at the Student Counseling Centre. Although a large majority (85%) knew about Student Counseling Services, findings showed that only 54% approached Student Counseling Services for assistance.

Observations showed that because students deal with numerous issues, they need to reach out to the institutional support structures that are in place. Terenzini *et al.,* (1996) found that first year students, especially first generation, were less likely to develop relationships with university staff members and they perceived the faculty staff as not concerned about their development. Institutional support which seeks to attend to various types of student characteristics requires the institution to know the type of student body enrolled in the university. The nature and backgrounds of students need to be understood by institutions to provide appropriate assistance since first generation students from lower socioeconomic backgrounds are less likely to persist and graduate (Engle, 2007; Letseka, 2007). More research needs to be conducted about such students' university experiences and challenges so that their support which may lead to persistence and increase in their graduation possibilities. This may then have ripple effects in the household income, thus providing a breakthrough in the low status of living for many students.

The importance of institutions understanding the nature and characteristics of the student body and tailoring suitable support cannot be overemphasized.

These results showed that students are grappling with various issues whilst pursuing their studies which are in line with Atherton's (2011) comment that some students are preoccupied with external issues such as financial and family problem. These results suggest that student support services need to be more proactive in assisting students, since students know that there are services such as Student Counseling Centre, but they are not utilizing them. Student should also be encouraged to take the initiative to seek assistance when they are in need.

### 3.4.3. Student accommodation and accessibility to learning resources

Seventy-two percent of the students interviewed lived in university owned residences, 11% occupied private accommodation and 9% of students lived at home with parents and immediate family. Five per cent live off-campus with relatives and 3% reported to be "squatting" with a friend(s). Figure 2 illustrates the different types of student accommodation.

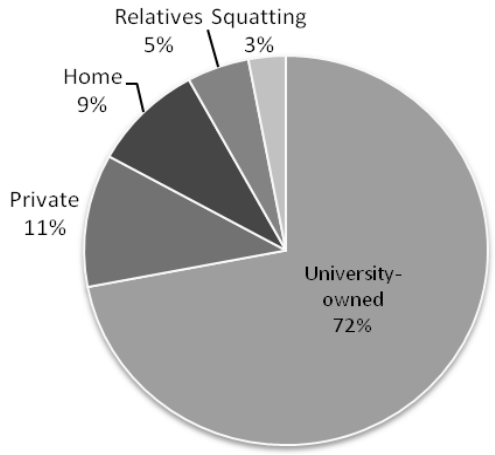


**Figure 2: Types of accommodation occupied by students**

The different types of accomodation illustrated in figure 2 present challenges to students, figure 3 shows the negative factrs expereinced in accomodation types.

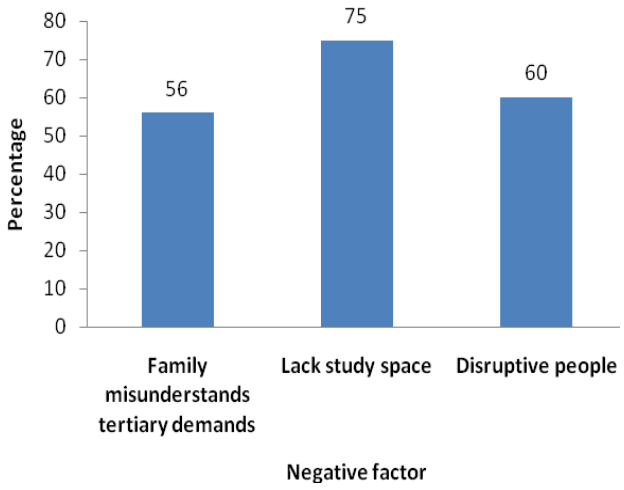


**Figure 3: Negative factors experienced in accommodation types**

Moreover, focus group discussion indicated that students spend more time traveling to and from university daily. With regards to the challenges related to the living condition arrangements, 56% of students living at home stated that their family does not understand the demands of tertiary education placed on students. Regarding space availability in all accommodation types, 75% lack study space and 60% reported to be disrupted by the people they live with.

Although the majority of students interviewed live in University-owned residences, discussions revealed that they are located far from the university and facilities required by students after classes. Due to the long distance, students are transported to and from campus via shuttle service that works according to a specified and fixed time-table. Discussions revealed that accessing resources such as libraries, computer LANs was not a viable option afterhours. Accessing study venues was particularly challenging for students, when they need quietness for study sessions, as some residence rooms are shared by two people. These findings are possibly the cause or the negative impact on academic performance caused by their accommodation location. This possibility is supported by the DoE (2011) and Brits *et al.,* (2011) finding that suggested first year students' need to stay on campus residences where they will be close to learning resources, especially after hours, for improved academic performance.

Findings from the UKZN LEC also reported about students not having access to learning resources after classes and how that negatively affects academic performance (SFP, 2011).

Furthermore, students reported that conducting group discussions on campus becomes a challenge because they need to adhere to the fixed shuttle times. Walking to residence was said to be impractical and unsafe especially for females as some of these residences are located in unsafe places.

### 3.4.4 Challenges faced by students living at home

Problems were not only faced by students on campus accommodation. Throughout all discussion groups, students living at home reported that staying away from campus presented some limitations on resource utilization and doing university work (e.g. in study group and using the library). They explained that because by the time they need to get into their work, it is already late in the afternoon and are then forced to leave for home. For these students, household chores were stated as contributors to extra fatigue. In addition, students need to stay up late until the whole family is asleep in order for them to be able to get work done. One student expressed that: "*At home they don't understand the work I do on campus and when I come home, they expect me to do chores.*" Another student commented that; "*The only time I get work done is late at night when they are asleep otherwise I am expected to do chores and I can't study when people around me are doing all sorts of activities.*" Parental support has been shown to be an important factor as students find their way in the new environments (Budny, 2001). For first generation students, this parental support may not exist, as they are the first individuals in their families to enroll in higher education (Engle, 2007). These students may experience lack of support from home and their parents may not even understand the expectations and workload that their children need to cover. This also explains the occurrence of students experiencing disturbances at home as some students have expressed in the focus group discussions. The transition from secondary school to university presents unique changes where students need support and reassurance from their families; however, first generation students need to figure most things out for themselves such as deciding on majors, registration, accommodation, and financial support amongst others. In most cases first generation students overcome these challenges without the assistance of their families. This was further confirmed by focus group discussions where students commented that their parents expect them to produce good marks, without even understanding some of the challenges and changes they go through.

The results suggest that more needs to be done by institutions and support stakeholders in putting more effort in informing parents and family members about the demands of being a university student, especially for students living at home. Improved understanding towards their children's needs and challenges faced is critical. Students need their parents to understand the demands of tertiary in such a way that they can support their needs (Jeynes, 2005). Malefo (2002) also documented similar findings where parents' involvement cultivated positive outcomes impacting on academic performance. Perhaps this can be done by encouraging parental attendance to a "Parents' day" event during Orientation Program at the beginning of the year. One way this can be done is through using the media as a means of communication when reaching out to rural areas. This could be done by hosting awareness programs on local radio shows, where the local language can be used as the medium of communication. In addition, simple and easy-to-follow publications in both English and local language can be disseminated to these areas. That way, parents and guardians will better understand students' needs and possibly move towards being more considerate and sympathetic when students express their need as well as the space to study. The university's Student Housing Department needs to be more vigorous in ensuring that first year students are accommodated in residences in close proximity to study resources, or have a better functioning shuttle service as they need to become conversant with the institution and study resources.

### 3.4.5 Lack of Proficiency in the Language of Learning and Teaching

Cross-tabulation was done to compare the relationship between students' ability to express themselves verbally in English, with their ability to express themselves well when answering exam/test questions. There was no significant indicator for association (p value = 0.30). This finding was unexpected because questionnaire results showed that 24% can't express themselves well in spoken English during classroom engagement and also noted they can't express themselves well in tests/exams. Open-ended questionnaire results also showed that 39% of students that sometimes have challenges expressing themselves in English, they sometimes face challenges with course content. During focus groups, students said that they overcome language issues through engaging with peers in study groups which helps in terms of explaining some terms and concepts in their mother language, however, the tests/exams remain in English. Fifty-seven per cent face difficulties understanding study material such as class notes and textbooks. Some students noted that going through the day's work at home and reading does help if you

have the resources. It can be concluded that those students coming from low income backgrounds and without funding are further displaced due to lack of resources. Only 13% of students ask questions for clarity in class, the rest either do not ask, or consult their study group. Focus group discussions clarified some of the challenges that students face when they need to ask questions in class. Students expressed that lack of confidence in their ability to speak "proper English" restricts them from participating in class and asking questions. This finding was that of Khanyile (2011). A student shared that; "*When I arrived here* (UKZN), *I noticed that all my lecturers were white and all I could understand was "good morning" and I was lost for the rest of the lecture. Even when I got the courage to ask something after class, usually they would answer me according to what they think I am asking and I would still be confused."* Results showed that 72% of students were part of a study group as a bridge to understanding course materials and to catch up on what they have misunderstood in class. This may be where support by institutions can be strengthened, by providing more supplementary support such as peer mentoring by senior students. Observation has shown that in some faculties, there are Academic Development Officers, tutors and mentors who offer various types of academic assistance including supplemental instruction. It is advised that these structures be strengthened as such supplementary assistance does add value to students' academic performance, as shown by Engle (2007). Figure 4 illustrates the different areas of difficulties experienced by students who are not proficient with the LoLT.

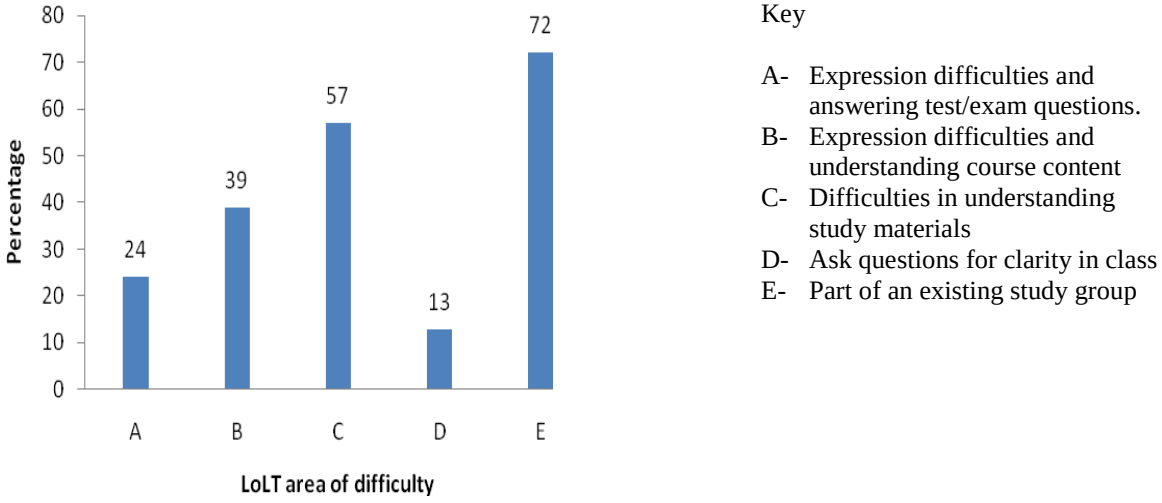


**Figure 4: Areas of difficulty brought about by LoLT**

The university uses formal academic English as the language of instruction which Molefe (2009) adds that it might be slightly difficult to understand. The current study found that almost 60% of students do not understand study material. This study's findings about the challenges experienced by students in their inability to fully articulate themselves in academic writing, including in tests and exams complement the findings from the Jones *et al.* (2009). These findings also suggest Van Heerden's (1995) statement that problems of literature which students face in school catch up with them in University as seen through academic performance. It is also evident that students facing these problems are at a disadvantage as their thinking is not fully explored due to linguistic limitations affecting the construction of knowledge and cognitive organization as reported by Gutteridge (2009).

According to Gutteridge (2011), the poor academic performance can therefore be attributed to the loss of critical information when second and third language speakers go through the timeous process of translating what is being taught into the mother tongue, and then back into English as a written or verbal response. Discussions showed that some of the reasons behind students not communicating in class was because they "*don't know how to speak English like everyone else"*. One of the key informants explained that this occurs because firstly, English is known to carry power as a language, and secondly, students have a fear of being laughed at because their English is "different" (Khanyile, 2011). Findings from this study regarding language challenges faced by students were also found in the results from the UKZN LEC where students were challenged when expressing and communicating in English (SFP, 2011). Because language affects communication and understanding, this has negative impacts upon the overall academic performance of students who are not proficient in the language of instruction used.

This study has proved that the issues brought about by spoken language brings about numerous negative impacts upon students areas of study such as; how they perform academically, how they interact in class amongst peers and lecturers, their overall perception and understanding of course material, and the ability to express themselves in written language in tests and exams. Multi-lingualism has been identified as a major contributor towards academic achievement as a result of learners' ability to express themselves (Thomson, 2009; Boughey, 2000). In this way, South Africa's development agenda that is founded on education as a means of poverty eradication and job creation can be realized. If this is the case, why are tertiary institutions still grappling with issues of LoLT and multilingualism in the university classroom? It can be suggested that

politicians and key policy-makers need to be equipped as decision makers so they too can have a comprehensive understanding about how multilingualism can facilitate academic progression in higher education. The Student Counseling Centre does include some language and writing classes throughout the year for students who are not proficient in the language they are taught in. Perhaps this language course could be introduced in a larger scale for students who appear to be struggling with the LoLT as it appears that implementing the multi-lingual policy is not functioning at present. Fostering a multilingual environment should be supported through translation and mother tongue written lecture notes as other institutions do in South Africa (Boughey, 2000).

### 3.4.6. Insufficient secondary school preparedness

When students were asked about their perception regarding preparation for tertiary education from their previous secondary school; the questionnaire showed that 50% felt that they were prepared for tertiary studies while 46% felt they were not sufficiently prepared by their previous secondary school.

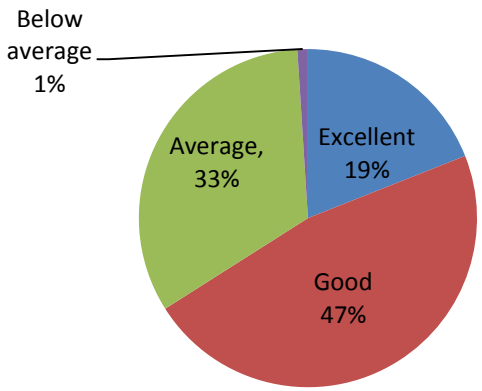


**Figure 5: Perception of tertiary preparation by secondary school**

Figure five (5) shows students rating of their secondary schools. Nineteen per cent rated their secondary school as 'excellent', 47% rated their school as 'good but needs improvement,' 33% rated theirs as 'average, but needs improvement' and 1% rated theirs as 'below average.' The majority of the students attended secondary schools which were in rural areas (45%) followed by townships (44%) while only 9% attended sub-urban area secondary schools and 2% were 'other'.

With regards to understanding of terminologies used in classes, 51% said they sometimes don't understand technical phrases/terms used, 33% do not have a hard time following what is being taught and 16% normally have a hard time understanding technical phrases and terms used in lectures.

During the focus discussions, all groups agreed that the type of secondary school attended does have an impact on the first academic year in tertiary, especially on how well one understands and grasps concepts/terminologies used and creating links with knowledge that is already known from previous education. One student said that; "*most of us from the rural areas, when we arrived at UKZN, we were shocked by how much we were so behind compared to our other classmates who went to "better" schools", we did not even know what a major was, we were just glad to be in a university."* All discussion groups compared government schools with private schools and agreed that the latter better prepares learners for tertiary education. These findings were also documented by Letseka (2007) as he alluded to the differences in standards between elite independent schools and government schools. These findings imply that a lot of work needs to be done if students admitted to universities are to overcome iniquities from previous secondary education.

These results presented in figure 5 and focus group discussions suggest that a form of 'academic preparedness training' is needed to bridge the gap between the type of education obtained at secondary, and first year university education. Apart from the level/quality of pre-university education, Gutteridge (2011) stressed the importance of UKZN's Orientation Week. He further advises that it should be stretched into a longer period in order to prepare students in a holistic way for what is to come during their first year (Gutteridge, 2011). In addition, this period should be directed more towards real academic counselling and academic work which will smooth the transition from what is expected at high school to what is expected at university. This should make the transmission smoother for most students especially those coming from those secondary schools who are struggling. An example of such is the UKZN LEC which is currently implemented at various levels within the university. A key informant who works as a counsellor within the augmented program expressed how this was producing positive results on academic performance. Developed by the Nelson Mandela Metropolitan University (NMMU), The LEC is an electronic assessment and reporting system that is used by counsellors to quickly identify

students' risk areas at an early stage so as to intervene timeously. It is a diagnostic tool which also assists students in identifying the possible areas of growth that they need to focus on (NMMU, 2011). This program is proactive in assisting poorly performing. It does this by identifying students' area of struggle and this information is derived from the online assessment. The counsellors then draw a plan with the students on how they can succeed, amidst the problems expressed in the assessment. As a result of this process, students are encouraged to take charge and facilitate the change they want to see by utilising the resources that counsellors have referred them to. However, this is a self-awareness programme and needs to willingly participate. The lack of measures to enforce it leads to "missing" some students who may need it the most. This program sifts out students who appear to be struggling with their academics as a result of coming from disadvantaged schools and are not fully prepared for tertiary education. It suggested that a similar program should be conducted where struggling students (as identified by the LEC) can be equipped in areas such as language, writing, literacy skills, computer skills and other areas. This initiative can be used to compensate ill-prepared students on the knowledge they might have missed as a result of the quality of education obtained from previous secondary school attended. It would therefore be useful if the LEC program was implemented with the same commitment as the College of Science and Agriculture by other Colleges because it is reasonable to believe based on the sample of 98, these issues appear across the institution irrespective of the College the students are in.

### 3.5 Summary and recommendations

South Africa's higher learning institutions have undergone major changes which have seen students from all races and socioeconomic classes enrolling in the same institutions; however, not all students stand an equal chance of succeeding which is largely due to socio-economic factors that affect performance outcomes. The poor academic results seen in students' first year give evidence that there are gaps not only present in the current education system in secondary schools, but also in universities. It is suggested that universities to communicate their standards, conditions of acceptance as well as their expectations of secondary schools in preparing their learners for admission in the future. Likewise, secondary schools also need to communicate with universities with regards to what happens at grassroots level amongst learners and the education system. This would help universities in making the necessary changes that will accommodate the characteristics of students that will be enrolling for that particular year if need be. Some

issues can also be addressed before they become impossible to manage. Factors such as students' socio-economic background, secondary school preparation for tertiary, the Language of Learning and Teaching, the living environment, condition and proximity of accommodation to learning resources as well as the type and availability of institutional support available to students need to be considered as possible factors affecting academic performance. Institutions and support stakeholders need to take these factors into cognisance when undergoing program/policy planning and implementation. These are the factors identified in this study which show association with academic success. It is noted that universities cannot change students' demographics and their socio-economic background, but interventions which could increase the odds of low socio-economic students' success, especially in their undergraduate academic years, needs to be implemented. Partnerships with organisations that can bridge the socio-economic gap should be explored and strengthened where they exist.

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## CHAPTER 4: DRAFT MANUSCRIPT 2: EXPLORING THE STATE OF AND FACTORS AFFECTING FOOD SECURITY: A CASE STUDY OF FIRST YEAR STUDENTS ON PROBATION AND AT-RISK OF ACADEMIC EXCLUSION.

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### Abstract

The successful completion and development of students' education are the main reasons for the existence of institutions of higher learning. However, less than a quarter of South African tertiary students complete their degrees within the prescribed time frame due to a myriad of challenges, underpinned by low socio-economic backgrounds, which significantly affect their food security status. This study investigated the state of and factors affecting food insecurity among students and determined other factors significantly affecting food security amongst University of KwaZulu-Natal students. A mixed methods approach including self-administered questionnaires, focus group discussions and key informant interviews were conducted in the study. The Household Food Insecurity Access Scale (HFIAS) and Individual Dietary Diversity Score (IDDS) tools were used to elicit information about student food insecurity.

Food insecurity amongst students called for attention by the institution and support stakeholders. The HFIAS showed that majority of students were food insecure as 80% were anxious about food accessibility and 54% went through periods without any food due to lack of resources. The IDDS showed 92% of students consumed bread, rice and maize; 70% ate foods with high sugar and oil, 71% ate foods made with high oil, fat or butter content. Sixty-six ate meat; 58% ate vegetables, 50% ate fruits. These disparities in dietary diversity show that students' diets are mainly comprised of foods made of starch, and foods rich in fats and sugars. Students' health was compromised as fewer students consumed fruits and vegetables. The socio-economic background affected students food security status as one fifth (20%) of students shared their financial aid with their families and regularly sent remittances home thus reducing their food accessibility.

The causal factors of student food insecurity were related to food access issues, such as the unavailability of financial assistance, financial mismanagement, remittances sent home, as well as storage issues and food theft in their communal residences. The study suggests that

universities and financial aid institutional need to consider the impact of various factors such as family economic background, inadequate nutritional knowledge, mismanagement of funds and a lack of budgeting and grocery listing skills if new and holistic programs are to be implemented. The study recommended, among other things, that university-owned residences could have university-run dining halls and meal plans subsidized by the university to accommodate students from low economic backgrounds since lack of food while at university can undermine the primary goal of being at university. The distribution of coupons to insecure students for purchasing food at grocery stores, as well as mandatory attendance of budgeting/financial management workshops for all first year students were also recommended.

**Key words:** Food security, socio-economic factors, Individual Dietary Diversity Score, Household Food Insecurity Access Scale, undergraduate students, diet.

### 4.1. Background and introduction

Section 27 of the South African Constitution acknowledges that food is a basic human right (RSA, 1996). Although South Africa has been regarded as an upper middle-income country, the manifestations of pre-1994 inequalities are evident in economic imbalances which result in poverty and a lack of buying power (Koch, 2011). There is no specific and accepted ways in which food security can be measured in South Africa (Altman, *et al*, 2009 & IFSS, 2002). While South Africa is classified as a country that is food secure, this status of being secure does not apply at household and individual level (Altman, *et al*, 2009).

The Food and Agriculture Organisation (FAO, 2002) defines food security as a state "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active lifestyle." Conversely, food insecurity occurs when a household or individual has difficulty in accessing and securing adequate food. Both food security and food insecurity can be determined at three primary levels: at national, household and individual levels. The measurement of food security becomes an even bigger challenge in South Africa when it comes to measuring individual food security (IFS) as there are no accepted food insecurity measures. However, Brink & Rainville (2001) and Rychetnik (2003) provide four key elements that determine IFS status: quantity of food *(is it sufficient?),* quality *(nutrient variety and diet diversity),* psychological acceptability (*food preferences, anxiety about the amount & type of food available in the household or in stores and food selection/choices)* and societal acceptability *(morals, norms and values).* Therefore, in this study the household food insecurity access scale (HFIAS) and individual dietary diversity scales (IDDS) were both used to assess the food security status of first year university students at an individual level, covering the four key dimensions.

Globally there are few studies that have sought to measure the prevalence of food insecurity among university students (Hughes *et al.*, 2011). Similarly, food insecurity in South African institutions of higher learning is not widely researched. A study by Chaparro *et al.*, (2009), reviewed the prevalence of food insecurity among students at the University of Hawaii in Manoa. This study found that 22% of students were either food insecure, with more students at risk of being food insecure. Other studies conducted in Australia found that students who were experiencing financial stress and poverty had a greater likelihood of being food insecure

(Fentiman *et al.*, 2008; Grant *et al.*, 2004; Fredman, 2004). Food insecurity amongst university students is undesirable as it has substantially negative impacts on the individual.

Food insecurity is known to reduce both physical and mental ability (Booth & Smith, 2001). As a result, the potential for optimum economic and social development diminishes due to reduced social participation in tertiary education owing to diet-related illnesses (Booth & Smith, 2001; Vic Health, 2005). Students face the risk of forfeiting their tertiary education due to prolonged failures, which result in academic exclusion. This does not only affect the individual student through loss of an academic qualification, but their prospects of finding gainful employment are threatened and, at the same time, the chances of national economic growth are significantly impeded (Altman, *et al*, 2009). Even though higher learning institutions are mandated to educate and equip students for the working world as students obtain their respective qualifications; however, perhaps there needs to be mechanisms in institutions whereby food insecurity can be addressed. This could be beneficial, considering the large number of students who come from previously disadvantaged backgrounds and have little or no financial support (Letseka, 2007). Within the South African context, students that come from disadvantaged backgrounds are included amongst those who grew up in an environment that was inclusive of factors that would prevent them from obtaining necessary skills, abilities and knowledge to succeed professionally or gain access to higher learning institution (Scott, *et al*., 2007). The University of KwaZulu-Natal, Pietermaritzburg campus houses a Student Counseling Centre (SCC) which caters for the educational and personal needs of students. The centre assists students with career and personal counseling, study and life skills, AIDS prevention programs and other development programs (UKZN, 2013; Khanyile, 2011). Apart from these duties, the Centre has also assisted food insecure students by providing food parcels due to the increasing numbers of students who were food insecure and coming for counseling (Khanyile, 2011). Research findings state that food insecurity may lead students to eat poor quality food, or not to eat at all, and they may also sometimes resort to unsustainable and risky means of acquiring food (Burns & Inglis, 2006). Some writers have noted the strong correlation between food insecurity and poor academic performance (Chaparro *et al.,* 2009). However, this phenomenon has only been proven with regard to school going children, hence the need of investigating the relationship and impact between food insecurity and the academic performance of university students (Chaparro *et al.*, 2009). South African tertiary institutions not only have a high dropout rate, but also a high rate

of undergraduate failures (Letseka & Maile, 2008; Ochse, 2003). Globally, numerous educational institutions and universities are conducting research to determine the underlying factors behind the escalating failure rates in institutions (Rodan, 2002).

Letseka & Maile (2008) document the Department of Education (DoE) statistics that in the year 2000, a total of 120 000 students enrolled in higher education in South Africa. In their first year of study, 36 000 (30%) dropped out. A further 24 000 (20%) dropped out during their second and third years, while the remaining 60 000 (22%) graduated within the time specified for a Bachelor's degree (Letseka & Maile, 2008). A public statement by the Department of Education reported that the dropout rate was costing the national treasury R4.5 billion in subsidies and grants to institutions of higher learning; however, there was no return on the investment (Letseka & Maile, 2008). The rate of unsuccessful students raises concerns for the institutions and government alike and also raises serious questions about the capacity of South Africa's education system to generate a feasible throughput rate.

Before a study of the relationship between food insecurity and the academic performance of university students could be undertaken, there was a need for a baseline study to assess the state of food insecurity and to identify the factors that affect food security; these were the primary aims of this study. This study holds value, as it seeks to address key issues pertaining to student food insecurity and the causal factors. This study also recommends data informed possibilities to improve its response to food insecure students. By addressing these pertinent issues, students, institutions of higher learning, as well as the country as a whole will benefit in the long run (especially economically) provided that appropriate implementation measures are applied.

### 4.2. Factors affecting the food security status of students

There are numerous contributing factors that affect the state of students' food security. Some of the key factors that were elaborated upon in this study include: family financial background; the role of the National Financial Aid Scheme (NSFAS) on food security; students' mismanagement of funds; as well as the impact of student accommodation on food accessibility and availability. The failure of students to complete their studies has serious financial implications for both the institutions of higher learning and the country, which is why factors relating to academic achievement receive much attention (McGrath & Brauenstein, 1997). Food insecurity is not yet

regarded as one of the factors that could significantly impact on the academic performance of students, even though socio-economic factors relate directly to food security. This brings forth the role of universities in socio-economic challenges that are national issues. How should institutions of higher education be poised to deal with such a challenge? The following sections address each food security factor specifically.

### 4.2.1. The impact of family financial background

Students' financial backgrounds play a large role in terms of their ability to pay for tuition and other university costs, and also impacts on their food security status (Brink & Rainville, 2001; Barnard, Helen & Eat Well SA, 1999). The cost of tertiary education increases year on year, which makes it even tougher for the average citizen to pay for an education over an extended period (Fowler, 2003; Naidoo, 2008). A significant proportion of students enrolling at tertiary institutions come from low socio-economic backgrounds, where households earn as little as R1 600 per month (Letseka, 2007). This situation impacts not only on their ability to pay tuition fees but also to continue with their studies. There is a need to discover the extent to which this affects students' food security and academic performance.

McGregor (2007) stated that South Africa is faced with the challenge of a high rate of first year dropouts and failures at universities. In 2007 40% of first year students dropped out of university. A 2006 study conducted by the Human Sciences Research Council in seven local universities showed that most of the dropouts and failures were first generation students, who came from families with low incomes and low literacy levels (Naidoo, 2008). Similar results from a recent study conducted by the Vaal University of Technology were also documented by Brits *et al.,* (2011) as well as Pike & Kuh (2005). McGregor (2007) and other researchers confirm that the financial pressure experienced by students is one of the forces behind the increasing rate of undergraduate dropouts. Such students are classified as "high risk" due to the fact that they lack the finances for tuition fees and to cater for other needs.

A link is said to exist between poverty, household income and food security (Agriculture, Forestry and Fisheries, 2011). A household that struggles to secure income is more prone to food insecurity than a household with sustainable income, where members are employed and contribute to household needs. South Africa is known for its high poverty and unemployment

rate and this acts as catalysts for household food insecurity (Terreblanche, 2002). It can be concluded that students from low income backgrounds without any source of financial aid are prone to food insecurity. This link has been successfully identified and addressed in South African schools through the implementation of feeding schemes. According to Seoketsa (2007), these programs were introduced by the government to public schools as a way of addressing poverty in schools. Children coming from low income and food insecure households were always hungry as they could not afford to bring meals to school. The school feeding scheme as a way of eliminating poverty in schools provides meals to learners and thus improving academic performance and attracting those who were dropping out (Seoketsa, 2007). Espejo *et al.,* (2009) note that millions of children go to school on empty stomachs and by implementing feeding schemes, short-term hunger can be alleviated. In this way, the ability for learners to concentrate, learn and perform tasks at school is thereby increased. The implementation of school feeding schemes is a known phenomenon in South African public schools; however, the discontinuation of such programs on the lives of learners furthering their studies in universities may possibly need to be addressed. Learners, who are used to being fed at school through feeding schemes, may possibly face food security challenges later in universities if they are not assisted. This may be where the role of subsidized university-owned dining halls may play a part in ensuring that students have nutritious meals daily. This will be especially beneficial for students that come from low socio-economic background who have difficulties purchasing nutritious food on a daily basis.

Enrolling in tertiary institutions entails the upfront payment of fees for tuition – an average of R5000, which is difficult or almost impossible for most students (Naidoo, 2008). Moreover, students need money to purchase books and other academic material, to secure accommodation and for transport, amongst other expenses. These costs affect students across the board, but more severely those that come from low socio-economic backgrounds (Letseka, 2007), as is the case for most students whose parents/guardians earn between R400 and R1 600 per month (Letseka, 2007), as well as for students who do not have any form of financial aid (bursary, scholarship and/or loan). With the existence of a support scheme from the government, it can be concluded that students from low income families would be able to secure tuition fees, and be food secure for the duration of their studies. South Africa has a successful student financial aid scheme that

seeks to bridge the gap for socio-economically disadvantaged students who wish to access tertiary education.

### 4.2.2. The National Student Financial Aid Scheme and its contribution to student food security

The National Student Financial Aid Scheme (NSFAS) provides previously disadvantaged South African students who meet specific criteria, with the finances to access higher education, which they would not have been able to afford on their own. This scheme has made a significant difference in the lives of many students through creating opportunities for higher education and training. During the years 2006 to 2008 and 2009, the number of students funded increased from 108 416, to 138 235. (NSFAS, 2010). The role which NSFAS plays in providing access to higher education for students from low socio-economic background is to be applauded, as hundreds of thousands of students have had the opportunity to gain tertiary qualifications through NSFAS. Over the past decade more than R12 billion worth of financial aid has been distributed (Higher Education and Training, 2009). Nevertheless, there are some shortfalls in the NSFAS. For example, empirical research on South African tertiary students documents that NSFAS distributed insufficient funds for students to take care of their daily necessities (McGregor, 2007). NSFAS recipients struggle to secure items such as meals, accommodation, and to cover books and travel costs (Higher Education and Training, 2009). It is therefore noticeable that even with the existence of the NSFAS; student dropout in South Africa is still on the rise because the amount that each student receives seems to be insufficient to cover the full costs of universities, especially for students from lower socio-economic backgrounds (McGregor, 2007).

The hefty financial burdens carried by students may increase the likelihood of food insecurity. The bursaries advisor from the student funding office in UKZN broke down how NSFAS distributes funds to students. The NSFAS distributes a total amount of R628.25, four times per semester for meals (Ndimande, 2012). This amount allows for an allocation of R21 per day for food. If students eat three times a day, it becomes apparent that this amount is insufficient, when one considers the costs of food. The majority of students from low income families rely exclusively on the money received from NSFAS. Therefore, if students use the money allocated for food for other essentials, such as transport, this further depletes the daily allowance of R21.

Students without NSFAS loans or other types of financial aid need to find other means of supporting themselves. However, the economic status of some students does not allow them to acquire bank loans, due to the inability of their parents and family members to provide collateral and to repay the loan. Although students are accepted by universities, the lack of financial support is a huge disadvantage, as their needs will not be fully met.

The NSFAS awards students funding based on their eligibility. The University of Cape Town has a Financial Aid package as well as GAP funding (University of Cape Town, 2013). The latter is a course fee bursary that provides financial assistance to students that apply for financial aid, but do not meet the prescribed eligibility criteria (University of Cape Town, 2013). Therefore, students who are excluded from NSFAS can be assisted by the GAP funding. In this way, up to 50% of students' course fees are funded by the program. Furthermore, this program makes special concession for students with siblings (University of Cape Town, 2013 and South Africa Student Loan/Bursary info, 2013). This relieves the financial burden from students that come from families that are struggling to support their children the university.

The University of Zululand and Durban University of Technology (DUT) in KwaZulu-Natal are currently running formalized meal plans in some of the students' residences and dining halls. Key informant interviews concluded that the NSFAS-funded students residing in residences receive meal vouchers of a certain amount per day. These are used for purchasing or "swiping" meals from the dining halls. Buthelezi (2012), a Head Chef was interviewed regarding the dining hall system that is run in DUT. He expressed that the system is working well in terms of addressing students' hunger, especially those that come from low income backgrounds and cannot readily afford groceries per month. However, he suggested that more could be done to improve the menus in a way that they will be healthier and diverse. He further noted the general tendency for students who qualify to use the kitchens, as they were sponsored by NSFAS, swiped for their friends who were excluded from the system. Mr Buthelezi stated that food insecurity on campus is not fully acknowledged as a serious problem, especially for students without NSFAS who fend for themselves. This highlights the bigger food insecurity related issues on campus and the urgency to extend support to students without NSFAS.

South African vice chancellors have emphasized about how students struggle to concentrate on their studies due to a lack of money to feed themselves (Naidoo, 2008). Food insecurity, especially the poor quality of the food that they eat (the nutritional component) is the result of financial difficulties experienced by many South African students. Low income individuals, without financial aid, are challenged when it comes to accessing healthy food, such as fresh fruit and vegetables (Rose, 2010). As a result, they opt for cheap, energy-dense food that is low in nutritional value, presenting a potential health hazard, as the individual's dietary and nutritional requirements are not met (Rose, 2010). The probability of contracting diet-related illnesses is high (Innes-Hughes *et al.*,, 2010). The overall costs associated with higher learning take their toll on students, especially those who lack financial assistance, thereby possibly leading the negative impact on academic performance.

### 4.2.3. Financial mismanagement by students

There are some students who come from socio-economically advantaged backgrounds, including those who have secured financial aid (bursaries, scholarships and loans). Ideally, these students ought to be food secure, as they are in a better position to purchase a variety of nutritious foods. However, the mismanagement of funds results in these students falling into the trap of food insecurity, as money is squandered on expensive designer clothes, alcohol and various forms of entertainment (Tomaselli, 2010; Letseka, 2007). Because these students are financially secure, they are more susceptible of spending money on appealing items rather than on necessities as reported by (Mae, 2009).

A lack of budgeting is one major mistake that university students make and is largely responsible for the mismanagement of funds. Students, who are privately funded but may have a sporadic or limited income, can also end up spending money on luxury items rather than on essentials. This may be due to enticing marketing strategies targeted at university students. Hayhoe *et al.*, (2000) note that marketing to university student's makes good business sense, but many students are lead into the debt trap. Fulltime students represent an enormous source of buying power (Jackson, 2010). Credit is tempting for students as they have numerous expenses associated with tertiary education, and they may live away from home and sometimes earn an income from part-time jobs (Hayhoe *et al.*, 2000). Credit jeopardizes financial security, thus affecting food accessibility and affordability, and thereby impacting negatively on food security.

When students live independently in university residences and private accommodation, they are prone to mismanage their funds (Hayhoe *et al.*, 2000). This is common amongst first year students who are no longer under the watchful eye of a parent and are experiencing independence for the first time. In such cases, good financial practices play an important role. Hibbert *et al.*, 2001 noted that the less financial planning applied by students, the more financial stressors they will experience. This is a phenomenon especially common amongst male students. A University of Louisiana study using a questionnaire about income, debt and budgeting practices, reported that a large majority of students did not have or use a written budget for shopping; and those who did were women, married and older students (Henry *et al.*, 2001).

The mismanagement of funds by students corresponds closely with their low financial literacy, as they have not received the financial knowledge necessary to be successful and secure in today's economy (Jorgensen, 2007). It is important, especially for first year students, to obtain financial knowledge as the lack of this kind of knowledge introduces and increases financial difficulties which continue into later years (Jorgensen, 2007). Although students differ in their spending patterns, cross-sectional research findings suggest that financial counselors and educators need to target the problem behavior of students, especially of first year students (Jorgensen, 2001). This may not only affect their financial standing, but also the type and quality of food that they have access to, as this is greatly affected by how much money they have to spend on food, which will also determine their degree of food security.

### 4.2.4. Student accommodation and its impact on food accessibility and availability

Tertiary institutions house students in various types of residences and accommodation that is not university-owned is also available. Students whose homes are located too far away for them to commute daily to university, those who need space away from home that is more conducive to study, as well as those who find such living arrangements convenient, make use of such accommodation (Higher Education and Training, 2011).

University-owned residences usually have communal kitchens. This arrangement increases the risk of food theft, resulting in food insecurity (Tomaselli, 2010). A study conducted by Innes-Hughes *et al* (2011) concluded that students living at home were less likely to be food insecure due to the financial benefits and because they are not subject to food theft. Students participating

in that study further mentioned that stealing food was an emergency measure when food is scarce (Innes-Hughes *et al.*, 2010). Unauthorized occupation in residences, commonly known as "squatting", also increases the risk of food theft and consequent food insecurity (Kent-Smith & Lister, 2009). A common denominator with squatting students is the restrictions in terms of their space, privacy, safety and security. They are compelled to live under such conditions due to their financial situations (Kent-Smith & Lester, 2009). In addition, these students battle to pay for food, transport and other necessities increasing theft incidences. When destitute students share communal kitchens and other resources, such as fridges and storage cupboards, with other students who have financial resources, the likelihood that food will be stolen increases; which then present a significant impact on food security.

The location and type of environment in which students reside is known to affect their food consumption, as it influences the types of food they are able to access (Burns & Inglis, 2006). Students residing closer to fast food outlets are likely to consume unhealthy foods compared to those living at home or near supermarkets, where there is easier access to a range of healthy foods. Societal acceptance also has an impact on the type of food that students consume, as Hill and Radimer (1997) state how individuals succumb to the norms and values that affect food choices informed by peer pressure and socialisation. Consequently, the food consumption patterns of most university students are reported to be unhealthy. A study by Hii *et al.,* (1997) found consumption patterns to be a cause for concern due to the occurrence of skipping meals, and eating snacks and fast foods. Students tend to eat food from cafeterias, conveniently located on campus which seldom sell healthy foods, thus limiting their options (House *et al*., 2006). Because food accessibility issues are largely influenced by the environments in which students live, it is important to consider the different living arrangements that students have.

The environment, location and type of accommodation occupied by students is important when considering food security as this impacts significantly on food availability, accessibility, quality, and utilization (Rychetnik, 2003). This is largely a result of students little or no control over where their accommodation is located in relation to where grocery stores are situated (Nugent, 2011). It is therefore important to educate students on how to make the most of their current living conditions, as they are faced with a new and unfamiliar environment in their quest to obtain an education.

### 4.3. Methodology

A significant number of students struggle academically and the number of students facing academic exclusion is growing. Food insecurity could well be part of the root cause of this poor performance. The target population for this study was first year probation students from the College of Science and Agriculture at the University of KwaZulu-Natal, Pietermaritzburg campus, who are at risk of academic exclusion. Because the researcher already had predefined sample characteristics, purposive sampling was used (Welman *et al*, 2005; Fouche and De Vos, 2002). There were a total of 511 students from the various categories at risk. A total of 98 students participated in the study. Ethical principles were followed by the researcher; participation was voluntarily, as students responded their willingness to participate in answer to e-mail invitations sent by the Dean's assistant, who had established a relationship with this category of students. Students were assured of anonymity and confidentiality.

A questionnaire was developed, containing both closed and open-ended questions. It included demographic information, the use of support services on campus, students' accommodation, transport and financial positions, their food habits and consumption, and finally, their experiences with regard to food insecurity. Data was analysed using the Statistical Package for Social Sciences. In addition to students' completion of questionnaires, semi-structured focus group discussions were conducted to obtain in-depth understanding of issues and trends emerging from questionnaire data (Douglah, 2002).

#### 4.3.1 The Household Food Insecurity Access Scale and Individual Dietary Diversity Score

The Household Food Insecurity Access Scale (HFIAS) and the Individual Dietary Diversity Scores (IDDS) were used as tools to measure and determine the prevalence and severity of food insecurity. The HFIAS was originally designed to measure whether or not households had experienced food access problems (insufficient quality and quantity) within a recall period of 30 days (Coates *et al.*, 2007). Because this study focused on students and not households, the questions were modified to fit the current context. This study investigated the socio-economic factors affecting food insecurity; therefore the HFIAS was a useful tool as it is linked to income levels. The occurrence of a high HFIAS score directly corresponds to low socio-economic status students (Coates *et al.*, 2007). The IDDS was used to measure individual food consumption (Coates *et al.*, 2006). The researcher acknowledged that the IDDS was used primarily as a proxy

indicator of the nutritional adequacy of children's diets; however, because of the nature of the study where respondents comprised of young adults, the IDDS was also modified to suit the context of the study by including food groups from the Household Dietary Diversity Score (HDDS). Both the HFIAS and IDDS show the relationship that exists between food access and socio-economic status.

Data was encoded and entered using SPSS (Statistical Package for the Social Sciences-v18i for Windows) software. Frequency tables were used to analyse variables and the severity of a specific occurrence. Cross tabulation was used to analyse one variable in relation to another. Variables used were students living at home and those living independently in various types of accommodation.

To ensure that this study had reliable, valid and comprehensive results, multi-perspective triangulation strategies through focus group discussions and key informant interviews were used. Students were invited to participate in a series of six focus group discussions to further explore and gain in-depth information on the issues covered in the questionnaire. Focus group discussion responses were analysed through content analysis identifying themes.

### 4.4. Findings and Discussion

The findings presented in this section provide information gathered from students who participated in the study and the staff members from various student support structures and university structures, to determine the prevalence of food insecurity and the associated outcomes.

#### 4.4.1. Demographic profile of students

A total of 98 students completed the questionnaires. Ninety-three per cent (93%) of students who took part were South African students, while 7% were international students. The gender ratio showed that there were 63% female and 37% male students. In South Africa, women are identified as being most vulnerable to food insecurity and are at the receiving end of poverty (Frayne *et al.*, 2009). The gender ratio presented in the study does not differ from the common pattern that presents women as being amongst the most vulnerable groups (Pike & Kuh, 2005). This was confirmed by 50% of the study participants who were "first generation" female

students and came from low income backgrounds. These are students who were first in their families to attend university.

Sixty-two per cent of students were in the age group from 17-20, 31% were between the ages 21-23, and 7% were between 24-27 years old. First year university students are expected to be within the age group 17-20, but a significant number of students between the ages 21-23 and 24-27 years old were still at first year level. Fifty per cent of the students were members the first generation of their families to enroll at a university.

Sixty-two percent of students were in the age group from 17-20, 31% were between the ages 21-23, and 7% were between 24-27 years old. First year university students are expected to be within the age group 17-20, but a significant number of students between the ages 21-23 and 24-27 years old were still at first year level. Fifty per cent of the students were the first members of their family to enroll into a university. The focus discussion groups revealed that many of the students aged between 21-23 who were still first year students, had family responsibilities and financial challenges that were the key factors preventing some of them from enrolling at university immediately after secondary school.

Some of these responsibilities included looking after sick family members, providing food for the family as well as educating their younger siblings at school. Students further expressed how they were pressurized to find employment and save money before going to university. This shows the responsibilities and family expectations borne by the students. As a result they battle to focus on their academic responsibilities, which should be their primary focus. Some students explained that they had changed their direction of study which set them back to the first year level of study, as a large proportion came from secondary schools in rural (45%) and township (44%) areas, with a small percentage having attended a secondary school in the suburbs (9%) and "other area" being only 2%. This proportion reflects the socio-economic implications of the pre-1994 administrative system with the majority of students coming from rural areas which are underdeveloped. Poor quality secondary schools have resulted in sub-standard levels of education, implying a greater need for guidance and academic support programs throughout the year for students from these schools, posing new challenges for universities. This compels universities to compensate for the increase in accessibility to tertiary education by students who

come from diverse backgrounds and have varying degrees of academic preparation. This can be done through programs that assist students and equip them for academic success and degree completion.

### 4.4.2 Socio-economic characteristics.

The government social grants showed that they play an important role in catering for some of the household basic needs such as food, water and other bills. This was particularly important for students who were unemployed and relied on grant support for household income. Figure six below illustrates the household income breakdown. Forty-two percent of students' parents/guardians were fully reliant on grant support as a means of household income. Only 41% of parents/guardians were employed, some of whom were employed on a casual basis. Furthermore, 8% owned small informal businesses as vendors and 9% were in the "other" category. Figure 6 illustrates the income breakdown of households.

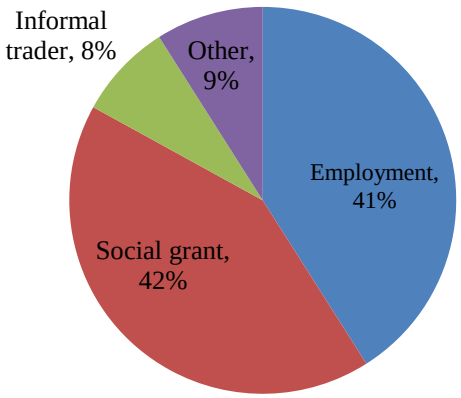


**Figure 6: Household income breakdown**

This study revealed that the households where study respondents came from were largely dependent on welfare and non-sustainable sources of income, such as social grants, informal trading (vendors) activities and casual/short-term employment (as other"). The socio-economic status of the students who took part in this study was in line with Letseka's (2007) finding that the majority of South African students come from poor socio-economic backgrounds. Studies have associated a household's reliance on government grants with increased experiences of food

insecurity (Brink and Rainville, 2001). When parents' casual and short-term employment contracts are terminated, families become financially insecure. Similarly, dependence on informal trading (vendor) activities does not guarantee stability as there is no income when the vendor is sick or unable to work. These economic situations have many negative implications for the food security of students. According to Koch (2011), financial barriers hinder access to food. During group discussions, students disclosed that one of their strategies which enables them to buy food is to pool their grocery money. Although sharing is common, students expressed that it is hard to keep feeding someone that is constantly eating for free, as it is unfair on those who are contributing. This form of food insecurity is brought about by limited finances from parents or guardian resulting in affordability issues which impede access to food.

More than half of the students (53%) were from socio-economically disadvantaged backgrounds, referring to the environments in which they come from that are characterized by factors that would have prevented them from gaining the skills, knowledge the ability to succeed in university. Fifty-seven percent did not have any form of financial aid to support their studies. Forty per cent of students indicated the need for a part-time job, and 20% of students that had funding from either NSFAS or bursary sent remittances home to support their families. Findings are illustrated in Figure 7.

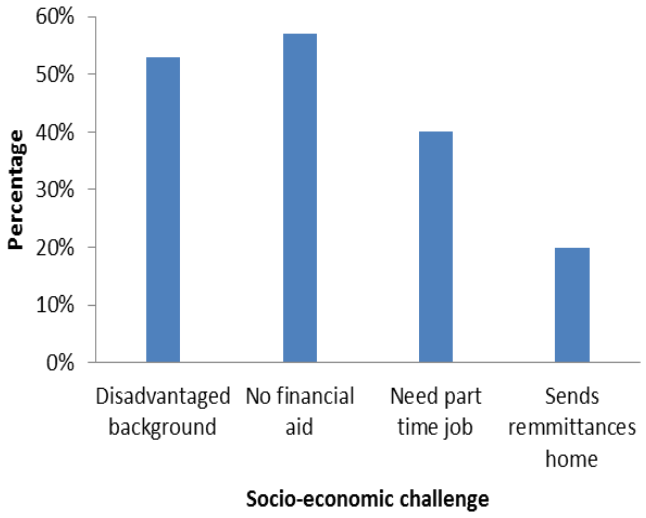


**Figure 7: Socio-economic status of students**

These findings complement the findings of previous studies, such as that of Letseka (2007) who concluded that a considerable proportion of South African students come from disadvantaged backgrounds and that there is a prevalence of students who lack financial support and who send remittances home. This finding also shows the need for some form of activity which would provide some income, as was seen in the students' interest in part-time jobs. Finances play an integral role in the lives of university students. It is evident that a significant proportion of first year students have little or no financial security and struggle to make ends meet. On the other hand, the occurrence of students on the National Financial Aid Scheme (NSFAS) and various other sources of funding who send remittances home, shows how serious the financial situation at home is, when students feel compelled to share the little that they receive with their families.

This illustrates the great cost of educating a student from a disadvantaged socio-economic background a great challenge for the country. This highlights the pressing conditions experienced by students and calls for the financial structures of universities and for state funding to create strategies that will grant access to and support a wider pool of students.

It is evident that many rural areas and townships still show structural poverty as a fruit of the Apartheid legacy. However, this can change with the appropriate strategies in place as it has severe negative implications on education, as well as on student food insecurity. A proportion of students were not on financial aid (57%). From the students who were not on financial aid, 70.4% of them experienced anxiety about food. On the other hand, 43% of students were on financial aid. Of these students, 9.1% have experienced anxiety related to food availability and accessibility. These findings confirm that a link exists between income and food insecurity where students without financial support were amongst the largest proportion who experienced food insecurity. These findings also confirm that even with the provision of financial aid, some students do experience food insecurity. This may be due to lack of budgeting skills where students succumb to spending money unwisely, thus leaving little money for purchasing healthy food. It may also be related to the occurrence of students undertaking some family responsibilities such as sending some money home or are supporting their siblings at school. These are some of the realities that students with financial aid face as confirmed by focus group discussions. The remaining 20.5% comprised of students who have financial aid and have never experienced any anxiety related to food security. Due to the large numbers of students eligible

for financial aid, financial aid structures such as the NSFAS and other providers of loans and bursaries, need to reassess their criteria for financial aid. Furthermore, a similar model such as the University of Cape Town's GAP funding model could be established whereby students who are unable to obtain funding from NSFAS due to eligibility issues, can still apply for GAP funding.

The existence of the NSFAS does not necessarily result in every needy student obtaining financial support. There are far too many students at South African institutions who qualify for the NSFAS but are without support and those just outside the threshold. Should students that wen to "better" secondary schools and are not exactly within the funding threshold be excluded entirely from obtaining financial assistance? Perhaps assistance can be extended to these kinds of students as they may have a better chance of succeeding and graduating within the prescribed time frame, thus enabling other students to obtain funding. There needs to be more joint support from other external structures, such as municipal bursaries and scholarship schemes from local and provincial departments. This is where the possibility of having the GAP funding model functional where students who fall just outside the threshold can be assisted. Companies could also form partnerships with universities, where students could be funded by the company and upon completion of their qualification; the students would work for the company in return. Such a scheme has added economic benefits in that jobs would be created for students who complete their qualifications. Another strategy that could be implemented to directly combat the food insecurity of students would be to subsidise food prices for students in grocery stores.

**Table 2: Summary of responses from focus group discussions**

| Questions | Themes from Focus Group Discussion |
|---|---|
| 1:Accommodation and impact on food accessibility and availability | • More emphasis on the provision of on-campus residence for all first years<br>• General agreement that it increased students' reliance on friends for food provision<br>• Common kitchens increased food theft<br>  o Largely affected by lack of safe storage facility<br>• Squatting students more susceptible to food accessibility and availability |
| 2: Perceptions about healthy eating | • Most acknowledged the importance of a healthy diet<br>  o Lack of finance is a major limiting factor in accessing diverse and nutritious food.<br>• Lack of time to cook proper meals due to academic commitments and tight schedules – students resort to quick, energy-dense meals.<br>• Complaints about weight gain due to "varsity diet" (unhealthy, eating on the run) |
| 3:Attitude towards food insecure students on campus | • Stigma against "poor" students, hence not wanting to be seen carrying a food parcel due to negative social consequences.<br>  o Food parcels work best for students staying on campus residences with cooking facilities |
| 4:Experiences resulting from lack of food | • Frequent Headaches – most agreed<br>• Weight loss<br>• Lack of concentration in class<br>  o Constant worrying about food |
| 5: Coping strategies used to obtain food | • Ask friends for food and/or borrow money<br>• Some students come to terms with their condition and let it be<br>• Transactional sex and "sugar daddy syndrome" by female students<br>• Call home<br>  o This is futile for students with low income backgrounds.<br>• Theft of food was common |
| 6:Possible solutions to increase food accessibility | • Invest in resident kitchens with catering for all 1st year students<br>  o These would offer healthy meals<br>• Coupons distributed to food insecure students to buy food items at grocery stores<br>• Workshops on budgeting and healthy eating. |

Table 2 illustrates a summary of responses elicited from focus group discussions from study discussions according to emerging themes. Group responses were organized according to the following questions that were asked: Accommodation and its impact on food accessibility and availability, perceptions about healthy eating, students' attitudes towards food insecure students on campus, experiences resulting from the lack of food, coping strategies used by students to obtain food as well as the possible solutions that may increase food accessibility.

A focus group discussion of nine participants was conducted in DUT's Ritson campus to elicit more information regarding how NSFAS funds students' meals. NSFAS gives students a total amount of R 2 400 per month to purchase meals from the kitchens which was divided into R80 per day. This money is transferred into to the student account where they can purchase food by means of swiping. This system may be commended as it ensures that students' food accessibility is ensured throughout the course of the month and students could not redirect the funds to other social activities which would leave them with no money for purchasing food. However, a significant majority of students from the group preferred the meal allowance to be transferred into their bank accounts where they would be at liberty to use the meal allowance on other things such as transport, printing credits and on social activities. Therefore, students felt that the current swiping system was limiting. From the information gathered, an allocation disparity was evident from UKZN's students who were receiving R628.25 per month as a meal allowance which when subdivided, amounted to R21 per day, whilst students at DUT received approximately R2 400 which is limited to R80 per day for meals. UKZN students noted that the money received from NSFAS for meals was insufficient in carrying them through the month and this was largely due to other costs such as transport, printing credits and remittances sent home. Perhaps having a similar system to that of DUT could be beneficial in ensuring that food accessibility and availability is ensured at all times.

### 4.4.3. Domains of student food insecurity in terms of food access

Findings from the HFIAS were sub-divided into domains of student food insecurity, specifically accessibility within a recall period of 30 days. In this way, the severity of food insecurity and the vulnerability of students were clearly outlined.

Domain one showed experiences of anxiety and uncertainty about the availability of food. The second domain describes the quality of food consumed by students and includes food preferences and variety, thus presenting factors affecting food consumption. The third domain reflects food intake and the physical consequences resulting from factors influencing portions of food consumed and food availability. Domain four outlines the coping strategies of food insecure students which reflected societal acceptability in accessing food. Figure 8 presents the domain summary of food insecurity among first year students as determined through the use of the HFIAS.

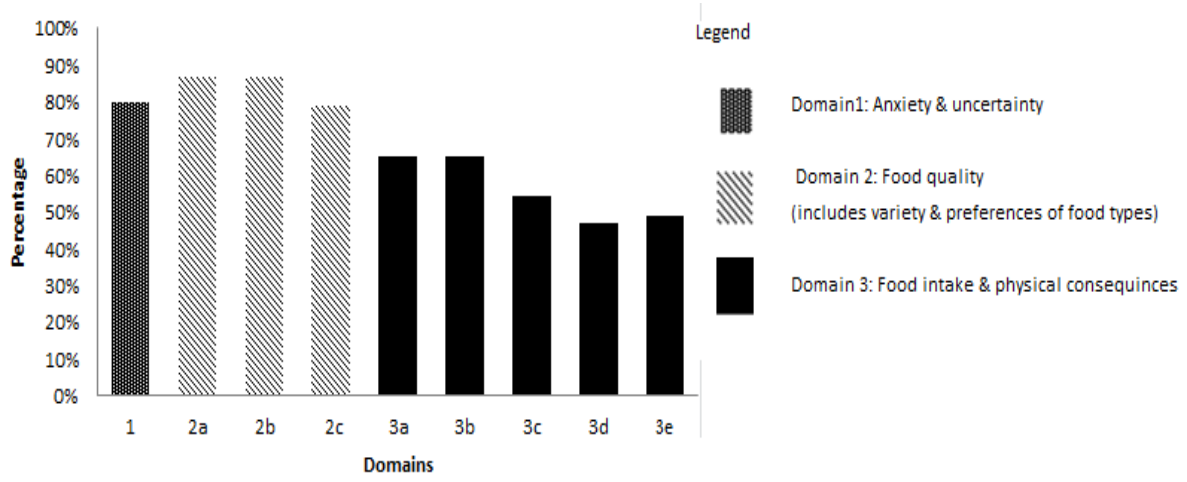


**Figure 8: Severity of food inaccessibility according to domains (HFIAS)**

*Domain 1: Students' experiences of anxiety arising from food inaccessibility factors.*

There were various factors that were identified as leading to food anxiety and uncertainty such as: the type of living arrangements of students, the presence or absence of storage facilities, food theft, lack of finances and the mismanagement of funds.

Results from HFIAS showed that 80% of students had experiences of anxiety and uncertainty about their food supply. Students living in university-owned accommodation were more likely to experience food insecurity than students living at home or with relatives. Cross tabulation counts showed the different levels of food insecurity for students who lived at home and those who lived independently. Of the students who experienced anxiety about food security, 5% lived at home with parents, 4% lived off-campus with relatives, 7% lived in private accommodation, and 60% lived in university-owned accommodation. Only 24% of students had never experienced food insecurity. Findings from this domain highlighted the fact that the students most vulnerable to anxiety and uncertainty to food insecurity are those who live in university-owned residences. This indicates that there are underlying issues relating to student accommodation, finances and food security. Students living at home do not necessarily worry about managing their finances and budgeting for groceries, while students living independently need to be cautious and plan accordingly, as failure to do so increases the likelihood of food insecurity. This also ties in with researchers who noted the phenomenon of students spending money on discretionary and appealing items and mis-allocating their funds due to a lack of budgeting skills, while some grappled with student debt (Hayhoe *et al*, 2000*;* Punch, 1991). This

is where financial literacy becomes vital for students so that they prioritise their spending, thus decreasing the chances of becoming food insecure (Mae, 2009).

The focus group discussions showed that university-owned accommodation and squatters in these residences, worsened food security due to communal storage facilities, which increased the likelihood of theft. Students shared their experiences of food insecurity; *"I used to stay in a type of accommodation where food was cooked for us but meal costs were not part of rent fees. At times when I only afforded accommodation and not meals, I would be excluded from the dining area where food was served. I could not go to student counselling to get a food parcel because I did not have a place to cook that food and I did not even have pots as residents were expected to eat what was provided in the dining area. I struggled."* This short narrative reveals the reality that not only is food insecurity experienced by students residing in university-owned accommodation, but also by students living in private accommodation. This study indicates that students experience various challenges with regard to food while pursuing their studies. Those who live in university-owned accommodation are troubled by food theft and unsafe storage facilities, while in some cases, those living off-campus may be excluded from dining halls due to a lack of resources such as in the abovementioned experience from a student.

Financial instability appears to be another major problem as bursaries and other financial aid are often paid late and sometimes payment is continuously delayed. Numerous students stated that they only started eating properly in the second semester, once they had received payment from their loan/bursary, which indicated that until then, they were not eating properly due to financial restrictions. Focus group discussions disclosed that those students who lived in campus residences relied heavily on friends and roommates for food when faced with food shortages. This strategy was only acceptable when the students had a system of rotating food contributions. When the same strategy is used by students who rely on it for their daily survival without ever contributing anything themselves, their self-esteem is compromised and they are stigmatized as 'food beggars'. This highlights the severity of food insecurity, and the consequences of students' various coping strategies that may not always yield positive results, as social relationships may be affected. For students who "never" contribute, it would be important to further investigate their household/income backgrounds. It would also be beneficial to investigate the coping strategies of unfunded students from low income backgrounds, who have been previously supported by the state's feeding schemes in their former schools. This type of information would

inform policy makers and support stakeholders in institutions about the kind of programs that could be implemented in a higher education setting.

The mismanagement of funds contributes to students' anxiety as, without funds, food becomes inaccessible. Students residing on campus described their feelings of uncertainty regarding what to eat when they come from attending lectures or where to find sufficient food when they have spent money irresponsibly on less important things. These findings are documented by Tomaselli (2010) and Letseka (2007) who documented students spending money on costly luxury items. Students commuting daily to and from campus highlighted the challenge of budgeting for transport and for purchasing lunch on campus. These issues result from a lack of budgeting skills and proper planning. This could be addressed by student services conducting compulsory workshops on budgeting skills, which are compulsory for all first year students.

A key informant, who was a former Dean's Assistant, in the study suggests that some students leave practical classes early, especially in winter to walk long distances to their off-campus residences due to lack of funds for transport. Some have been robbed while walking home. Such students are often from disadvantaged schooling backgrounds and need the practical classes to catch up on concepts but are prevented by finances.

*Domain 2 Food Quality and Quantity*

The second domain determined the quality and quantity of food consumed by students. Some of the leading factors affecting food quality and quantity were a lack of resources, limited grocery listing and budgeting skills, insufficient funds from financial aid sources, and also the extra responsibilities such as sending remittances to their families.

Eighty-seven per cent of students were not able to eat preferred food due to a lack of resources (*refer to Figure 8, in Domain 2a*). Eighty-seven per cent ate a limited variety due to a lack of resources (*Domain 2b*). Seventy-eight per cent of students ate foods they did not want to due to a lack of resources *(Domain 2c).* The focus group discussion showed that students were knowledgeable and acknowledged the importance of nutritionally adequate foods. However, they mentioned certain limitations to purchasing quality foods. One factor was that healthy food was perceived as being more expensive, less satisfying and the constant need to replenish supplies was problematic. Students further justified their purchasing starchy foods such as fried chips, bread rolls, maize meal (for pap), *vetkoeks* and biscuits, by claiming that this kind of food

satisfied their hunger for longer and so was in effect cheaper for those students who have limited resources. This illustrates students' trade-off of healthy food options and hunger satisfaction.

Limited budgeting and grocery listing skills also hindered students from having a diverse diet. Numerous students from different groups expressed that; "*When you just receive money at the beginning of the month, you can buy good food, but as the month progresses, the money runs out which leads us to buying cheap and unhealthy food."* For those students with funding, for example bursaries, admitted that if they could control their spending, they could live much better knowing that they consume a balanced and healthy diet. It can therefore be noted that students with no financial aid face the risk of food insecurity as they have insufficient funds to purchase healthy food in the correct quantities, while students who are financially secure are at risk of food insecurity due to their mismanagement of their finances, due to a lack of budgeting skills.

Another problem that surfaced was that funds received from financial aid sources are insufficient, especially when students have extra responsibilities such as sending home remittances. For them, this did not leave enough funds aside for students to buy food that was suitable for well-balanced meals for over a period of a month. Finances play an important role in determining the types of food to which socio-economically disadvantaged students have access. These findings spell out the need for resources to be made available to needy students, as their diet and food quality is compromised by a lack of funds and skills. Students need to be informed about better purchasing options and the types of healthy meals they can prepare on a limited budget. This would be especially useful to those who face financial difficulties (Henry *et al.,* 2000).

*Domain 3: Quantity of Food Intake and Physical Consequences*

The third domain reflected insufficient food intake and its physical consequences. Lack of resources, especially finances, was the major factor contributing to insufficient food intake. Results showed that 65% of students ate smaller meals than they should have due to a lack of resources (refer to Figure 8, *Domain 3a*); 65% had fewer meals a day because there was insufficient food (*Domain 3b*); and 54% experienced a situation where there was no food at all (*Domain3c*). Forty-seven per cent of students have gone to bed hungry (*Domain 3d*) and 49% have gone a whole day and night without food due to a lack of resources (*Domain 3e*).

During focus group discussions, students discussed their experiences of frequent headaches, weight loss and lack of concentration, which are linked to insufficient food intake and at times starvation. Some students noted that they did not relate physical ailments to their diets. Literature has also documented that food insecurity reduces both mental and physical health (Rychetnik *et al.*, 2003; Barnard, Helen & Eat well S.A., 1999). Further focus group discussions also revealed that under the conditions stipulated in Domain 3 (eating fewer meals due to inaccessibility), a number of students expressed that they lost weight as a result. These findings uncover the occurrence of student hunger, resulting from a lack of resources to secure sufficient and stable food supplies. The physical consequences as well as the medical implications brought about by insufficient food intake and hunger amongst food insecure students' needs to be investigated further through the collaborative efforts of medical practitioners and nutritionists. Once these findings are scientifically documented, interventions can be put in place.

The findings reveal how finances play a crucial role in ensuring students' health and adequate diet by enabling buying power. This finding was also documented by Hughes *et al.,* (2011). The physical consequences of food insecurity are detrimental to students' health and subsequently their academic performance despite students not linking lack of concentration to food insecurity. This study suggests that university-owned residences need to reconsider the establishment of dining halls to feed students and investigate ways of subsidizing food for very poor students. It would be fitting for dining halls to supply healthy food to students throughout the course of the day. One of the benefits would be that students would not have to worry about accessing food or spend time preparing food, which would leave more time for their studies and for relaxing. This could be a partnership between the university and the financial aid institutions such as NSFAS allocating money to students to eat in the dining halls. This could be done through a loan system, where students repay meal allowances at a later stage in the same way that they repay their tuition loans. Exclusion of students from accessing food due to financial constraints over which they have no control is detrimental to their performance thus weakening the state's investment (NSFAS) return as students take longer to complete their studies and lasting the state more.

*Domain 4: Coping Strategies.*

The data for *Domain 4* summarizes the coping strategies of students in the face of food insecurity, related to the societal acceptability in securing food and it is illustrated in figure 9. Some of the main strategies included asking friends for food, drinking water, borrowing money from friends and going to the student counseling centre.

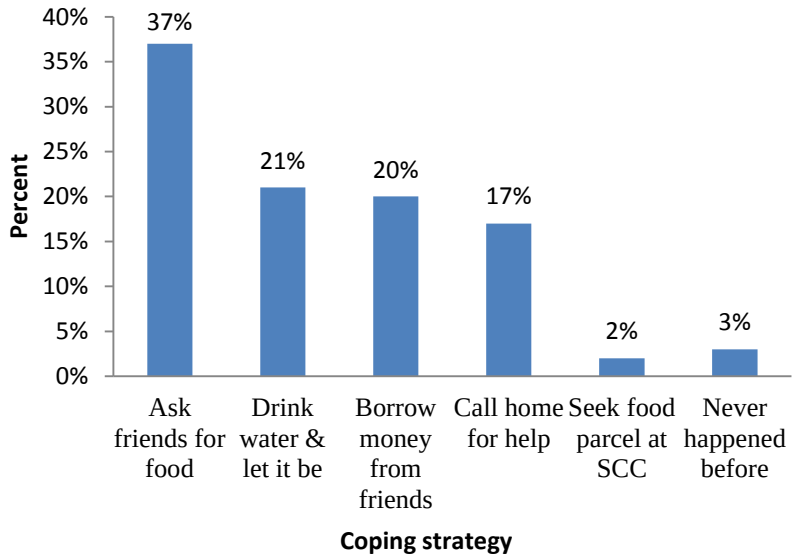


**Figure 9: Coping strategies used by students**

Results in figure 9 showed that 37% ask friends for food, 21% drink water, 20% borrow money from friends, 17% call home and ask for help, 2% go to the student counseling centre for help and 3% of students have a steady supply of food and do not have to resort to coping strategies.

The largest proportion of students asked their friends for food and focus group discussions showed that these students had very limited food options, as they were forced to take what they were given, usually in quantities that were insufficient. Students seemed to understand that the "donor" was also taking from their limited supply and therefore they had no say in the food they received. Students expressed that; *"we constantly feel like we're being a nuisance every time we are forced to ask friends for food. They are also students like us and sometimes have limited supplies too. Sometimes, we don't even ask them anymore because they tend to avoid us. They think we don't notice but it's so obvious when you are bothering someone."* This phenomenon contributes to some students not having the courage to ask friends or anyone else for help and

they then resort to drinking water and ignoring the situation. Students who borrow money from friends risk falling into debt, which they may not easily settle, especially if they do not have a sustained income. This can create tension between students, and may also lead to others refraining from helping destitute students as a result of their not being able to pay back the loan, thus increasing food insecurity.

Students disclosed that it is preferable to call home for help when there are family members who are employed and can readily assist. Living with extended family was shown to restrict the availability of financial assistance to some students. Furthermore, some students noted that they would rather not call home as they recognize their families' financial limitations. Calling home would just make their family look helpless, which grieves the student. This also explains why food insecurity is higher amongst students who live in university-owned residences or private accommodation than for students living at home. The poorest students supported by NSFAS can only afford university-owned residences because they receive money from NSFAS for meals. Because these students come from low income backgrounds, calling home for assistance in times of need is futile. These results agree with findings by Innes-Hughes *et al* (2010) who undertook a similar investigation, which showed that students living in university-owned residences are at a higher risk of food insecurity than those living at home.

Focus group questions also included some of the "socially unacceptable" ways which students use to secure food. Alarming coping strategies were discussed, such as students performing transactional sex in exchange for money, "*decent groceries"* and accommodation, as well as stealing clothes which were later sold to acquire grocery and transport money (particularly amongst students from university-owned residences). Focus group discussions also confirmed the occurrence of fancy cars parking outside residences occupied by females, indicating. The discussions also highlighted the growing tendency for girls to have "sugar daddies" in exchange for food, airtime and other items. Students participating in the group discussions explained how this was a way in which older, working men (some of whom are married) use women's vulnerability to their advantage. This further translates to a bigger and serious social issue that is growing in universities and therefore contributes to a growing HIV rate. These are also unsustainable and unreliable coping strategies also described by Olson (1996). The key informant interviews supported these findings and further pointed out that some students do not want to steal, but the situations they are sometimes faced with push them to that point.

The key informant interviews revealed that the Student Counseling Centre (SCC) already assists students through counseling, budgeting workshops and the distribution of food parcels. However, data shows that there were few students that knew about this and approached the SCC for assistance. For those that had been to the SCC for food parcels, they noted that the parcel constitutes of a canned beans, 1kg of rice, mielie meal, tomatoes and soup sachets. Students further noted that although the food parcel does go a long way in addressing hunger, it only works for those students that stay in varsity-owned residences where there are cooking facilities. For students that had other types of living arrangements, for example squatting, utilizing the food parcel was problematic due to inaccessibility of resources such as pots and pans. When students were asked why they seldom approached the SCC for help. They explained that "*nobody wants to look like a needy student in university*. *People just ask why you are here when you know your situation; how can you answer such a demoralising question*." It contains beans, 1kg rice, tomatoes, soups sachets. There is a stigma attached to not having sufficient food and is an unspoken shame among students. Students shared how it is embarrassing to be seen with the food parcel from the SCC. The sustainability of the provision of food parcels needs to be questioned, as this study has presented a significant number of food insecure students. Khanyile (2011) did confirm that even though the SCC acknowledges the food insecurity amongst students on campus as a serious issue, they do need assistance as their resources cannot be stretched. Furthermore, they do not have enough capacity to run the program efficiently and effectively. This is where support institutions and stakeholders could play a meaningful role.

Support institution or stakeholder could establish a supermarket-sponsored "Food Bank" for example, that will partner with the SCC in terms of supplying essential food items and capacity enhancement so as to handle the distribution of food and the delivery food as a way to proactively address student hunger. The support institution or stakeholder could create and manage a database that will not only capture student cases of food insecurity, but also its subsequent impacts. This will not only keep a record, but will also inform future interventions in tackling food insecurity by means of empirical records. Having a support institution/stakeholder on board to address student food insecurity will assist the university in alleviating food insecurity and its associated negative impacts, and possibly enhancing academic performance of poor students. This will also ensure that the university focuses on its main task in producing qualified graduates in record time as some of the urgent socio-economic issues will be addressed by support institutions/stakeholders.

Results from the various domains show that food accessibility and stability are a serious issue for many students, especially those living in university-owned residences and private accommodation away from home. As a way of ensuring that students have access to sufficient food that is available at all times, and as a way of curbing the frequent occurrences of food theft, the findings suggest that residences should establish a system of offering cooked meals to students two or three times a day. In this way, the issue of nutrition would be addressed through the supply of balanced meals. The challenges of students' lack of budgeting skills, grocery listing and the mismanagement of their finances would also be addressed as the responsibility would then be shifted to the caterers (this will also have a positive impact on students' time, as they will be able to concentrate more on their studies without worrying about food). A challenge would still exist for those students with no funding or not living in university residences and are in need of assistance. In this case, the GAP funding model from UCT would be suitable if implemented because it funds students who are not assisted by NSFAS. This funding could relieve students from financial burdens, thus increasing their chances of food security.

### 4.4.4 Individual Dietary Diversity Score

The current study measured diversity according to the number of different foods consumed by students over a recall period of 24 hours. Because dietary diversity is recognized as a key component of a healthy diet, this section is included so as to determine the quality and types of foods accessible or inaccessible to students. In essence, this study associated dietary diversity with students' socio-economic status.

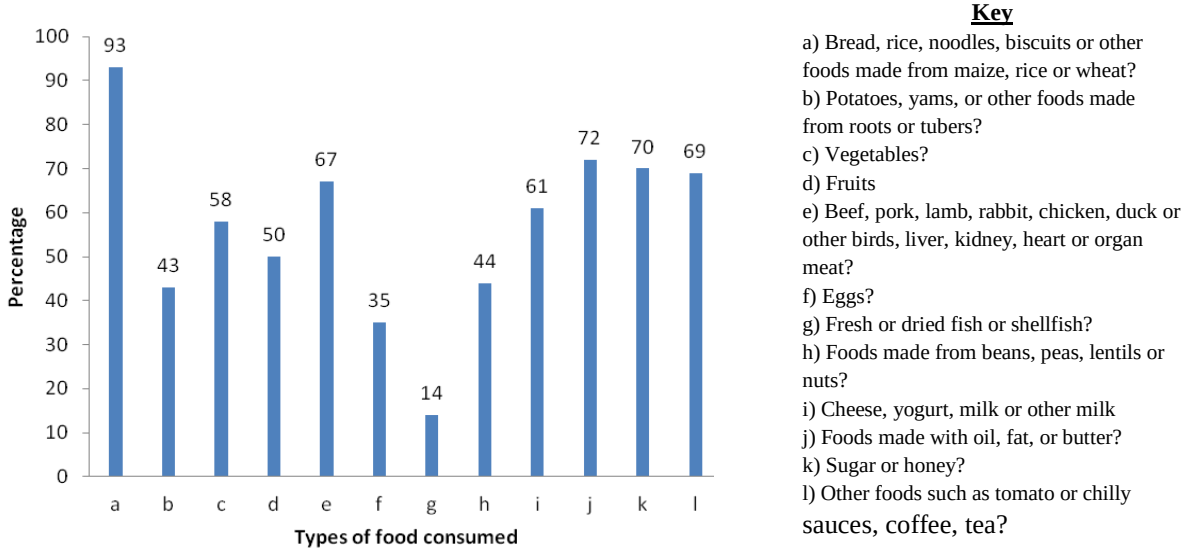


**Figure 10: IDDS summary of types of food consumed**

Figure 10 shows the IDDS findings. Results showed that almost all (92%) students ate foods such as bread, rice and maize; 42% ate foods made from roots or tubers; 58% ate vegetables; 50 % ate fruits and 66% ate meat such as beef, chicken, pork or organ meat. Thirty-five per cent of students ate eggs, and only 15% ate fish. Sixty-one per cent of students consumed dairy products such as cheese, yoghurt or milk, 71% ate foods made with oil, fat or butter, 70 % ate foods with sugar or honey and 69 % ate other foods such as tomato or chilly sauces as well as coffee or tea. Out of the food groups, the greatest proportion of food consumed leaned more towards energy-dense foods such as maize, fats and sugars as well as some kind of meat. This was because the energy dense foods which are cheaper and provide students with energy they need to perform academic tasks and get through the day, with the least time spent in preparation. The least consumed food were meat, fruits and vegetables which are important constituents of healthy diets. The focus group discussion verified that students' diets mainly consisted of energy-dense foods. Bread (white being more dominant than brown) with butter was frequently consumed by majority of students, cereals and noodles were unanimous in every group. Tea or coffee with milk and cheap biscuits were also popular amongst students living in residences. Students discussed how this type of diet suited their budgets more than their tastes. This kind of food is not only filling, but can be bought more cheaply, in bigger quantities that last longer without requiring cold storage. Preparation time was a major contributing factor towards students' diets, and this was confirmed by students from focus groups. In addition, those students that expressed their troubles with managing their time noted that they do not spend time in the kitchen preparing food. This finding was also documented by Hughes *et al.*, (2011). Students living at home had better dietary diversity, which included protein, vegetables and fruits.

The four food groups that were least often consumed were groups G (14%), F (35%), B (42%) and H (43%). Purchasing fish, dairy products or fruit/vegetables was a challenge, as students had limited storage facilities, and, as the students used communal refrigerators, theft was also a problem. The time required for preparation was discussed as another hindering factor that put students off buying certain foods. Powdered milk was used more often than fresh milk as it is easier to store and is also cheaper. Fruits were also deemed expensive and were bought only when some money was left over after having bought necessities.

The IDDS findings showed that students are missing out on essential nutrients, even if there is a desire to purchase and consume a diversified and balanced diet, storage facilities, price and time management are the factors that present the most difficulties, according to focus group discussions. Ruel (2002) writes that dietary diversity is strongly associated with household per capita income. This confirms the prediction that dietary diversity is largely dependent on students' availability of resources and their socio-economic status: a higher socio-economic status allows access to a more diverse diet. The Harvard School of Public Health (2011) provides a "healthy eating plate", created by nutritional experts who advise how to balance a meal. Experts advise that a plate should have vegetables and fruits, whole grains, a source of protein, healthy plant oils and water or tea/coffee with little or no sugar. When this "healthy eating plate" is compared to the findings of this study, it is apparent that there needs to be more emphasis, especially by student services, on educating students about healthy eating habits, taking into consideration the typical "student budget" of the many students from disadvantaged backgrounds. Students need to learn how to stretch their limited budgets and what types of foods they should be purchasing to maintain good health.

The majority of first year students their first year at university meant that it is the first time in their lives they are faced with managing themselves. When they live in campus residences or independently, many find it hard to adjust and to take care of themselves as they should. If students are equipped with skills and knowledge about health and diet, perhaps the negative impacts of food insecurity may be reduced. Institutions also seek to gain a better understanding about students from poor socio-economic backgrounds and their extra responsibilities, which may put a burden on their meager resources. The findings above describe the type of student enrolling into UKZN as burdened by the "first generation" factor, lack of financial support from home and funding institutions thus increasing the susceptibility of food insecurity due to lack of resources. It is suggested that the institution look into the possibility of adopting the GAP funding model that is successfully implemented in the University of Cape Town. It is also suggested that the funding structures in the universities to possibly revisit the eligibility criteria that distinguishes students' suitability for NSFAS funding. This is motivated by the large numbers of students interviewed in this study who appear to be eligible for funding, but apparently did not qualify. It is important for university students to maintain a healthy diet to help them maintain a healthy body which is less prone of diseases, thus contributing towards consistent class attendance. Some institutions have meal plans which address malnutrition and

limited access to food. Chaparro (2007) found that university students who participated in school meal plans did not suffer from problems associated with food insecurity. Other universities in KwaZulu-Natal such as the University of Zululand and the Durban University of Technology are currently running residences with meal plans where UKZN can adapt certain strategies which may be employed.

### 4.5. Summary and recommendations

This study investigated the severity of food insecurity and factors affecting food security among under-performing first year students. Collectively, food insecurity is severe in UKZN amongst first year students; anxiety, lack of food access as well as food consumption characterized by insufficient quality and poor quality foods all suggest that interventions need to be implemented. Health and nutrition was severely compromised as students' diet was robbed of essential vitamins and minerals due to lack of dietary diversity. It is suggested that university-owned residences organize dining halls/meal plans that would cater for students, similar to the DUT system. These dining halls could be subsidized by the institutions so as to accommodate students from low income backgrounds with affordability challenges. This would also provide a solution to the problems brought about by the delayed payment of meal allowances which impacts on students' food security as they awaiting payment. Furthermore, because the meal allowances would be directed to students' accounts and a limit to be set for each day's usage; this controls students' spending and prevents misallocation of funds for food, on other luxury items and social activities that aren't a priority. Although the Student Counseling Centre already host a series of seminars and workshops about necessary life skills, budgeting, and health (possibly cooking courses for increased dietary diversity could be included), only a minority of first year students attend. As it is imperative for first year students to receive this kind of information as they transfer from secondary school to a more independent university setting; workshop and seminar attendance should be made compulsory. First generation students from low income backgrounds were most vulnerable to food insecurity and financial challenges posed as serious barriers to food security for both genders due limited purchasing power.

The number of students who are food insecure is expected to rise in the face of increasing tuition fees, food prices, and the cost of accommodation. One of the main reasons that institutions of higher education exist, is for training people such that they are equipped and skilled for the production of man power needed for the preservation and progress of the country as a whole.

This is fulfilled by producing competent graduates and skilled researchers who will contribute to the economy. In this way, institutions of higher learning are active in disseminating and preserving knowledge whilst students are being constantly developed to they reach their full potential. However, the developmental agenda is significantly affected by the socio-economic factors that affect students' food insecurity, and subsequently their academic performance. Outlined below are some recommendations directed at addressing food insecurity specifically at UKZN.

Food insecurity is a result of a myriad of issues, most of which stem from socio-economic factors and the lack of financial assistance. Food insecurity is not fully acknowledged in universities and amongst financial aid institutions, hence the difficulties involved in attempting to tackle such a complex problem. It requires a holistic approach by universities' student and financial support structures as well as support stakeholders. This joint partnership could be started by creating an awareness of food insecurity and its potential consequences to students, the institution and the country's development. A key outcome this study presents is whether investing in the very poor in South Africa is the best option for improving the country and its people quicker. The South African government through taxpayers input has supported numerous students to gain access to higher education through the NSFAS. This study has shown a significant proportion of these resources are redirected through remittances sent home which delays students' academic progress and prolonging their time in university. NSFAS is encouraged to further its financial assistance to other needy students that do not fall exactly within their threshold for funding. Based on empirical findings, this study presents a possibility for NSFAS to broaden their threshold and accommodate the lower middle class students who might yield better results and graduate within the acceptable time frame, thereby enabling NSFAS as an investor to reap the returns. This study further suggests that the GAP funding model be implemented that is similar to UCT's as it is evident that not every eligible student can be funded by NSFAS.

If tertiary institutions are to see a return on their investment in further education, socio-economic factors that affect academic performance, especially food insecurity, need to be proactively addressed through informed institutional policies.

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# CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

## 5.1. Introduction

The baggage in which students bring with them into University that is informed by their backgrounds can no longer be overlooked as it presents challenges both academically in terms of securing food accessibility and availability. The current study has shown the various ways in which students' socio-economic background affects how they perform in their first year of study. Food insecurity amongst low socio-economic groups is a serious issue that needs to be addressed at institutional level.

Students bring with them the situations and burdens from where they come from. Some of the issues that students face are those which create situations of food insecurity and those socio-economic factors that have impact upon their academic performance. These issues form part of a student as an individual and it is challenging for them to leave those issues behind once they enrol into a tertiary institution. The resulting challenges from socio-economic baggage do not only affect the individual student alone, but there is a myriad of complexities that arise as a result. Institutions of higher learning experience high dropout rate, increasing cases of failed courses and growing numbers of students on probation and at risk of academic exclusion, amongst others. The study illustrated Maslow's hierarchy of needs by concurring that when the basic need of food is met, academic performance is thus negatively affected. The current study was conducted in the University of KwaZulu-Natal, Pietermaritzburg and first year students on probation and at risk of academic exclusion as research participants. This chapter presents the conclusions and recommendations of the study which was guided by the following sub-problems as a guide:

1: What is the prevalence of food insecurity in the College of Science and Agriculture?

2: What are the socio-economic factors that affect food security?

3: What are the socio-economic factors that affect performance?

## 5.2. Conclusions

Black South African students, majority being females, were more vulnerable to food insecurity. The majority of students' economic background was characterized by low social and economic standing. Unemployment and a strong dependency on social grants were evident. This proves that funding sources are scarce within this group, of which a large proportion of study participants proved not to have. This suggests that NSFAS may need to consider funding students who do not exactly fall within their funding threshold as well as for the GAP funding model, which largely addresses entrant middle class students who do not meet NSFAS criteria, to be implemented. This model can take a similar structure from the one implemented at the University of Cape Town.

An alarming number of students in the study proved to have anxious about food supply. University residences and their lack of storage resources also contributed to the supply and accessibility of food due to habitual theft. Students proved to be consuming foods high in sugar and fat at cheap prices due to lack of resources to purchase good quality food. The lack of budgeting, financial management and grocery listing skills worsened led to students consuming low quality and insufficient quantities of food. As a consequence; there were complaints about headaches, frequent illnesses and weight loss. This may have had an impact on academic performance due to reported headaches and lack of concentration during lectures and whilst doing other academic activities after classes. The coping strategies employed by students were largely unreliable and unsustainable. It can be said that a gap lies between the university and support stakeholders in addressing food insecurity challenges amongst students. A joint partnership can be formed for the implementation of interventions that will address food security-related challenges.

Socio-economic challenges significantly limited food acceptability and stability while minimizing dietary diversity such that essential nutrients were forfeited due to poor dietary intake. These challenges were largely a result of lack of purchasing power for students from low income backgrounds without financial assistants. This hindered students from accessing other types of foods that would complete a healthy diet. Students showed a pattern of consuming a monotonous diet which consisted of basic staples such as bread, rice and maize. More students need to consume vegetables, fruits and other groups of essential foods as part of their diets. Students' poor diet was largely contributed by lack of resources to access other types of food that

would complete a healthy diet. Students do have a desire to purchase other types of foods and have a healthy diet, however; food is expensive, especially for students coming from lower socio-economic backgrounds, including those without funding. This proves that dietary diversity is dependent on students' availability of resources as well as their socio-economic standing.

Students do not recognize food insecurity as a serious issue and often do not acknowledge their food insecure status. This makes it harder for students to seek assistance from the Student Counseling Centre. Food insecurity as a problem affecting university students has not been fully acknowledged by majority of universities and amongst financial aid institutions which then creates difficulties in planning and implementing interventions. Once awareness and the severity of food insecurity is communicated across institutions of higher learning, funding agencies and other support stakeholders; then holistic interventions can be brought into action.

South Africa has indeed come a long way in enabling the greater society in accessing higher education and training as a direction towards economic growth and human development. However, this study has shown some of the socio-economic factors that are posing a threat on the advancement in this sector as it was revealed in the growing numbers of underperforming students. The state and institutions of higher learning need to acknowledge the myriad of challenges faced by students entering South African universities if the objectives set out for higher education are to be met. A more comprehensive support of students should be explored, including social, financial and psychological support to address the first generation university student phenomena.

This study concludes that students are facing challenges in their academics. Many students are still grappling with first year courses when they ought to be progressed further towards completing their degrees. However, the significant number of students without financial aid poses numerous challenges for them to thrive in university. Students who have part-time employment place strain on their academics thus negatively impeding academic performance. . Therefore; lack of finances excludes learners from realizing their full academic potential due to inaccessibility of study materials such as textbooks, and also due to the displaced time on academic work. Many South African households face financial difficulties in supporting their children in universities, and this is where financial aid schemes and bursaries play a significant role. This factor also seeks to emphasize the importance of the GAP funding model.

The occurrence of students grappling with additional responsibilities as well as strenuous housing accommodation dynamics places strain on their academic work, in addition to accommodation and accessibility to learning resources. These are subtle yet pertinent dynamics that play a role in influencing students' state of well-being in pursuit of their education. In the classroom, lack of proficiency in the LoLT presents expression difficulties in both written and spoken language for learners, most of whom attended secondary schools characterised by lack of resources and sub-standard pre-university training. This brings about limited participation and interaction within the classroom – a place where the transfer of knowledge ought to take place. Language of Learning and Teaching thus greatly affects learners' epistemological access to education. This flags the importance for universities to review the Language policy, as well as to efficiently implement it if these negative effects are to be curbed.

### 5.3. Recommendations

University-owned residences need to organise dining halls/meal plans that should be subsidised by the institutions in order to accommodate socio-economically disadvantaged students. This would also provide a solution to the problems brought about by the late payment of financial aid which impacts on students' food security while awaiting payment. Although student services (including the Student Counseling Centre and the Campus Clinic) at UKZN already host a series of seminars and workshops about necessary life skills, budgeting, and health (possibly cooking courses for increased dietary diversity could be included), only a minority of first year students attend. It is imperative for first year students to receive this kind of information as they transfer from secondary school to a more independent university setting. Workshop and seminar attendance should be made compulsory. Further research on the direct relationship between food insecurity and academic performance is suggested. It is also recommended that support stakeholders including those external to the university, to work hand in hand with the campus support services where they are not capacitated to carry tasks through. For example, the Student Counseling Center could offer counseling and admin-related duties regarding food insecure students. A support stakeholder, such as a non-profit organization, can then play the role of managing and distributing food parcels to food insecure student. This way, the Student Counseling Centre can focus on their core duties, whilst providing for students' need where they are not entirely able to. This also gives the greater community, through support stakeholders, a

share in community responsibility, which will also encourage students to succeed and in turn, give back to society.

With regards to addressing students' academic performance; College academic development officers can consider student demographics and socio-economic characteristics - such as familial economics, need of financial assistance, whether they are first generation, type of secondary school attended - upon students' acceptance to universities. The information collected could be used to inform the type of assistance extended to students, thereby being more effective than conventional assistance for all students. For example, the use of a categorical model can be useful where students are grouped students according to the information provided upon applying to the university. In this way, the university and support stakeholders can ascertain which students fall into certain risk categories as well as the specific type of assistance that can be depicted.

In order to mitigate the affordability factor, it is suggested that Colleges run "module libraries" where recommended textbooks can be on loan, similar to the academic reserve system in libraries. This loan system would only be utilized by students enrolled for that particular module so it is manageable. This way, more students can have access to textbooks and other learning material such as notes which follow textbooks, without students having to purchase them. This would be beneficial especially with the frequent up-grading of textbooks coupled with increasing prices. A partnership with publishers and the university needs to be established so that copyright laws are not violated. In this way, notes which closely follow the textbook can be made available to all students.

The importance of on-campus accommodation and access to learning resources for first year students is of the essence. Lack of such resources presents a threat to academic performance. Comprehensive planning and residence allocation and prioritizing residence occupation by first year students' needs can be structured by the Student Housing Department. In this case, the categorical model explained above could also come into use where allocation of residences and location is used according to students' need and urgency.

A few number of students either seek assistance or know about the Student Counseling Centre in UKZN, and this is ought to be one of the first places where they can seek professional assistance. Furthermore, time and budgeting skills workshops ought to be mandatory for all first year students. Once students grasp the fundamental principles of being a student and overcoming

issues; they can better their chances of succeeding in their first and subsequent undergraduate years. The categorical model could also be of importance when it comes to Student Counseling Centre not only reaching out to first year students, but especially those identified as at-risk. In this case, specialized programs could be directed to students. Student support staff also needs to be capacitated to deal with the myriad of issues students deal with in their everyday life, while also reaching out to all students in an effective way through program implementation and database organization.

The challenges brought about by the LoLT are complex that most students silently deal with. The English language will still remain dominant in teaching and learning; however, the role held by African languages in primary and secondary education ought not to be discontinued in tertiary institutions. The issue of multi-lingualism and the implementation of the multi-lingual policy needs careful planning and implementation but it should not be disregarded completely. In terms of secondary school preparedness, programs such as the Learner Enhancement Checklist that is already running in the College of Science and Agriculture can be effectively implemented to be implemented across the institution in all Colleges. Students who have secured a place in university because of their secondary school marks, but are struggling to meet the set standards can be assisted through programs like the LEC.

With the extension of access to higher learning institutions to all South African citizens, there comes implications for most students; especially those of low socio-economic backgrounds faced by myriad of socio-economic and political factors which have critical repercussions on academic performance. Therefore, it is central for universities and support stakeholders to proactively address these issues if the returns on the investment made in education are to be reaped. Supportive measures that will foster improved academic performance need to be realized and implemented.

## Appendix 1: Respondents Questionnaire

**EXPLORING FOOD INSECURITY AND SOCIO-ECONOMIC FACTORS AFFECTING ACADEMIC PERFORMANCE: A CASE STUDY OF 1ST YEAR STUDENTS ON PROBATION AND AT-RISK OF ACADEMIC EXCLUSION.**

The purpose of this research is to explore food insecurity and to investigate the socio-economic factors affecting academic performance. This questionnaire consists of three sections: Biographical, academic and food security sections.

Please answer on the spaces provided. All data will be coded so that anonymity will be protected in any research papers and presentations that result from this work. Your signature below indicates that you have understood the information about this study and consent to your participation. This participation is voluntary and you may refuse to answer certain questions on the questionnaire and withdraw from the study at any time with no penalty.

Participant:_____ Date:_____

Researcher:_____ Date:_____

1 **Gender**

| | |
|---|---|
| Male | |
| **Female** | |

2 Age

| | |
|---|---|
| 17-20 | |
| 21-23 | |
| 24-27 | |
| other | |

3 Nationality

| | |
|---|---|
| South African | |
| International | |

4 What degree are you studying towards?

_____

5 At which year did you register for this course?

| | |
|---|---|
| 2011 | |
| 2010 | |
| 2009 | |
| other | |

6 Secondary Education

6.1 I feel my secondary school prepared me well for university

| Yes | No |
|---|---|
| | |

6.2 I went to a school that was in a

a) City ☐ b) Township ☐ c) Rural area d) Other ☐

6.3 How would you rate the quality of your secondary education?

| | |
|---|---|
| a) excellent ( I would recommend others to go there) | |
| b) good, but needs some improvement | |
| c) average (a lot needs to be changed) | |

| | Module content | Yes | No |
|---|---|---|---|
| 7.1 | This degree was my first choice | | |
| 7.2 | My current degree is suited to my abilities | | |
| 7.3 | I can cope with the demands of all my semester modules | | |
| 7.4 | I have peers/study group that I ask when I need help | | |
| 7.5 | I have challenges with the course contents | | |

| | Language | Yes | No | sometimes |
|---|---|---|---|---|
| 8.1 | I can't express myself verbally in English | | | |
| 8.2 | I don't have the ability to express myself well in ex tests or exams. | | | |
| 8.3 | I have a hard time understanding the language used by lecturers | | | |
| 8.4 | I feel isolated because of language differences | | | |
| 8.5 | If I was taught in my home language, I would do better in class | | | |

| | Facilities | Yes | No | Sometimes |
|---|---|---|---|---|
| 9.1 | I can't afford to buy the textbooks needed for my modules | | | |
| 9.2 | I am not able to pay for printing of assignments etc | | | |
| 9.3 | I don't know how to use library resources (e.g catalogues, subject librarian) | | | |
| 9.4 | I am unable to pay for my stationery (e.g. pencils, pens, calculators, etc.) | | | |
| 9.5 | I cannot access facilities (library, laboratory, LAN) after classes because I live far. | | | |

| | Institutional Support | Yes | No | |
|---|---|---|---|---|
| 10.1 | Do you know about the Student Counseling Centre? | | | |
| 10.2 | Have you ever been to the Student Counseling Center for assistance? | | | |
| 10.3 | Have you ever been to the Student Counseling Center for assistance? | | | |
| 10.4 | If answer to above was yes, give reason for visit_____ | | | |
| 10.5 | Do you know about the ROBOT system and why it is there? | | | |
| 10.6 | Do you consult an Academic Mentor or Academic Officer for help? | | | |

| | Managing your studies | Yes | No | Unsure |
|---|---|---|---|---|
| 11.1 | Do you have a study plan? | | | |
| 11.2 | I know about how to study effectively | | | |
| 11.3 | I would like to know more about study management skills | | | |

| | | | | |
|---|---|---|---|---|
| 11.4 | I don't understand technical phrases/terms | | | |
| 11.5 | Where live, I don't have space where I can study | | | |

| | | always | never | sometimes |
|---|---|---|---|---|
| 12 | Managing your time | | | |
| 12.1 | I struggle to cope with a heavy workload | | | |
| 12.2 | I procrastinate (put tasks off until later) | | | |
| 12.3 | I don't plan my day | | | |
| 12.4 | I generally do not meet academic deadlines | | | |
| 12.5 | I find that other social activities compete with my academics | | | |
| 12.6 | I spend too much time travelling to and from university | | | |
| 12.7 | I struggle to balance the demands of my part-time job and my studies | | | |

| | | Yes | No | Maybe |
|---|---|---|---|---|
| 13 | In lectures | | | |
| 13.1 | I ask questions in all of my classes | | | |
| 13.2 | All the lecturers are too fast for me to understand | | | |
| 13.3 | I have a difficult time understanding study material (notes, textbooks) | | | |
| 13.4 | When I am hungry it is difficult to concentrate | | | |

| | | | | |
|---|---|---|---|---|
| 14 | Personal/ emotional problems affecting you | | | |
| 14.1 | My family does not understand the demands of university life | | | |
| 14.2 | At times I feel so nervous that I cannot cope | | | |
| 14.3 | I have difficulty paying attention or concentrating | | | |
| 14.4 | Name some of the problems you are dealing with<br>_____ | | | |
| 14.5 | I don't have someone whom I can share my problems with | | | |

| | | Yes | No | Maybe |
|---|---|---|---|---|
| 15 | Financial | | | |
| 15.1 | I come from a disadvantaged family(i.e. unemployed/ not earning enough money) | | | |
| 15.2 | I have or am experiencing difficulties getting a loan or bursary | | | |
| 15.3 | I need a part time job to cope financially | | | |
| 15.4 | I have to share my loan/bursary with my family | | | |

| | | | |
|---|---|---|---|
| 15.5 | What is your source of income? Name the amount. | a)loan | R |
| | | b)bursary | R |
| | | c)parents | R |
| | | d)own job | R |
| | | e)other | R |

| | | | |
|---|---|---|---|
| 15.6 | Financial Breakdown. Please indicate how you spend your money<br>How much do you spend on: | a) Food | R |
| | | b) Leisure | R |
| | | c) Clothing | R |

| | |
|---|---|
| d) Stationary | R |
| e) Cell phone expenses | R |
| f) Transport | R |

16 Food Security

| | | Yes | No | Maybe |
|---|---|---|---|---|
| 16.1 | Do you have trouble choosing the correct foods when shopping? | | | |
| 16.2 | Does the price of foods you want influence on whether to buy or not | | | |
| 16.3 | Does hunger affect your concentration/effectiveness? | | | |
| 16.4 | Do you have enough time to cook food? | | | |
| 16.5 | Do you prefer buying food compared to cooking food? | | | |
| 16.6 | I know about healthy eating habits and I apply them | | | |
| 16.7 | Have you ever missed classes because you did not have food to eat? | | | |
| 16.8 | If you live in residence, has your food ever been stolen? | | | |

16.9 What do you do when you do not have food or money to buy food?

16.1 If there was an organised dining area where meals were prepared for you, three times a day, would you sign up?

yes No Maybe

give reasons why to question 16.1 above:

## Appendix 2: Focus Group Discussion Guide

### UKZN Focus Group Discussion

1) In your opinion do you think the accommodation and impact on food accessibility and availability?

2) What do you perceive as healthy eating?

3) What is your attitude towards food insecure students on campus?

- Discuss your perceptions towards seeking help in cases of food insecurity (SCC)

4) Share your experiences resulting from lack of food

- Do you think there is any relationship between sicknesses or absenteeism from University with food security?

5) What kind of coping strategies are used to obtain food?

- Results of using those coping strategies
- How sustainable are these coping strategies?

6) What possible solutions do you have to increase food accessibility?

7) Open discussion centered on first generation students' experiences

- Experiences about support received from home

8) Open discussion centered on finances (including financial challenges and budgeting)

9) Open discussion centered on secondary schools attended (including LoLT experiences)

10) Exit question (Anything else students want to say about food security and their experiences in University contributing to academic performance)

### Durban University of Technology Focus Group

1. Open discussion about dining hall's usefulness (food diversity regarding menus, any relief regarding food preparation times and time management etc.)

1. What is your general feeling towards the food being served at the kitchens?

a. Do you have preferences or choices about the types of foods served?

2. Do you prefer buying your own food, or do you prefer the current system where food is prepared for you at the dining hall?

3. Do you know of any programs that assist students who do not have access to the dining halls?

a) How are they assisted?

4. If there was something you would like to change with regards to the dining halls, what would it be? (E.g. food prepared, cost of food, serving times, etc.)

## Appendix 3: Key Informant Interview Guide

### A) DUT Kitchen Matron Interview

1. How is the eating or serving plans organized/ what system is in place for the serving of meals? Do students eat at different prescribed times? What happens when students miss meal times?
2. Please tell me about students' attitudes towards the operating of this system. What is their general response?
3. Please tell me about how students pay for the meals. (Are they subsidized by the institution, do they pay from their own pockets or from student loans such as NSFAS? How are the meals paid for)
    a. How much is assigned per student?
    b. Per month or per day?
    c. Have there been challenges in the payment of those fees?
4. Could you please describe the types of foods that are offered at the dining halls? Please provide a copy of a typical menu if possible.
5. What types of food do students like to eat? (Consumption patterns or food preferences)
6. Please describe the times in which food is served. (DUT) Do students miss class because they need to take meals from the dining halls? Have you encountered that issue?
7. Do you think the current system used by DUT addresses food insecurity amongst students?

### B) UKZN Lecturers and Student Counseling Centre staff member

1. Do students complain about hunger in classes?
2. Do you think food insecurity amongst students is a serious problem?
3. In which ways have you noticed hunger affecting students' effectiveness in class? (e.g. concentration)
4. Do you know about students who do not have access to food and come to class hungry?

5. (SCC counselor) When food insecure students come to the Centre for assistance, what are the ways in which you help them?
    a. Is this way effective?
    b. What are the ways you would suggest they be helped, if the current system is limited?
6. What are some of the trends you have picked up with teaching food insecure students, if you have noticed that there are students who are food insecure? (e.g. absenteeism)
7. Do you have any further points to make regarding students and food insecurity on campus?

## Appendix 4: Household Food Insecurity Access Scale Questionnaire

| For each of the following questions, consider what has happened in the past 30 days. Please answer whether this happened never, rarely (once or twice), sometimes (3-10 times), or often (more than 10 times) in the past 30 days? | | | |
|---|---|---|---|
| NO | QUESTION | RESPONSE OPTIONS | CODE |
| 1. | Did you worry that you would not have enough food? | 0 = Never<br>1 = Rarely (once or twice in the past 30 days)<br>2 = Sometimes (three to ten times in the past 30 days)<br>3 = Often (more than 10 times in the past 30 days) | ….\|___\| |
| 2. | Were you not able to eat the kinds of foods you preferred because of a lack of resources (money)? | 0 = Never<br>1 = Rarely (once or twice in the past 30 days)<br>2 = Sometimes (three to ten times in the past 30 days)<br>3 = Often (more than 10 times in the past 30 days) | ….\|___\| |
| 3. | Did you eat just a few kinds of food day after day due to a lack of resources (money)? | 0 = Never<br>1 = Rarely (once or twice in the past 30 days)<br>2 = Sometimes (three to ten times in the past 30 days)<br>3 = Often (more than 10 times in the past 30 days) | ….\|___\| |
| 4. | Did you eat food that you preferred not to eat because of a lack of resources to obtain other types of food? | 0 = Never<br>1 = Rarely (once or twice in the past 30 days)<br>2 = Sometimes (three to ten times in the past 30 days)<br>3 = Often (more than 10 times in the past 30 days) | ….\|___\| |
| 5. | Did you eat a smaller meal than you felt you needed because there was not enough food? | 0 = Never<br>1 = Rarely (once or twice in the past 30 days)<br>2 = Sometimes (three to ten times in the past 30 days)<br>3 = Often (more than 10 times in the past 30 days) | ….\|___\| |
| 6. | Did you eat fewer meals in a day because there was not enough food? | 0 = Never<br>1 = Rarely (once or twice in the past 30 days)<br>2 = Sometimes (three to ten times in the past 30 days)<br>3 = Often (more than 10 times in the past 30 days) | ….\|___\| |
| 7. | Was there ever no food at all in where you live because there were not resources to get more? | 0 = Never<br>1 = Rarely (once or twice in the past 30 days)<br>2 = Sometimes (three to ten times in the past 30 days)<br>3 = Often (more than 10 times in the past 30 days) | ….\|___\| |
| 8. | Did you go to sleep at night hungry because there was not enough food? | 0 = Never<br>1 = Rarely (once or twice in the past 30 days)<br>2 = Sometimes (three to ten times in the past 30 days)<br>3 = Often (more than 10 times in the past 30 days) | ….\|___\| |
| 9. | Did you go a whole day without eating anything because there was not enough food? | 0 = Never<br>1 = Rarely (once or twice in the past 30 days)<br>2 = Sometimes (three to ten times in the past 30 days)<br>3 = Often (more than 10 times in the past 30 days) | ….\|___\| |

**Appendix 5: Individual Dietary Diversity Score**

| | | |
|---|---|---|
| Now I would like to ask you about the types of foods that you ate yesterday during the day and at night. READ THE LIST OF FOODS. PLACE A NUMBER 1 (ONE) IN THE BOX IF YOU ATE THE FOOD IN QUESTION. PLACE A *0 (ZERO)* IN THE BOX IF YOU DID NOT EAT THE FOOD. | | |
| A | Any bread, rice noodles, biscuits, or any other foods made from millet, maize, rice, wheat? | A..... \|___\| |
| B | Any potatoes, yams, or any other foods made from roots or tubers? | B..... \|___\| |
| C | Any vegetables? | C..... \|___\| |
| D | Any fruits? | D..... \|___\| |
| E | Any beef, pork, lamb, goat, rabbit wild game, chicken, duck, or other birds, liver, kidney, heart, or other organ meats? | E.....\|___\| |
| F | Any eggs? | F.....\|___\| |
| G | Any fresh or dried fish or shellfish? | G.....\|___\| |
| H | Any foods made from beans, peas, lentils, or nuts? | H..... \|___\| |
| I | Any cheese, yogurt, milk or other milk products? | I..... \|___\| |
| J | Any foods made with oil, fat, or butter? | J.....\|___\| |
| K | Any sugar or honey? | K.....\|___\| |
| L | Any other foods, such as tomato or chilly sauces, coffee, tea? | L.....\|___\| |