

Measuring and Using Pre-University Levels of Student Engagement at a South African
University

Submitted by
Melody Mentz

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Supervisor: Dr J.F. Strydom

Co-supervisor: Dr L. Naude

With this, I declare that the thesis hereby submitted for the PhD in Psychology at the University of the Free State is my own independent work. It has not previously been submitted for any other degree.

In addition, I cede copyright of this thesis in favour of the University of the Free State.

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Abstract

Coupling access with success in South African higher education has become imperative. There is a clear need to identify and rigorously research factors contributing to student success that are within the institutions sphere of influence so that institutional policies and practices can be intentionally aligned and designed to create conditions conducive to success. Student engagement represents a multi-faceted approach to understanding students that focuses almost exclusively on student behaviours and conditions over which institutions can exert a measure of influence. Strongly grounded in a rich history of theoretical work on effective undergraduate education, student engagement offers a concrete, theoretically solid manner in which to understand undergraduate students in South Africa longitudinally with the goal of understanding the factors that contribute to student success.

The overall research objective of this multi-disciplinary study was to investigate how the Beginning University Survey of Student Engagement (BUSSE), a survey administered during the first weeks of the academic year to investigate how measuring levels of student engagement at high school, expectation to engage at university and levels of engagement during first-year can be appropriately used by higher education institutions in South Africa at an institutional and individual level in the context of student success.

The study was conducted over a two year period (2008-2009) at a university in SA amongst first-time entering degree-seeking undergraduate students in a representative sample and makes a unique contribution to understanding engagement and success in South Africa as it is the first study to be conducted using the (BUSSE) in this context and is also the first international application of the instrument to date.

Four research questions related to the overall objective of the study were proposed and investigated through appropriate statistical tests. Acceptable Cronbach coefficient alpha values were obtained for all subscales in both samples, and values were comparable to samples in the US context. Results obtained in the current research study confirm both theory and results obtained in other samples.

It was found that there is a level of consistency between high school engagement and expectations to engage during the first year (although this is not uniform across all types of activities). Female students consistently report higher levels of engagement at high school and higher expectations for engagement at university. There is some evidence to suggest differences between students from different racial groups (higher levels of engagement and expectation from Black African students) and an interaction between gender and race in terms of high school engagement and expectations to engage during the first year.

As expected based on the literature, student expectations to engage during their first year exceeded their actual levels of engagement, confirming the notion of the “freshman myth”. However, despite this disjuncture, there is evidence to suggest that students tend to engage more frequently in the activities they expected to engage in. Regardless of the differences between Black African and White students in terms of their high school engagement and their expected levels of engagement at university, there is no significant difference in actual levels of engagement during the first year.

The examination of the ability of the engagement variables to predict academic performance and persistence to second year highlighted the methodological and conceptual complexities associated with predicting success, and there were not consistent findings between the two samples.

The results of the study were discussed and interpreted from the perspective of how student engagement data can provide actionable solutions to the institution to contribute to student success in the first year of study.

Keywords: First-year experience, student engagement, student success, expectations

Opsomming

Die verbinding van toegang met sukses in Suide-Afrikaanse hoër onderwys, het noodsaaklik geword. Daar is 'n duidelike behoefte om die faktore binne die institusie se invloedssfeer wat tot studentesukses bydra, te identifiseer en deeglik na te vors, sodat die institusionele beleid en praktyk doelbewus gerig en ontwerp word om toestande wat sukses bevorder te skep. Studentebetrokkenheid verteenwoordig 'n multigefasetteerde benadering tot die verstaan van studente, wat amper uitsluitlik fokus op studentegedrag en toestande waarop institusies 'n mate van invloed het. Studentebetrokkenheid, wat op 'n ryk geskiedenis van teoretiese werk rondom effektiewe voorgraadse onderwys gebaseer is, bied 'n konkrete, teoreties soliede manier om voorgraadse studente in Suid-Afrika longitudinaal te verstaan, met die doel om die faktore wat bydra tot studentesukses te verstaan.

Die algehele navorsingsdoel van hierdie multidissiplinêre studie, was om ondersoek in te stel rondom die manier waarop die Beginning University Survey of Student Engagement (BUSSE) - 'n opname wat gedurende die eerste weke van die akademiese jaar toegedien word om vlakke van studentebetrokkenheid op hoërskool, verwagting om op universiteit betrokke te wees, en vlakke van betrokkenheid gedurende die eerste jaar te meet - toepaslik op 'n institusionele en individuele vlak binne die konteks van studentesukses deur hoër onderwysinstansies in Suid-Afrika gebruik kan word.

Die studie is binne 'n tweejaar tydperk (2008-2009) onder 'n verteenwoordigende steekproef van voorgraadse studente, wat vir die eerste keer ingeskryf en 'n graad nagestreef het by 'n universiteit in SA, uitgevoer. Hierdie studie maak 'n unieke bydra tot die verstaan van betrokkenheid en sukses in Suid-Afrika, aangesien dit die eerste studie is wat binne hierdie

konteks van die BUSSE gebruik gemaak het, en dit tot op hede ook die eerste internasionale toepassing van hierdie instrument is.

Vier navorsingsvrae, wat verband hou met die algehele doelwit van die studie, is voorgestel en deur middel van toepaslike statistiese toetse ondersoek. Aanvaarbare Cronbach koëffisiënt alfa waardes is vir alle subskale in beide steekproewe verkry, en die waardes is vergelykbaar met steekproewe binne die VSA konteks. Die resultate wat binne die huidige navorsingstudie verkry is, bevestig beide teorie en resultate wat in ander steekproewe verkry is.

Daar is bevind dat daar 'n mate van konsekwentheid tussen hoërskoolbetrokkenheid en verwagtinge om betrokke te wees binne die eerste jaar is (alhoewel dit nie dwarsoor alle tipes aktiwiteite gelykvormig is nie). Vroulike studente het konsekwent hoër vlakke van betrokkenheid op hoërskool en hoër verwagtinge rondom betrokkenheid op universiteit gerapporteer. Daar is sekere bewyse wat verskille tussen studente van verskillende rassegroepe aandui (hoër vlakke van betrokkenheid op hoërskool en hoër verwagtinge rondom betrokkenheid op universiteit onder Swart Afrika-studente), en wat ook 'n interaksie tussen geslag en ras in terme van hoërskoolbetrokkenheid en verwagtinge om deel te neem gedurende die eerste jaar aandui.

Soos op grond van die literatuur verwag, het studente se verwagtinge om betrokke te wees gedurende hulle eerste jaar hul ware vlakke van betrokkenheid oortref, wat die idee van die “groentjie mite” bevestig. Maar, ten spyte van hierdie disjunksie, is daar bewyse wat aandui dat studente geneig is om meer gereeld deel te neem aan aktiwiteite waaraan hulle verwag het om deel te neem. Ongeag die verskille tussen Swart Afrika- en Wit studente in terme van hul hoërskoolbetrokkenheid en hul verwagte vlakke van betrokkenheid op universiteit, is daar geen beduidende verskil in die ware vlakke van betrokkenheid gedurende die eerste jaar nie.

Die ondersoeking van die vermoë van die betrokkenheidsveranderlikes om akademiese prestasie en volharding tot tweede jaar te voorspel, het die metodologiese en konseptuele kompleksiteite wat met die voorspelling van sukses geassosieer word na vore gebring, en daar was nie konsekwente bevindinge tussen die twee steekproewe nie. .

Die resultate van die studie is bespreek en geïnterpreteer vanuit die perspektief van hóé data rondom studentebetrokkenheid uitvoerbare oplossings vir die institusie kan bied om sodoende tot studentesukses in die eerste jaar van studie by te dra.

Sleutelwoorde: Eerstejaarsondervinding, studentebetrokkenheid, studentesukses, verwagtinge.

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List of Acronyms

ANOVA	Analysis of variance
AUE	Actual university engagement subscale
BCSSE	Beginning College Survey of Student Engagement
BUSSE	Beginning University Survey of Student Engagement
CESM	Classification of education subject matter
CHE	Council on Higher Education
DHET	Department of Higher Education and Training
DoE	Department of Education
EUE	Expected university engagement subscale
FET	Further Education and Training
FTE	Full-time equivalent
FYE	First-year experience
GET	General Education and Training
HE	Higher education
HESA	Higher Education South Africa
HET	Higher Education and Training
HEQF	Higher Education Qualifications Framework
HSE	High school engagement subscale
HSRC	Human Sciences Research Council
ICT	Information and communication technology
LGBT	Lesbian, gay, bisexual and transsexual
LSSE	Lecturer Survey of Student Engagement

NCHE	National Commission on Higher Education
NCHEMS	National Centre for Higher Education Management Systems
NFF	New funding framework
NQF	National Qualifications Framework
NRF	National Research Foundation
NSC	National Senior Certificate
NSSE	National Survey of Student Engagement
NPHE	National Plan for Higher Education
NSFAS	National student financial allocation scheme
OBE	Outcomes-based education
OECD	Organisation for Economic Cooperation and Development
OLS	Ordinary least squares
PIRLS	Progress in reading and literacy study
SA	South Africa
SAQA	South African Qualifications Authority
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SAJHE	South African Journal of Higher Education
SASSE	South African Survey of Student Engagement
SAPSE	South African Post-Secondary Education
SDS	Student Development and Success
SES	Socio-economic status
TIMSS	Trends in International Mathematics and Science Study
UNESCO	United Nations Educational, Scientific and Cultural Organisation

UFS University of the Free State

US United States

VIF Variance inflation factor

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Chapter 1: Introduction

Improving student success in higher education (HE) is important to individuals (Branson, Leibbrant & Zuze, 2009), institutions (Scott, 2004; Steyn & de Villiers, 2007) and societies – particularly developing economies such as South Africa (SA) (Higher Education South Africa [HESA], 2010; Moleke, 2005). For individuals, obtaining a HE qualification is associated with higher earnings, as well as improved overall quality of life and standard of living (Branson, et al., 2009; Cloete, 2009). Within the broader society, HE has a fundamental role to play in building a vibrant democracy, promoting transformation and social justice, as well as contributing to the country’s economic growth and competitiveness (Council on Higher Education (CHE), 2004; Scott, 2004; Van Heerden, Bohlmann, Giesecke, Makochekanwa, & Roos, 2007). In this context, one of the key deliverables for the HE sector in SA today is to produce an “appropriate number and mix” of high-quality graduates (CHE, 2009; Scott, Yeld, & Hendry, 2007) who can act as responsible citizens in a democratic society achieving their own potential, whilst concurrently contributing towards the overall good of the country (CHE, 2004). Given that the HE sector is largely funded by government and enrolled students, unspoken social contracts and government regulatory policies will continue to hold HE institutions accountable for the quality of education they provide and their ability to successfully educate the nation in the foreseeable future (CHE, 2009; Miller, Bender, & Schuh, 2005).

1.1 Massification, Diversity and Student Success

Locally and internationally, the massification of HE has led to an increasingly diverse student population (Altbach, Reisberg, & Rumbley, 2009; CHE, 2004) with a vastly different profile than 20 to 30 years ago. This rapidly growing and diverse student population has presented HE systems worldwide with many new challenges – one of the most prominent of

these challenges being to couple access into HE with success after enrolment. The United Nations Educational, Scientific and Cultural Organization (UNESCO) report on HE (Altbach et al., 2009) acknowledges that true progress in the sector can no longer to be measured by the participation rates of diverse groups, but by the ability of all population groups to participate in HE with similar levels of success. In many respects, student success in HE has become one of the primary criteria by which institutions are judged (HESA, 2010; Levitz & Noel, 2002; Pike & Saupe, 2002).

However, to date this equity in outcomes for diverse groups in HE has remained an elusive ideal, and poor student performance in undergraduate education is a problem internationally and nationally (ACT, 2010; Knapp, Kelly-Reid, & Ginder, 2011). Even more disconcerting is the large disparity in the success rates of diverse demographic groups (e.g. race, gender, SES) (Bowen, Chingos, & McPherson, 2009; Carey, 2008; Scott et al., 2007) (a comprehensive discussion on the performance of students in South African HE is provided in Section 2.1.2.3). Worldwide and in South Africa, the experience of students in their first year of study is of particular concern because the majority of students who drop out of HE do so in their first year (ACT, 2010, Department of Education, Training and Youth Affairs, 2000; MacGregor, 2007; Scott, 2009b). Thus, institutions aiming to improve outcomes in undergraduate education for diverse groups should focus attention on intentional institutional efforts to effectively intervene during the first-year (for a comprehensive discussion on the importance of the first year in HE refer to Section 2.3).

Unfortunately, the situation of increasing student numbers, highly diverse student populations and poor student performance is unlikely to change in the foreseeable future. The Organisation for Economic Cooperation and Development (OECD) identified several key

international trends in HE for the period to 2030 (OECD, 2008a) and predict that student participation and HE systems overall will continue to grow and that the profile of the “typical student” will continue to change (i.e. there will be greater numbers and mix of international students, older students and part-time students). They conclude that, taken together these trends will necessitate that attitudes and policies relating to access and how to accommodate diverse groups in HE successfully will inevitably become more central to national and institutional debates.

This continued trend of increased participation and diversity will emerge as particularly relevant in regions where access to HE remains the domain of the privileged classes, most specifically on the African continent. Overall HE participation in Africa has improved only marginally and sub-Saharan Africa has the lowest participation rate in the world (Altbach et al., 2009; Teferra & Altbach, 2004). In South Africa, overall participation rates have improved since 1994 (currently at approximately 16%), but are low when compared to countries with comparable levels of development where the norm is 20% (CHE, 2009; Scott et al., 2007) and very low when compared to developed countries where participation rates range from 60 – 80% (Scott, 2009b). Thus, despite significant improvements in access since democracy the situation clearly calls for a further increase in participation, and it is the goal of the DHET to increase overall participation to 20% by 2016 and to 50% by 2030 (CHE, 2004, 2009; DHET, 2011; HESA, 2010) (a more comprehensive discussion on the growth of HE in SA is provided in Section 2.1.2.2).

In essence, if access with success for expanding and diverse student bodies is accepted as one of the most critical challenges currently facing HE worldwide it then becomes imperative for HE institutions and researchers alike to investigate how to overcome the student success

problem. Current obstacles in the pathways to success and the persisting patterns of underperformance will not change without intentional intervention, and there remains a compelling need for a research agenda to identify conditions within HE that are conducive to success, particularly in the first year of study.

Given the context described above, it is not surprising that the challenge of improved student success in undergraduate education has spurred significant international research. Regrettably, despite its importance, the topic has not received due attention in the South African context (Le Grange, 2009; OECD, 2008b). However, even in countries such as the United States (US) where student success is one of the most researched topics (Metz, 2004-2005), little progress has been made in terms of shifting the success rates in the undergraduate education system in the past few decades (Braxton, Breir, & Steele, 2007-2008), and few research findings have been translated into widespread practice (Tinto, 2006-2007). One possible contributor to this conundrum is that although research has identified many factors influencing the success of students in HE (see Chapter 3 for a comprehensive discussion), a number of these factors are outside of an institution's sphere of influence (e.g. first-generational status, race and academic aptitude) (Reason, 2009a). Therefore, it has become critical for institutions to rigorously investigate the factors impacting on student success over which they do have a measure of influence, and thereafter invest human and financial resources accordingly.

1.2 Student Engagement: Areas within the Institutions Sphere of Influence

Recent research in the US proposes that one such area under the institution's sphere of influence is student engagement (see Chapter 4 for a comprehensive discussion). Studies suggests that a large proportion of the variance in student performance in the first year is directly related to the student experience on campus (Pike & Saupe, 2002), and as a field of study student

engagement taps into this domain of behaviours. The primary premise upon which the study of student engagement is based is that what students do during their time in HE (i.e. the nature and quality of their educational experience) is more important than who they are when they arrive on campus, and makes a significant contribution to student success (Kuh, Kinzie, Schuh, Whitt, & Associates, 2005c). Support for this premise is found in various studies in the US which have linked higher levels of student engagement to improved academic performance and retention in the first year of study, and have also found compensatory effects for at-risk student populations (e.g. race, first-generation, commuters etc.) (Bowen et al., 2009; Carini, Kuh, & Klein, 2006; Gonyea, Kuh, Kinzie, Cruce, & Nelson Laird, 2006; Greene, Marti, & McClenney, 2008; Kuh et al., 2007a; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Kuh, Kinzie, Cruce, Shoup, & Gonyea, 2007b; Miller, 2008; Pascarella, Seifert, & Blaich, 2009; Pike, Kuh, McCormick, & Ethington, 2007; Svanum & Bigatti, 2009). Given these findings, research on student engagement as a means to understand student success during the first-year in South Africa would be prudent, particularly in the light of the need to support increasingly large numbers of diverse students, many of who can be classified as at-risk (see discussion in Chapter 2).

However, not all students engage with and in their education at similar levels, and it is thus important for institutions to understand the factors associated with higher levels of engagement in the first year so that they can intentionally design campus environments in a manner that facilitates engagement – ultimately contributing to student success. Two factors known to influence actual levels of engagement in the first year of study are past engagement at high school and expectations to engage during the first-year of study (Cole & Korkmaz, 2010) (both of these factors will be expanded upon fully in Chapter 4).

Evidence for consistency between behaviour in past and future educational contexts implies that high school engagement represents, at least to some extent, a student's predisposition to engage in higher education (Cole, Kennedy, and Ben-Avie, 2009), and it can therefore be expected that students' patterns of engagement during high school will translate at least to some degree into the patterns of engagement during the first year in HE. Additional to this link between past and future behaviours, there is also a relationship between expectations to engage and actual levels of engagement in new educational contexts, where students who expect to engage more, actually do engage more (Kuh, Gonyea, & Williams, 2005a). Thus, by understanding student patterns of engagement at high school and expectations to engage during the first year, institutions can purposefully manage and design the educational environment in a manner which facilitates high levels of engagement (Gonyea et al., 2006).

However, despite the conceptual link between past and future behaviour, there remains relatively little research on the relationship between high school and HE engagement (Davey, 2010). Furthermore, to date, there are few sources of reliable data (both nationally and internationally) on students' expectations for their university experience and on how these expectations influence their campus experience during the first year, as well as how their academic performance and persistence is affected by the aforementioned (Ewell & Jones, 1996; Kuh et al., 2005a; Scott et al., 2007). The lack of research in both of these areas highlights the need for research studies such as the current project, specifically in the South African context.

One way for institutions to understand the past behaviours and expectations of their entering first-year students is to systematically assess students as they arrive on campus. This type of systematic assessment of students within their first weeks of arriving at university is one of the principles of good practice in the first year (Upcraft, Gardener, & Barefoot, 2005), and is

particularly appropriate in SA where no such systematic assessment and research strategy has been implemented to date (Scott, 2009b).

Student engagement surveys, for example the Beginning University Survey of Student Engagement (BUSSE), are an example of how institutions can systematically gather information on students' high school experiences and expectations upon entry into HE (see Chapter 5 for a comprehensive discussion on measuring student engagement). One of the key benefits of the student engagement surveys is that they provide data about domains of behaviour within the institution's sphere of influence which are actionable almost immediately within an institution and can be used as part of the broader institutional research agenda (see Chapter 5 for a detailed discussion). For the purposes of introduction, examples of how the data can be used include: provision of individual level data for diagnostic purposes; identification of at-risk student groups; supplemental information for the design of student tracking systems; the development of predictive models that can be used to inform policy decisions; a deepened understanding of student experiences and perceptions that can be used in longitudinal research; the creation of educationally effective programs for new students and at-risk groups; the nuanced design of support programmes for diverse students; up-to-date relevant cohort information to inform staff development programmes and realign teaching and learning methodologies for a new generation of students; and, relevant information for the purposes of strategic planning and management (Allen, 1999; Cole et al., 2009; Gonyea et al., 2006; Hurter & Oakes, 2010; Kuh, 2007; Miller et al., 2005; Murtaugh, Burns, & Schuster, 1999; Nel Troskie-De Bruin, & Bitzer, 2009; Swing, 2004; Tinto, 1993; Upcraft et al., 2005).

As is illustrated above, the BUSSE data has value both as a standalone assessment tool and when supplemented with other sources of institutional information. In this context it is also

important to note that the BUSSE is specifically designed to be used in conjunction with the South African Survey of Student Engagement (SASSE), which measures actual levels of engagement and is currently being used on a national level to contribute to the discussion on student success and quality teaching and learning in HE (Strydom & Mentz, 2009, 2010).

The current research study contributes to the understanding of student success in the South African context by investigating the usefulness of the BUSSE to assess past engagement and expectations to engage, as well as examining the relationship between pre-university engagement, expectations to engage and student success among first-time entering undergraduate students at a South African institution. This cross-disciplinary study bridges the fields of HE studies and psychology, and is unique in that no research using this specific measurement instrument has been conducted to date in the South African context. In fact, the contextualisation of the BUSSE in South Africa is the first international adaption of the parent survey the Beginning College of Student Engagement (BCSSE) which is widely used in the US (J. Cole, Personal Communication, 12 April 2011).

The following section will provide an overview of the thesis by stating the research problem and objectives, briefly describing the research methodology that will be employed and providing a chapter outline.

1.3 Overview of the Current Research Study

1.3.1 Research problem and methodology overview.

Based on the rationale presented in this chapter, the current study aims to use the BUSSE, a student engagement survey administered during the first weeks of the academic year over a two year period to investigate how measuring levels of student engagement at high school, expectation to engage at university and actual levels of engagement during first-year can be

appropriately used by higher education institutions in South Africa on an institutional and individual level in the context of understanding student success. This broad objective will be achieved by investigating a number of related research questions outlined below.

Given the evidence in the US for stability in student engagement scores from year-to-year (Kuh, 2001; NSSE, 2010e) it was decided to conduct the study over a two year period (as opposed to a single administration in one year) to observe if a similar trend is found in the SA context.

Research question 1: *Can engagement at high school and expectation to engage in educationally purposefully activities at university be meaningfully measured among first-year students in SA?*

The first research question deals with how engagement at high school and expectation to engage in educationally purposefully activities at university can be meaningfully measured among first-year students in SA. This question will be answered by the examination of the psychometric properties of the data obtained from the 2008 and 2009 administrations of the BUSSE, and by providing a detailed discussion related to the establishment of a unified validity argument for the use of the BUSSE in South Africa. Given that the survey has not been administered in South Africa before, this study represents the first examination of the psychometric properties of the BUSSE in this context.

Research question 2: *What are the engagement and expectation profiles of first-year students at a university in central South Africa, and do these differ by gender and race?*

The second research question investigates the engagement and expectation profiles of first-time entering students at a university in the Free State (South Africa). This research question will be addressed by means of both descriptive and inferential statistics. The discussion

will highlight salient item findings, descriptively discuss the two subscales and draw parallels between the 2008 and 2009 samples. Student engagement profiles will be further investigated from the perspective of race and gender by testing for significant differences in the mean scores for each group by conducting a two-way factorial ANOVA.

Research question 3: *What is the difference between expectations to engage, engagement at high school and actual engagement levels among first-year students, and does this differ by gender and race?*

The third research question investigates the difference between first-year expectations to engage, engagement at high school and actual engagement levels among first-year students. In order to address this question individual level scores on two measures of engagement will be matched and significant differences investigated by means of a mixed between within-group ANOVA. Again, this question will be further addressed by investigating the differences in the scores on the two engagement measures for race and gender. In order to complete this section of the analysis BUSSE participants will be matched with SASSE responses.

Research question 4: *Do student's engagement expectations and high school engagement accurately predict academic performance and persistence at the end of the first-year of study, after controlling for past academic performance and selected demographic variables?*

The fourth research question investigates whether student engagement expectations and high school experiences can effectively be used to predict two quantitative student outcomes at the end of the first-year of study. The two outcomes that have been selected are whether or not the student returns the following year to continue studying (an indication of retention) and the percentage of credits enrolled for that a student has passed as an indicator of academic performance. In order to predict retention, a logistic regression will be conducted as it is the most

appropriate method when the predictor variables include both discrete and continuous variables and the researcher wants to control for additional variables (in this case gender, race and high school academic performance) (Tabachnick & Fidell, 2007). In order to predict academic performance, multiple linear regression will be utilised as it is the most appropriate method to use when predicting a continuous variable from a number of predictors whilst controlling for the effect of variables selected by the researcher (in this case gender, race and high school academic performance) (Tabachnick & Fidell, 2007).

An overview of the broad content of the thesis is given in the section below.

1.3.2 Outline of the thesis.

This section gives an indication of the outline of the thesis in the form of a broad overview. Chapter 1 has provided the rationale for the study, described the research questions posed in the study and outlined briefly the methodology that was employed in executing the research. Chapter 2 will provide a description of the context in which the research project was conducted by describing the South African HE landscape, as well as by discussing key characteristics of modern day student populations. Chapter 3 will focus on student success in HE by conceptualising student success (in broad terms and in the context of the current study). The chapter investigates the concept of student success further by elaborating on the various theories and perspectives on student success. It concludes by examining the factors that contribute to success in undergraduate HE.

This discussion on the contributors to student success is continued in Chapter 4 where a detailed description of student engagement as a domain of constructs useful for understanding student behaviours contributing to success in HE is provided. This chapter will define the key constructs related to student engagement by discussing student behaviours and institutional

conditions associated with student success. After examining the link between success and engagement, the chapter discusses two of the factors influencing engagement in the first-year namely engagement during high school, expectations to engage during first-year.

Chapter 5 discusses the measurement and practical application of student engagement data by introducing the most widely used surveys to measure engagement prior to and during the first-year. The contextualisation of these measures to the South African context is discussed and examples are given of how the data can be used at the institutional and individual level.

Chapter 6 provides an in-depth discussion of the methodology employed in the research project. This discussion includes a description of the research design, the sampling procedures, the characteristics of the respondents and the survey instrument. After the survey instrument and its subscales have been introduced, the chapter examines the psychometric properties of the data in the two administrations.

Data analyses answering the research questions posed by the researcher in this study are addressed systematically in Chapter 7. Thereafter, Chapter 8 discusses the major research findings in this study and makes relevant recommendations for future research. Finally, the primary limitations of the current research project are presented along with future recommendations and a summative conclusion of the research project is given.

Chapter 2: South African Educational Context and Modern Day Student Populations

As mentioned in the introduction, the shift to a post-industrial society and the emergence of the knowledge economy has led to significant growth in global HE – in fact, the massification of HE has been signalled as one the most noteworthy HE trends of the latter 20th century (Altbach et al., 2009).

Locally and internationally, this significant growth has led to an increasingly diverse student population. Formerly, access to HE was typically restricted to a privileged minority who entered HE immediately after high school, relied on their parents to fund their postsecondary education and only worked part time (if at all). Modern student populations are drastically different, and the majority of undergraduate students in the US no longer fit this “traditional classification” (Choy, 2002). In SA, the abolition of Apartheid policies was an expediting factor that contributed greatly to significant shifts in the demographic diversity of the student body. A comprehensive discussion supporting this is provided in Section 2.1.2.2.

As stated previously, this rapidly growing student population with its increasing levels of diversity has presented HE systems with one of its most critical challenges – improving the access to success ratio (Altbach et al., 2009; HESA, 2010; Levitz & Noel, 2002; Pike & Saupe, 2002). To date this equity in outcomes, particularly for diverse groups, has remained an elusive ideal, and poor student performance in undergraduate education is a problem both nationally and internationally. In the US, studies indicate that less than a third of degree seeking students graduate from public higher institutions in the regular 4-year period (Knapp, Kelly-Reid, & Ginder, 2011) and less than 50% of undergraduate students (US) graduate within 5 years (ACT, 2010).

The large disparity in the success rates of diverse demographic groups is even more concerning (Carey, 2008). In the US, students from higher socio-economic status (SES) categories are nearly five times as likely to earn a degree as students from lower SES categories; White and Asian students are more likely to graduate than Black or Hispanic students are, and the interaction between gender and race indicates that females within all groups are more likely to graduate than males of the same race/ethnicity. Regrettably, despite various attempts to overcome these differences, there has been no significant narrowing of these attainment disparities (Bowen et al., 2009).

The overall persistence and graduation rates in SA are similarly disconcerting with only an estimated 45% of students eventually graduating, and significant differences between Black and White students persist (Scott et al., 2007) (a comprehensive discussion on the performance of students in South African HE is provided in Section 2.1.2.3). In order to highlight the relevance and urgency of this challenge in South Africa, a contextual overview of education in South Africa is provided below.

2.1 South African Education: A Contextual Overview

In order to understand the complexity of the student success problem and the multiplicity of factors impacting on student outcomes in South African HE, it is necessary first to understand the local historical and social contexts the sector is embedded in. In light of the fact that school level education is inseparable from the problems currently facing the HE system, brief comments on school education are provided in the following section. First, as a means of introduction, brief comments about the overall structure and financing of the South African education sector as a whole are made.

South African education (school level and HE) is currently structured according to the National Qualifications Framework (NQF) and the Higher Education Qualifications Framework (HEQF). The NQF has 10 levels: level 1 falls under General Education and Training (GET) encompassing grades 1 through 9. Levels 2 (grade 10), 3 (grade 11) and 4 (grade 12) are classified as Further Education and Training (FET), and encompass both FET schools and FET colleges (South African Qualifications Authority (SAQA), 2006; South African Qualifications Act, 1995). However, some FET colleges that offer programmes for higher education institutions may have additional programmes that take the qualification up to Level 5 (OECD, 2008b). The remaining levels (5 to 10) are considered Higher Education and Training (HET), where Levels 5-7 encompass undergraduate degrees and levels 8-10 refer to postgraduate qualifications (Department of Education (DoE), 2007). Hereafter, the GET and FET sectors are collectively referred to as the South African school system.

SA's current spending on education is only slightly lower than the UNESCO benchmark for government spending on education, which is benchmarked at 6% (OECD, 2008b). HE is primarily funded by government subsidy, and annual spending on HE has increased steadily since 2004. However, whilst overall spending on HE as a percentage of national gross domestic product has improved since 2004, the percentage share of the national budget has declined (CHE, 2009). Despite this relatively large financial investment in overall education, the system is plagued with inefficiencies and large scale inequalities (as will be illustrated below) that pose a real threat to the socio-economic growth and development in the country if left ignored.

2.1.1 South African school system.

Prior to 1994 the highly fragmented school system was a vehicle for the promulgation of inequality and sustaining the superior position of White South Africans. This was achieved by

biased allocation of resources (human and financial) within the school system, and by limiting the exposure of non-White South Africans to high quality educational opportunities (OECD, 2008b).

After the election of the first democratic government in 1994, large scale reform of the school system took place in terms of structure, financial spending and curricula. As part of the drive to decrease the level of fragmentation and to create a single, seamless coordinated system of education, the school system was realigned to form part of the NQF (as previously discussed) and a fundamental overhaul of the curricula was undertaken in 1994. The end result of these changes culminated during 2008 when, for the first time, all learners in the school system nationally had precisely the same curriculum. This radical curriculum change was introduced in 1997 as Curriculum 2005 (later revised in 2002 to be the Revised National Curriculum Statement) (OECD, 2008b).

One of the key philosophical changes was the move away from the former aims and objectives approach to an outcomes-based approach to education (OBE) (Umalusi, 2008). Since its inception, OBE has sparked widespread controversy. Criticisms have been levelled simultaneously at the structure, content, assessment strategies, as well as the implementation of the curriculum model (Bloch, 2009; Jansen & Christie, 1999; OECD, 2008b). The first cohort of students to have completed their National Senior Certificate (NSC) entered HE at the start of 2009 amidst considerable controversy and evidence suggesting that the curriculum had not adequately prepared them for HE (Parliamentary Monitoring Group, 2009; Paton, 2009; Prince & Yeld, 2010; Yeld, 2007).

Regrettably, there is extensive evidence to confirming that learners throughout the school system are underperforming and not well-prepared – particularly in the areas of Mathematics and

Science. South African learners consistently underperform on international skills tests in the GET sector. For example in the Trends in International Mathematics and Science Study (TIMSS), SA ranked the lowest of all participating countries in both 1999 and 2003, and lower than 12 other sub-Saharan African states (Howie, 1999; Mulis, Martin, Gonzalez, & Chrostowski, 2004). Evidence confirming these low proficiency levels can be found by examining results on standardised tests such as the Monitoring Learning Achievement study (UNESCO's Education for All project), the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) study of Grade 6 learners, the Progress in Reading Literacy Study (PIRLS) (Bloch, 2009). Most recently, the Annual National Assessments project in South Africa (Department of Basic Education, 2011) which involved the testing of all learners in public schools in Grades 2 to 7 to assess learner performance by means of standardised tests suggests that the quality of basic education is still well below what it should be and that many challenges continue to face the sector. The 2011 Annual National Assessments (ANA) found that the percentage of learners who could demonstrate at least the 'achieved' level of performance varied from 12% to 31% depending on the grade level and subject under consideration.

In 1996, schooling until the age of 15 became compulsory in SA, and great progress towards this goal has been made. Almost universal enrolment in the compulsory grades has been achieved, with the majority of learners successfully completing grade 9 at some point. However, from the age of 16 (i.e. the FET sector) the proportion of young people enrolled in school begins to decline drastically, to the extent that only about 50% of the relevant age cohort takes the Grade 12 exam on an annual basis (OECD, 2008b).

Of this already low overall percentage of students who take the exam, many do not perform satisfactorily. After an initial promising increase in Grade 12 pass rates from 1998 till

2003, the percentage of students passing their Grade 12 exams has been declining since 2003, and reached its lowest point in almost a decade in 2009 with only 60.6% of students passing (MacGregor, 2010; OECD, 2008a).

Additional to low Grade 12 pass rates, not all of the students who pass their Grade 12 exam are eligible to enter HE. The *Human Resources Development Review* (Breier & Mabizela, 2007) for the period 2002-2004 indicates that a total of 451,000 Grade 12's wrote the Senior Certificate Examination, but only 81,000 of these obtained endorsement to go to University. Although this represents an improvement from the prior review period (2000-2004) (Subotsky, 2003), the number of students eligible for HE remains low. By 2007 the overall percentage of endorsed passes had fallen to 15.1% (OECD, 2008b) and in 2009 a total of 19.8% of Matriculants obtained a bachelors pass¹, enabling them to enter HE (MacGregor, 2010).

Conflating even further the problems of inadequate academic preparation, low Grade 12 pass rates and ineligibility is the fact that only a percentage of those eligible to enrol in HE actually do so. Both *Human Resource Development Reviews* (Breier & Mabizela, 2007; Subotsky, 2003) mentioned above, state that approximately 20% of those who qualified to enter HE actually did so at least one year after matriculating.

The net impact of all the factors discussed above, is that universities are left with no choice other than to accept underprepared students from a relatively small pool of candidates who are not well equipped to cope with the academic demands of HE (Hunt, Rankin, Schoer,

¹ Passing with endorsement was the required minimum criteria for entrance into HE prior to the implementation of the NSC and a Bachelors pass in the NSC is the equivalent of an endorsed pass in the old curriculum.

Nthuli, & Sebastiao, 2009; MacGregor, 2009a, 2010; OECD, 2008a). Tragically these students often end up becoming academically marginalised and disadvantaged in HE – a situation which leaves them at-risk of dropping out before the completion of their degree.

2.1.2 South African higher education.

This section will provide the historical and social context of HE in SA by paying attention to HE prior to 1994 and the key changes that have taken place after 1994.

Similar to the pre-1994 school system, HE under the Apartheid regime was designed specifically to maintain the social, political and educational advantage of White students through a privileged and superior educational system, whilst limiting access to resources and high-quality learning for students of colour. One of the key characteristics of HE under the Apartheid government was the skewed investment of resources in the system which was divided clearly along racial lines and for the most part, students of one group did not have access to the educational structures of students in other groups (CHE, 2004; Lange, 2006; Letseka & Maile, 2008; OECD, 2008b). Overall participation rates in HE were low, did not reflect the true demography of the country and did not contribute to the skills development needed for sustained growth and development in the country (Lange, 2006).

Apart from the divide in the system along racial lines, institutions were further classified in terms of their typology (universities, technikons and colleges). Each typology was divided along racial lines, had their own qualification structure and awarded divergent qualifications (OECD, 2008b). One of the most significant changes in the HE landscape post-apartheid has been the radical restructuring of the sector through the mergers and incorporations in 2004 (Jansen, Herman, Matentjie, Pillay, Schoole, & Weber, 2007) from 306 separate higher education institutions (private and public) to around 70 new institutions (Jansen et al., 2007;

OECD, 2008b). The new public HE landscape consists of 23 public HEI's: 11 "traditional" universities (focus on research and a mix of discipline-based and professional degree qualifications); six universities of technology (focus on a mix of technological, vocational, career-oriented and professional programmes leading to a certificate, diploma or degree); and six "comprehensive universities" that combine both types of HEI's (CHE, 2004).

Within this dynamic new HE environment, a number of key policy developments have contributed to the rapid expansion of student enrolments, and over time have shifted the emphasis within the sector from widening access, to providing access with success. These policy developments and their implications are highlighted briefly below.

2.1.2.1 Key policy developments in higher education.

After the first democratic elections in 1994, the African National Congress announced a framework for education based on the principles of non-racialism, non-sexism, democracy, redress and a unitary system of education administered by a single national department (CHE, 2004; Republic of SA, 1996, Article 3:4). The transformation of HE from its former fragmented state began with the National Commission on Higher Education (NCHE) in 1994. This landmark process resulted in the NCHE report entitled *A Framework for Transformation* (NCHE, 1996), which was "widely acclaimed both domestically and internationally, (and) regarded as a model tertiary² education policy document" (OECD, 2008b, pp.328). The report proposed a single unified system to facilitate and enable effective and efficient increased participation in HE as a means to begin addressing the vast inequalities of the system through a process of massification

² The term tertiary education can be used interchangeably with higher education.

(NCHE, 1996). The *Education White Paper 3: A Programme for the Transformation of Higher Education* (DoE, 1997) set out policy for this transformation of HE, after which a period of significant growth in HE enrolments followed (OECD, 2008b).

Despite these radical policy reforms and the institutional mergers, the inequalities between historically advantaged and disadvantaged institutions remained pervasive and difficult to overcome. In an effort to address this, the National Plan for Higher Education (NPHE) was developed. It contained detailed, specific goals on a number of key issues including improving efficiency in terms of graduation rates (i.e. focussing on success), and ensuring quality of education provision (DoE, 2001). Resulting from the NPHE, the DoE has sought to achieve its goals by introducing various mechanisms for steering the sector (Scott et al., 2007).

One of the primary steering mechanisms currently employed is funding. Where funding prior to 1994 enabled the perpetuation of inequality, funding post-1994 initially focussed on promoting access for historically disadvantaged groups and serving the goal of massification through a formula-based system of resource allocation, distributed through the South African Post-Secondary Education (SAPSE) (Steyn & De Villiers, 2007). However, over time the NPHE recognised the role that funding should play in meeting the national education objectives and by 2003 the new funding framework (NFF) had been announced. The NFF aimed to be ‘goal-oriented’ (linking funding to the achievement of national policy goals), ‘performance-related’ (linking funding to accountability for research and teaching outputs through the subsidy formula), and aimed to promote institutional and social redress through various forms of earmarked funding (CHE, 2004). Although the formula has received criticism on various levels (Bundy, 2006; Cloete, Fehnel, Maassen, Moja, Perold, & Gibbon, 2002), it served to move the

focus in the HE sector from a narrow-minded focus on access, to a more comprehensive focus on providing access with success.

In light of the key policy developments described above, the discussion below shows that although the goal of widening access to HE for historically disadvantaged groups has to some degree been accomplished, the ideal of equity in student outcomes has not been attained and has become one of the most critical factors facing the sector.

2.1.2.2 Enrolment patterns and participation rates in South Africa.

As noted earlier in the introductory remarks, internationally massification has been a key driver of transformation and has contributed to the creation of some of the most fundamentally challenging situations facing HE institutions today (Altbach et al., 2009; Krause, 2005b).

In SA, in line with the international trend of expanding enrolments, the overall gross participation rate³ in public HE increased in the period from 1996 to 2006 from 14% to just over 16% (OECD, 2008b). Of critical concern however is that participation rates continue to vary vastly between racial groups, where as many as 55-64% of the White age cohort is enrolled in HE, and as few as 12% of the Black African cohort is (CHE, 2009; Scott et al., 2007).

However, an examination of longitudinal enrolment data illustrates that the overall demographic profile of the students enrolling at institutions has changed drastically over the past 15 years, both in terms of race and gender. Enrolments for the Black African and Coloured cohorts have more than doubled since 1994, and these two groups of students currently comprise more than 70% of the total enrolments in South African HE (Scott, 2009b). There are now more

³ The method used to determine the gross participation rate is to express the total higher education enrolment as a percentage of the 20-24 age group (Scott et al., 2007).

female students in HE than male, and there are now more Black African students enrolled in public HE and fewer White students (Jansen et al., 2007).

Despite the changes in student profiles, there remain some fault lines in the enrolment patterns for female and Black students in SA. For example, access for Black African and female students to the high-status and scarce-skill areas and postgraduate programmes is very limited (Cloete et al., 2002) and Black African students remain enrolled to a large extent in the Humanities and Social Sciences. Sadly these figures reflect that the South African HE system has been unable to break as it should have with pre-1994 enrolment patterns (Scott et al., 2007).

The following section will examine undergraduate student success in SA.

2.1.2.3 Student Success in South African HE.

Similar to international trends, in SA there has been a marked shift in focus from widening access, to providing access with success (Coughlan, 2006). In fact, Scott, et al. (2007) suggests that the improvement of graduate output in SA should now be accepted as the central driver of HE policy, planning and resourcing, and that improving the educational process and experience is fundamental to this outcome. The discussion on student success provided in section below is evidence of why this shift in focus is necessary.

2.1.2.4 Performance of the South African HE system.

An examination of the throughput and graduation rates of the students who are enrolling in SA presents a bleak picture. In their review of South African education, the OECD point out that apart from the historically White English-medium institutions, retention rates for the system have declined after 1997 (OECD, 2008b).

In the only cohort study available to date in SA, Scott et al. (2007) did an analysis of throughput rates (calculated by determining how many students in a given cohort complete their

degrees and graduate within the stipulated time), dropout rates and delayed completion of degrees. The DHET made cohort data available for the study and the researchers tracked the 2000 cohort for the purposes of their analysis. By the end of 2004 (five years after enrolling for the first time), only 30% of the total first-time entering student intake had graduated, a further 56% of the intake had left their original institutions without graduating, and 14% were still in the system. A best estimate of total completion rate (when transfers and those still in the system are taken into account) for the cohort would be 45% (Scott et al., 2007). A study by the Human Sciences Research Council (HSRC) found that on average only 15% of students finished their degrees in the allotted time (MacGregor, 2007). HSRC analysts have estimated that these dropout figures translate to over R3 billion worth of state subsidies annually (Letseka & Maile, 2008).

There are some differences between institutional types in terms of their throughput rates. For example, universities outperform the former technikons, and contact institutions outperform the distance institutions (although there is substantial variation within each sub-sector). The best-performing sub-sector is the contact universities, where a total of 50% of the 2000 intake had graduated by the end of 2004 (Scott et al., 2007). In the cases of both technikons and universities, the completion rates are higher if distance education institutions are excluded from the statistics. However, given that the distance education institutions accounted for 32% of the first-year intake in the 2000 cohort, the success and completion rates of these students cannot be merely considered a by-matter (Scott et al., 2007).

Although these overall performance trends warrant attention, an analysis of throughput rates by race suggests that the yolk of inequality remains a heavy burden carried by many historically disadvantaged students in HE.

Table 1 below, adapted from Scott et al. (2007), indicates the percentage of Black African and White students by the Classification of Education Subject Matter (CESM) category who have graduated after five years (based on the 2000 cohort study).

Table 1

Percentage Black African and White students graduating within 5 years by CESM category

CESM Category	Black African	White
04: Business/Management	33%	83%
08: Engineering	32%	64%
03: Law	21%	48%
12: Languages	26%	65%

Clearly access has not been translated into success for the majority of students. In all the cases above, the Black completion rate is less than half the White completion rate, which essentially serves to nullify the progress made by increasing enrolments. When the overall participation rate of Black students is combined with attrition figures of over 50% and low completion rates, it can be concluded that the HE sector is catering for less than 5% of the Black and Coloured age group (Scott et al., 2007).

Although the scenario of low pass rates and disparities between groups is not unique to SA, the critical difference in the South African context is that the high dropout and low graduation rates take place in a system where there is already low overall participation. Thus, even though similar proportions of students may be dropping out elsewhere, the impact on the sector is far more devastating (Scott, 2009b).

Over the past three decades, a number of institutions have taken action towards addressing the problem of poor performance in the sector through various academic development

initiatives. Originally foundation modules were offered in key subjects with the intention to fill in the gaps between high school and university for students who had the innate ability to succeed in HE, but were educationally disadvantaged. However, by the late 1980's a number of universities had translated these foundation modules into foundation programmes attached to specific degrees (Osongo, 2006; Scott, 2009a). Research into the effectiveness of these extended programmes is not as widespread as it should be, but individual studies point to the academic advantages they afford to students, particularly Black African students (De Klerk, Van Deventer, & Van Schalkwyk, 2006; De Villiers & Rwigema, 1998; Smith, 2009; Steyn & Du Plessis, 2007; Wood & Lithauer, 2005).

A major drawback remains that these programmes are not system wide and have limited funds to tackle a problem which essentially affects the majority of students in institutions across SA (OECD, 2008b; Smith, 2004, 2009). Ultimately, only when systematic approaches to education that are flexible enough to cater for, and adequately support students from a vast diversity of educational and socio-economic backgrounds are implemented will any significant impact on student success be made. In practical terms this will mean a move away from "Band-Aid" approaches towards fundamental changes to curricula structures; the provision of integrated academic support; and a revision of teaching and learning approaches and policy (CHE, 2010; Scott, 2009a).

Along these lines, it is encouraging to note a number of discussions on a national level aimed towards structural and policy changes, such as the investigation into the four-year undergraduate curriculum (MacGregor, 2009a, Scott, 2009a). However, change at the national policy level is a time consuming process (and will never present a cure all solution), and thus institutions cannot afford to wait for systemic level changes as the singular answer to the

problem of student success without investigating viable means to improving student success within their own context.

Finding ways to overcome the problem of poor student performance in the sector is critical when the implications (as discussed briefly hereunder) on both the broader society and higher education institutions are considered.

In the first instance, HE in SA is now faced with an uncomfortable tension. On the one hand there is a need to increase participation in HE so that the country is at least comparable to other developing nations and that the majority demographic groups are proportionally represented across all fields of study. On the other hand, to date, the system has not been able to successfully accommodate those students who are currently enrolled. This tension can only ever be resolved if institutions can systematically identify and implement strategies that enhance student success for diverse student groups who are largely underprepared for higher education – even within the context of increased enrolments (Scott et al., 2007). The implication is that substantial changes to the educational process will have to take place if the situation is to be adequately addressed. Studies such as the current research project have the potential to enhance the sector's understanding of how the needs of diverse students differ, and ultimately contribute to the improvement of the educational process to cater successfully to all groups of students.

Second, given that “HE is increasingly seen as the engine of economic development” (Altbach et al., 2009) if the sector continues to perform as it is currently, the national goals of transformation and redress cannot be attained (Scott, 2009b). Without a major shift in equity of outcomes, the current graduate output will not be able to meet the needs of SA in terms of sustainable economic growth and development, measures of equity and redress in the workplace

will not be adequately implemented (Scott, 2009b), and ultimately the skills shortage that is currently threatening to cripple the country will not be resolved.

Third, for the HE system itself, a real consequence of low success rates in undergraduate programmes is the limited pool of students who will continue to complete their postgraduate qualifications. This in turn will translate into low numbers of high-quality postgraduate students who graduate, leaving South African higher education institutions with an insufficient pool of future academics, particularly from designated groups (Scott, 2009b). SA is lagging behind developed and developing nations in terms of PhD graduation rates (MacGregor, 2009b), and the postgraduate profile remains predominantly White and male (Koen, 2007). Although various projects are currently underway in an attempt to address this gap (HESA, 2009; NRF, 2007) the success of projects such as these depends to a large extent on a pool of high quality successful undergraduates.

2.1.2.5 Need for student success research in South Africa.

Despite the centrality of the access with success dilemma in SA and the broad implications of poor student performance noted above, research on the topic is sparse. In a review of articles published in the past five years in the South African Journal of Higher Education (SAJHE), Le Grange (2009) identified frequently researched themes. Although access was one of them, student success was not. This relative lack of published research on a critical area highlights the need for research (such as the current project) conducted on the topic of student success in South Africa, particularly in the context of the national imperative to increase enrolments, the high dropout rates and the low success rates (particularly for diverse groups).

The compelling need for this type of research in South Africa is reiterated by the OECD (2008b) review report which recommended that South African higher education institutions

embark on pro-active longitudinal studies that will aid the understanding of how external and institutional factors affect student performance and the high attrition rate (OECD, 2008b).

The current research study aims to respond to this research niche by contributing to the knowledge field related to student success in South Africa, and examining how systematic assessment at the institutional level in the first year of study can contribute to improving the undergraduate educational process.

In the context of the student success problem described in the discussion thus far, the following section will examine additional characteristics of modern day student populations which are relevant to the discussion on student success.

2.2 Modern Day Student Populations

Modern day student populations differ significantly from student generations before them. As mentioned previously, internationally the majority of students now longer fit the “traditional” classification (Choy, 2002). The discussion on the shifts in the South African demographic profile of students reflects a significant shift away from the profile of students who were enrolled in HE prior to 1994. The discussion below will discuss at-risk and millennial students as two further subgroups who differ from the “traditional” student profile.

2.2.1 At-risk students.

As student populations continued to change rapidly and low overall success rates continued to plague institutions, research and literature in the US sought to identify and define students at-risk of dropping out in an attempt to understand the student success problem in a more nuanced manner. Although there is no one concise, universal definition of an at-risk student, various traits are associated in the literature with being classified as at-risk in the US. These traits include: being a first-generation student (students who comes from a household

where neither parent nor guardian has earned a baccalaureate degree), being a member of a low SES group, having to support oneself financially, working off-campus/working full-time, having dependants/being a single parent, being a member of an ethnic minority group, being disabled, being a lesbian, gay, bisexual or transsexual (LGBT) student, being a commuter student (students not living on campus), delaying entry into HE, attending college⁴ part-time and being academically underprepared for HE (Johnson et al., 2004; Jones & Watson, 1990; LeSure-Lester, 2003-2004; McEwen, Kodama, Alvarez, Lee, & Liang, 2002).

No formal definition of an at-risk student was identified in South African literature. However, a large proportion of students currently enrolled in HE in SA are first-generation, low SES, students from racial groups historically excluded from HE, commute to campus and are underprepared for HE and could thus plausibly be considered at-risk in the light of the research and definitions provided above for the international context. The many concerns surrounding the levels of academic preparation of matriculating students in South Africa is of particular relevance to the discussion of at-risk students in HE.

2.2.2 Millennial students.

Student bodies have not only transformed in terms of their size and demographic profiles, but have also changed drastically in terms of the expectations they have of educational environments and how they approach learning (Monaco & Martin, 2007) adding an additional layer of complexity to the pursuit of providing access with success to all students. The “millennials” or “Generation Y” students currently enrolled in HE differ from previous

⁴ In the U.S. context the term college is used to refer to higher education institutions. For ease of understanding in the South African context the word university will be used from this point onwards.

generations in that they prefer to work collaboratively, they thrive on active tasks and they are extremely tech savvy (Frاند, 2000; Howe & Strauss, 2000; McGlynn, 2007; Reason, 2009b). Due to the fact that millennial students spend less time on-campus and participating in extracurricular activities than previous generations, the key to creating learning environments that facilitate success for this group is through intentionally designed, integrated classroom and cocurricular experiences that supplement the academic curriculum (Krause, Hartley, James & McInnis, 2005), whilst simultaneously offering them adequate personal support and high quality feedback (McGlynn, 2007; Monaco & Martin, 2007; Reason, 2009b). Given that the majority of this research on millenials has been conducted in the US context, there is some scepticism about the applicability of these findings in other contexts (Kennedy, Krause, Judd, Churchward, & Gray, 2006). Research in the South African context (Wessels & Steenkamp, 2009) found that the majority first-year students could in fact be considered millenials; however it is likely that there are large inter-institutional differences depending on institutional type and context.

Regrettably, the rapid and drastic changes in student populations described in this discussion thus far have not been accompanied by concurrent changes in curriculum, teaching methodologies, staff cohort and administrative systems at South African higher education institutions (CHE, 2010; Scott, 2006). As a result institutions have found themselves inadequately prepared to accommodate the increasing numbers of diverse, at-risk, millennial students they have admitted (Ozga & Sukhnandan, 1998; Scott, 2004). Given the important role that the educational environment plays in contributing to academic performance, rigorous research on the intersection between the characteristics of modern day undergraduate student populations and the HE environment has become a vital component in realising improved undergraduate student success (Hearn, 2006).

In the context of the discussions above, it is not surprising that research on student success has received considerable attention internationally. Within this student success research agenda a great deal of emphasis has been placed on investigating students in their first year of study. As a result, there is now widespread acknowledgement of the important role the first-year of study plays in contributing to academic performance and persistence in undergraduate education. The discussion below highlights various reasons why the first year is critical to ultimate student success, and has thus been selected as the population of interest for the current research project.

2.3 The Critical Role of the First-Year in Student Success

The majority of students who drop out of HE do so during their first-year – a trend which has been confirmed in the US (ACT, 2010), Australia (Department of Education, Training and Youth Affairs, 2000), and South Africa (MacGregor, 2007; Scott, 2009b). This trend is particularly concerning given that persistence to the second year of study is a necessary (although not sufficient) condition for eventual degree attainment. Therefore, institutions aiming to improve outcomes in undergraduate education for diverse groups should include intentional institutional efforts to intervene during the first year in order to curb high dropout.

Although many factors influence a students' decision to drop out, research suggests that failure to negotiate the transition between high school and HE makes a significant contribution to the high dropout rates in the first year (Parker, Summerfelt, Hogan, & Majeski, 2004).

2.3.1 Transition from high school to higher education.

Although making a successful academic and psychological transition from high school to HE remains one of the key rites a student must pass through on their journey to graduation (Terenzini et al., 1994), it places considerable demands on young adults and involves many new

challenges (Fisher & Hood, 1987; McInnis, James & Hartley, 2000; Parker et al., 2004; Terenzini et al., 1994; Tinto, 1993). Some authors have suggested that it is the most challenging phase of the undergraduate academic career (Giddan, 1998), and studies show that certain at-risk groups (such as women, students of colour and first-generation students), struggle more to make the transition (Fisher & Hood, 1987; Terenzini et al., 1994).

The psychological adjustments students must make include the challenge of building new relationships with peers and staff, modifying existing relationships with family and friends, negotiating new lifestyles, mastering time and money management, and learning to live independently (Dyson & Renk, 2006; Paul & Brier, 2001; Terenzini et al., 1994). This psychological transition is so critical that some studies suggest the emotional and social adjustment may initially be more important than academic adjustment in the decision to stay enrolled (Bray, Braxton, & Sullivan, 1999; Nipcon, Huser, Blanks, Sollenberger, Befort, & Kurpius, 2006-2007).

Above and beyond these psychological challenges, students are faced with an entirely new academic status quo for which they are often unprepared. International research in both the US and Australia suggests that students entering higher education are not adequately prepared (ACT, 2004b, 2006; Greene & Forster, 2003; Greene & Winters, 2005, McInnis et al., 2000). Similarly, for the majority of students in SA, the teaching and learning methodologies applied at high schools often do not serve them well as they enter HE (Agar, 1990; Leibowitz, Van der Merwe, & Van Schalkwyk, 2009; Mumba, Rollnick, & White, 2001).

The cumulative effect of the stressful psychological transition and the academically foreign environment contribute to making the first year of study a particularly high-risk transition period. Institutions should pay close attention to the wide variety of strategies they can

employ to promote a successful transition through this critical phase, especially for diverse and at-risk students (Ellinwood, 2003; Lee, Olson, Locke, Michelson, & Odes, 2009; Terenzini et al., 1994), thereby contributing to the ultimate success of the student in HE. Frontloading support during the first year – and particularly the first semester, is one way in which institutions can contribute to assisting first-years to make a successful transition (especially those who start HE with two or more risk factors) (Kuh, 2006; Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007a).

2.3.2 First-year academic performance as a precursor to future performance.

Once students have mastered this critical transition, they are faced with the challenge of performing adequately in the academic tasks presented to them throughout the year.

Successfully mastering their academics during the first year is of critical importance because as much as two-thirds of the gains in knowledge and cognitive skills occur during the first year (Pascarella & Terenzini, 2005; Reason, Terenzini & Domingo, 2006). Furthermore, adequate academic performance during the first year (and in particular the first semester) lays the foundation for future academic success, and has been linked to increased retention and improved graduation rates (Bowen et al., 2009; Edwards & Waters, 1983; Horn & Carroll, 1998; Ishitani, & DesJardins, 2002-2003; Kuh et al., 2007a; Pascarella, Smart, & Ethington, 1986; Ryan & Glenn, 2002-2003; Stratton, O'Toole, & Wetzel, 2005).

Studies in the US have found that as much as half of the variance in first-year academic performance was attributed to the experience of the student within the educational environment (Pike & Saupe, 2002). This finding emphasises the importance of the nature and quality of the first year educational experience as a contributor to a student's success and is particularly promising because it highlights that regardless of a students' pre-university characteristics (Reason et al., 2006) institutions can intentionally design first-year programmes in such a

manner that meets the needs of diverse, at-risk and millennial students thereby contributing to success and preventing dropout.

2.3.3 Managing mismatched expectations and experiences.

A further reason to focus attention on the first year is the overall mismatch between what students expect from the university environment and what they experience – commonly referred to as the freshman myth (Baker, McNeil, & Siryk, 1985; Braxton, Vesper, & Hossler, 1995; Cole et al., 2009). Essentially, students enter HE with overly positive expectations of themselves and of the university which are often not well matched to their actual experiences during the first year. If left unmanaged, this disappointment may contribute to poor academic adjustment and eventual dropout (Lowe & Cook, 2003; Paul & Breir, 2001; Yorke, 2002), but the extent of impact of the myth can be mitigated by institutional interventions (Baker et al., 1985).

Studies in South Africa suggest that students at lower levels of academic achievement in school tend to be over-confident in their ability to adjust to university and perform well academically (Bitzer & Troskie-de Bruin, 2004; Nel et al., 2009). The recent change to the NSC and the alleged grade inflation may contribute towards a scenario where first-time entering students have an unrealistic perception of their own academic ability (Nel & Kistner, 2009). Thus, there is a need to better prepare school leavers to have more realistic expectations of HE programmes, and to support lower level school achievers more effectively in order to improve retention rates in HE (Bitzer & Troskie-de Bruin, 2004; Osche, 2003). Concurring with this, a recently published study by the CHE (2010) emphasised the important role that universities must play in making explicit the often hidden “rules and routines of academic and social engagement within university environments” (pp. 182).

The discussions in Chapter 1 and 2 have clearly illustrated that addressing student success, particularly in the first year within South African HE institutions is a pressing and critical matter, especially in the light of the large number of students who are at-risk. Chapter 3 will shift the focus of the discussion from contextual issues to a detailed examination of the student success. Whilst Chapter 3 will provide a broad overview of the many factors associated with success, it will ultimately serve the purpose of illustrating the importance of focussing on factors within the institution's sphere of influence as a means of moving towards the goal of improved student outcomes. By doing so Chapter 3 will refocus the discussion on student engagement as a key construct in understanding and promoting undergraduate student success.

Chapter 3: Student Success in Higher Education

Chapters 1 and 2 have provided the rationale for the current study, and described the educational context in which the study takes place. From the discussions in these chapters, the need to understand undergraduate student success (specifically in the first year of study) in the South African context has become clear. More specifically, emerging from the discussion is the imperative to identify factors and conditions within the institution's sphere of influence.

In this context, Chapter 3 will examine the concept of student success in HE by: defining key terms and highlighting some of the problems associated with measuring student success using the current indicators; identifying various theoretical perspectives for understanding student success; and highlighting some of the research findings on factors influencing student success. The chapter concludes by calling for research on student engagement (one of the few contributors to student success over which institutions have a measure of influence) as a means of deepening an institutions' understanding of student success in South Africa.

3.1 Conceptualisations of Student Success

There is no single, simplified conceptualisation of student success, mostly due to the fact that it encompasses a broad range of outcomes and can be viewed from multiple perspectives. This section will expand on a number of conceptualisations of student success provided in HE literature, define key terms currently employed in measuring institutional student success and delimit the definition of success that will be used for the purpose of analysis within this study to examine the relationship between student engagement and success in the South African context.

From the outset it is important to recognise that student success can be defined and measured from multiple perspectives (including systemic, institutional and individual perspectives) and that at times these three perspectives may be oppositional to each other (Bean,

2010). For example, a student who transfers between institutions may still be attaining their personal goals, but this is oppositional to the initial institution's goal of retaining its students until graduation. It is however not oppositional to the HE system's goal of graduating students irrespective of the institution. This study will examine student success primarily from an institutional perspective (using the individual student as the unit of analysis), with some general reference to systemic success. The individual perspective (as defined by the individual's goal upon enrolment) is considered to be outside the scope of this study.

Even after delimiting the perspective from which to investigate student success it remains particularly difficult to conceptualise, as it encompasses both qualitative and quantitative outcomes. Although quantifiable outcomes are more easily defined and measured, they cannot capture the full meaning of success in education, and thus a combination of qualitative and quantitative outcomes is preferred, although not always practical or affordable. The difficulty in accurately identifying a clear, comprehensive and consistent definition of what success in HE is has hampered attempts to accurately identify the factors that contribute to or hinder it (Hearn, 2006; Perna & Thomas, 2006).

The most frequently used quantitative outcomes from an institutional perspective include academic achievement (most commonly measured in grades), retention from first to second year (in the case of first-year students), time taken to degree completion, retention/dropout rates and graduation rates. Other quantitative outcomes include enrolment in postgraduate programmes after the attainment of an undergraduate degree and performance on discipline specific exams (e.g. professional board exams in the case of Psychology graduates) (Kuh et al., 2007a).

On the qualitative side of the spectrum, outcomes such as student satisfaction, sense of belonging in the educational environment and personal development have also been used as

indicators of success for the higher education institution (Kuh et al., 2007a). Personal development includes cognitive and non-cognitive competencies such as complexity, knowledge acquisition, interpersonal and personal competence, a well-developed sense of identity, humanitarianism and civic engagement. Other competency outcomes include proficiency in writing, speaking, critical thinking, solving real life problems, information literacy in a knowledge economy and ultimately, job and life satisfaction (Kuh, 1993; Kuh et al. 2007a; The National Association of Student Personnel Administrators & the American College Personnel Association, 2004). In the South African context, these outcomes resonate strongly with the critical cross-field outcomes set out by the SAQA. The critical cross-field outcomes are qualities that should be achieved by all students regardless of the qualification they are enrolled in, and include (but are not limited to) the ability to identify and solve problems, to work effectively with others, to promote life-long learning, to communicate effectively, to organise and manage oneself efficiently, and to show responsibility towards the environment and others (SAQA, 1998).

Not only is the study of student success complicated by the vast number of outcomes included under the umbrella of success, but it is also complicated by the difficulty and lack of consistency in defining these outcomes. The discussion provided in the next section provides widely used definitions of some key terms used to quantify success in HE and highlight some of the problems and concerns associated with these definitions.

3.1.1 Student success terminology.

Both internationally and in SA, the terminology used in describing and measuring student success is not uniform across institutions making the task of reporting and understanding student success a complex and at times seemingly impossible task (Hagendorn, 2006; Hearn, 2006;

Letseka, Cosser, Breier, & Visser, 2010). This section will examine briefly some terminology and definitions of student success, with particular reference to the South African context.

3.1.1.1 Student retention.

The term student retention is often used interchangeably with persistence; however Reason (2009a) argues that it is erroneous to do so. Most accurately used, the term persistence relates to the individual level, whilst retention relates to the institutional level and is an organisational phenomenon. In other words institutions retain students, while students persist towards their individual goals.

Hagendorn (2006) discusses tracking retention on multiple levels, including institutional, systemic, discipline-specific and module-specific. Institutional retention is defined as the proportion of students who did not graduate, and remain enrolled at the same institution from year to year, and is tracked within a single institution. On the other hand, systemic retention focuses on whether the student remains in the HE system, regardless of which institution he/she is enrolled in. In this model a student who leaves one institution, but enrolls immediately in another is considered a persister. Whilst this allows for more accurate national reporting by acknowledging students who transfer to other institutions, it is costly and difficult to track. Recent enrolment trends in the US referred to as swirling and double-dipping⁵ have brought to the attention of researchers the importance of being able to track at a systemic level (Adelman, 1999; McCormick, 2003). Underreporting of eventual graduation rates is one of the limitations

⁵ Swirling refers to students who enrol back-and-forth between two or more institutions. Double-dipping refers to students who enrolled concurrently at two (or more) institutions. Nearly 60% of undergraduates in the U.S. attend more than one institution during their undergraduate studies (Adelman, 1999; McCormick, 2003).

of only being able to report student retention from an institutional perspective (Jones-White, Radcliffe, Huesman & Kellogg, 2010; Long, Ferrier, & Heagney, 2006). Various reports (Adelman, 2006; Choy, 2004) provide evidence that up to 70-76% of students in the US graduate if their retention is tracked between institutions, a percentage that is significantly higher than single institutional studies report. To date it is not possible to track students systemically in the South African HE context (Letseka et al., 2010).

Discipline-specific retention is a more limited view of retention which examines whether a student remains enrolled in their initial major area of study or discipline within a particular institution. A student can thus persist in an institution whilst not being retained in their discipline. This type of tracking and reporting may be useful and necessary in scarce skills areas such as science, engineering and technology. In the South African context this would be equivalent to tracking students on the programme level. At the micro-level, module-specific retention tracks and monitors retention at the modular level. This allows institutions to determine which modules have problematic completion rates, regardless of whether the student was retained at the higher education institution or not.

For the purpose of this study, analyses related to persistence from first to second year will only be examined on an institutional level (using individual students as the unit of analysis) because systemic level data (i.e. tracking students between institutions) is not readily available to the researcher. Furthermore, given that the study focuses on institutional level data and processes, the discipline/programme- and module-specific analyses fall outside of the scope of the study and will not be examined.

3.1.1.2 Student dropout.

The term dropout is not consistently defined between institutions in the South African context. For example, certain universities classify a student as a dropout if they do not complete their qualification – regardless of the reason. However, other institutions use the term to refer to students who choose not to return rather than those who are excluded on academic or financial grounds and not given the choice to re-enrol (CHE, 2010). The Department of Higher Education and Training does not require reporting to differentiate between students who are excluded (on the basis of academic or financial grounds) and those who voluntarily do not return (Scott et al., 2007). This lack of structured reporting contributes to the unavailability of consistent and comparable data on student dropout in SA, and limits the usefulness of comparing reported dropout rates between institutions.

A further complicating factor in the monitoring of student dropout is the distinction between students who drop out of HE and students who stop out (Letseka & Maile, 2008; Stratton et al., 2005). The key difference between these two groups is the permanency of their departure decision. Student departure refers to students who leave an institution without obtaining a qualification, including both students who drop out and those who stop out. Students who drop out leave HE without the intention to return, whereas students who stop out interrupt their studies intentionally and return at a later date to resume and complete their degrees (Stratton et al., 2005). This distinction is becoming increasingly important given that some research indicates that the factors (for example access to finances) associated with the two types of behaviour are statistically different. Treating these two groups as one may result in misleading results, inaccuracies in tracking systems and limited effectiveness for interventions designed for at-risk groups (Stratton et al., 2005). These differences may be particularly important in SA

where financial constraints often compel students to interrupt their studies in order to earn money before continuing.

3.1.1.3 Graduation, throughput and success rates.

In SA, graduation rate is determined by dividing the headcount enrolments for any particular year by the number of graduates for the same year within each institution (CHE, 2009). On the other hand, throughput rates involve the systematic tracking of a cohort from first year to graduation that takes into account a multiplicity of factors such as length of degree programme. However, in SA, the relative absence of cohort studies (only one comprehensive study has been conducted to date (Scott et al., 2007)) tracking students from first year to graduation (which would provide an accurate picture of throughput rates at an institutional level) has resulted in a situation where graduation rates remain a (problematic) proxy for throughput (Letseka et al., 2010).

The use of graduation rates as a proxy within institutions is problematic because it is a rough measure that does not allow for nuanced understanding of the factors relating to true graduation rates. For example, increased enrolments at a first-year level that can have a significantly negative impact on graduation rates and differing durations of degree programmes are not taken into account at all (Steyn & De Villiers, 2006). Furthermore, because graduation rates are determined within an institution, and the absence of a national student tracking system does not allow for the identification of 'dropouts' at a particular institution who go on to become successful graduates elsewhere (Scott et al., 2007), an accurate measure of the systemic graduation rate is not possible to determine.

Institutional success rates are calculated as a ratio of FTE⁶ degree/diploma credits earned to FTE enrolment. Success rates are submitted annually to the DHET for subsidy purposes, with 80% success rate considered a reasonable benchmark for contact students (Letseka et al., 2010; Subotzky, 2003).

3.1.1.4 Selected conceptualisations of student success for the current study.

As stated previously (see Section 3.1), the analysis of student success indicators for this study will focus on the institutional level. The decision to investigate institutional level success (as opposed to systemic, programmatic or modular) was based upon a number of factors including the focus of the research questions, the fact that the current research project is limited to a single institution, as well as the limited data available to the researcher.

Therefore, within the context of this study, student success in the first year will be measured by the following two quantitative institutional outcomes:

- Persistence from first to second year as an indicator of retention. Given that the study will only be conducted over a 2-year period involving two cohorts of first-year students, no systematic tracking from enrolment to graduation is possible.
- Percentage of credits passed during the first-year as a proxy for academic performance.

The percentage of credits passed during the first-year was selected (as opposed to average academic mark earned) for a number of reasons. First, it is not common practice at the

⁶ FTE's are calculated by assigning to each module a fraction representing the weighing it has in the curriculum of a qualification and multiplying the headcount enrolment of that module by this fraction (Letseka et al., 2010).

higher education institution being studied to provide a summative indication to students of their academic achievement on a year-to-year basis (as in the case of a GPA in the US context). Second, although it is ideal for students to obtain higher marks in their modules, it remains essential to their progression towards degree attainment that they pass as many of the credits they enrol for as possible, regardless of the academic mark obtained.

There are however various limitations to these conceptualisations. One of the primary criticisms of all types of quantitative indicators of success is that they do not reflect the quality of learning that has taken place (Gonyea et al., 2006). In the context of this study the researcher acknowledges that both academic grades and percentage of credits passed remain inaccurate reflections of the quality of learning that has taken place, and do not account in any manner for the various qualitative outcomes of HE as discussed earlier.

Furthermore, the lack of institutional information differentiating between students who drop out and those who stop out, means that no distinction can be made between these two groups for the purposes of statistical analysis in this study. Coupled to the aforementioned, it must be borne in mind that the study is being conducted at a single institution only, and thus it is not possible to identify whether students who were not retained at the institutional level were in fact retained at the systemic level. For both of these reasons cited, students who do not return to their studies for their second year are regarded as having dropped out (i.e. not retained by the institution). Furthermore, the reasons for student dropout are not accounted for, implying that no distinction can be made between students who choose not to return and those who are excluded on the basis of academic or financial grounds.

Lastly, when using quantitative indicators for academic performance the process of standardising scores results in a situation where different programmes and faculties are being

compared without taking into account the varying degrees of difficulty or academic demands between them (Miller, Imrie, & Cox, 1998; Milton, Pollio, Eison, & Braxton, 1988; Pascarella & Terenzini, 1991).

3.1.2 Concluding remarks on the conceptualisation of student success.

Taking the definitional and operational problems associated with measuring and reporting on student success, there is widespread acknowledgement that more efficient and effective ways of tracking throughput need to be established in the South African context (CHE, 2009; Seymour & Watson, 2010; Subotsky, Van Zyl, & Barnes, 2010; Visser, 2010). There is also agreement among various scholars that a more concise, comprehensive and systemically consistent definition of success in HE is necessary in order to be able to truly understand the factors that contribute to success (Hearn, 2006; Perna & Thomas, 2006).

In SA, additional to these challenges in monitoring dropout, there is very little systemic knowledge on the reasons underlying student dropout (CHE, 2007), and thus in the development of an effective monitoring system additional attention should be paid to the distinction between and identification of underlying causes of both student dropout and stopout.

Despite these limitations associated with quantifying student success, studies such as the current research project can make a valuable contribution to understanding student success in the first year of study.

3.2 Research on Student Success in Higher Education

This section will focus on various theories and perspectives that have been proposed for understanding student success, and will discuss a number of specific factors that have been investigated as contributors to success. Two key trends emerge throughout these discussions: first, student success is a complex phenomenon that cannot be understood by isolating a few

limited factors – it requires an integrated multi-disciplinary approach. Second, many of the specific factors that have been studied as contributors to success are variables which are outside of the institutions sphere of influence. Thus, although these studies increase our understanding of how different groups of students experience HE, they offer few (if any) actionable strategies for promoting success. The chapter will conclude by highlighting how a focus on student engagement allows for an integrated, more complex understanding of the student experience and represents a set of variables which the institution can exert influence over.

3.2.1 Theories and perspectives on student success.

Students who enter HE are the products of their cumulative past experiences, influenced to a large extent by their families, culture of origin, social situations, political contexts and educational backgrounds. Student dropout and academic performance must be understood in this context, and must take into account a broad set of factors related to the individual, socialisation agents, and the higher education institution (Astin, 1993; Kuh et al., 2007b; Reyes, 1997). Because of this complexity, it is therefore not surprising that a number of theoretical orientations have been employed to date in the study of student success, and that numerous models and theories have been suggested by researchers for understanding student success in recent decades.

Although each of the models and theoretical perspectives that will be discussed in this section provide some insight into student success, a primary criticism of all of the models is that they are too narrowly focused, lack complexity and attend only to a few of the factors that impact on student outcomes (Reason, 2009a; Tinto, 2006-2007). This has led to a situation where knowledge about what really matters to student success is somewhat fragmented and there is still no clear understanding of which factors directly impact on success and which factors act as mediators (Perna & Thomas, 2006). It is therefore not surprising that Braxton, Hirschy, &

McClendon (2004) label student success an ill-structured problem that requires a multi-theoretical approach to research. According to their definition, ill-structured problems defy single solution models and require a number of solutions simultaneously. Taking a multi-theoretical approach may be particularly appropriate as HE continues to diversify and evidence confirms how students from different groups (ethnicity, SES and history of education in the family) are each influenced differently by particular variables.

The section below will discuss the most prominent theories that have been proposed to date by highlighting the work of notable theorists in the field. Originating in the 1970's, theories on student departure were primarily sociological in nature. Thereafter, during the 1980's psychological, organisational and socio-psychological theories began to emerge. Most recently in the 1990's, economic and cultural perspectives became prominent, particularly in explaining the attrition patterns of low SES and minority group students (Bean, 2010). Although there are many different theories and perspectives that have been proposed and studied, the two most prominent theorists whose work have received considerable research attention in the field of student success are Vincent Tinto and John Bean. Tinto's theoretical contributions are primarily sociological, whilst Bean's work is grounded in organisational turnover theory. Both theorists are discussed briefly under the appropriate section.

3.2.1.1 Sociological theories.

Tinto's research was strongly influenced by the work of Spady (1970, 1971) who proposed that students who did not integrate socially were more likely to drop out. Spady initially proposed that academic performance, intellectual development, assimilation into the norms of the institution, and friendship support, all influenced social integration. In turn, all of

these variables indirectly impacted on the decision to drop out through two intervening variables – satisfaction and institutional commitment (Spady, 1970, 1971).

Tinto's original research, set forth in his *Interactive Model of Student Departure* has almost attained paradigmatic status in HE research and remains the most cited and studied theory in the field of student persistence (Metz, 2004-2005). Tinto (1975) posits that various individual characteristics (e.g. family background, individual attributes, and high school academic experiences), influences an individual's initial commitment to the university and the goal of completing their degree directly influence a student's departure decision. These factors in turn influence the extent to which students integrate into the academic and social communities on the campus, which ultimately further influences their decision to drop out or persist (Tinto, 1987).

Despite the face validity of the model and its overall popularity, Braxton, Sullivan and Johnson (1997) find mixed support for the model and it has been criticised for not giving adequate attention to factors external to the institutional environment (Cabrera, Castaneda, Nora, & Hengstler, 1992). Other research studies have shown that social integration may be a more robust predictor of student success than academic integration (Kuh et al., 2007a).

However, the continued research of Tinto led to the development and refinement of his original theory to include variables such as commitments outside the higher education institution and intention to remain enrolled, resulting in new models such as Tinto's *Longitudinal Model of Institutional Departure* (1993), as well as Tinto and Pusser's *Model of Institutional Action for Student Success* (2006). Research in the South African context has confirmed the importance of both social and academic integration for academic success (Bitzer, 2009; Louw, 2005).

3.2.1.2 Organisational theories.

In contrast to sociological perspectives (such as the work of Tinto), organisational perspectives (such as the work of Bean) attempt to give due attention to environmental factors by focusing on how institutional structures and processes impact on student performance. These theories focus on institutional size, selectivity, resources and student-staff ratios. However, the link between these institutional characteristics and student behaviour is not well explained through research and these theories in general lack explanatory power (Kuh et al., 2007a).

One prominent, comprehensive organisational theory was proposed by John Bean. Bean's *Student Attrition Model* explicitly incorporates external factors, whilst also stressing the importance of the individual student's behavioural intention to persist (Bean, 1980, 1983). In later research Bean and Metzner (1985) proposed an alternative model for non-traditional students taking into account the nature of their social interactions with peers and staff.

Tests of Bean's attrition model have supported the role of organisational, personal and environmental variables in shaping attitudes and intentions to either persist or withdraw (Cabrera et al., 1992). In a study comparing Tinto's model with Bean's model, Cabrera et al. (1992) found that the two models were not mutually exclusive, but rather complimentary in nature. Once again, Cabrera et al.'s (1992) finding draws attention to the need to combine multiple perspectives in order to understand student success.

3.2.1.3 Psychological theories.

A number of psychological theories have been used as frameworks for understanding and explaining student success. Specific theories include attitude-behaviour theory, self-efficacy theory, coping behavioural theory, locus of control theory, psychological contract theory, and self-theories about intelligence.

Although Bean's work was initially primarily organisational, later work such as Bean and Eaton (2001-2002) focused more on psychological theories. Bean and Eaton (2001-2002) propose a theory for student dropout that combines four of the abovementioned psychological theories including attitude-behaviour theory, locus of control theory, coping behavioural theory and self-efficacy theory. Attitude-behaviour theory informs their overall theory from the perspective that attitudes lead to intentions, which in turn lead to specific behaviours. In the context of HE, the intention to persist and the eventual behaviour of dropping out or remaining enrolled is influenced both on the original intention of the student upon their arrival, as well as their behaviour during the academic year. This interaction is further mediated by a student's coping style (approach/avoidance) and ability to effectively adapt academically and socially to the new environment. In interpreting their experiences and behaviours, students create meaning through either an internal or external orientation (locus of control). In conjunction with all of the above, the self-efficacy of a student plays a role in determining how they will react to their varying experiences ultimately and influences their intention to persist in HE based on their perception of the ability to achieve this goal (Bean & Eaton, 2001-2002). The multi-theoretical model proposed by these researchers once again illustrates the complexity of the student success puzzle and the inability of one specific theory to fully explain the phenomenon reiterating the importance of investigating this problem from a multi-disciplinary perspective.

Another psychological theory that has been used to understand student dropout is psychological contract theory (Rousseau, 1995). The psychological contract, essentially a mental model or schema, is a set of subjective beliefs and expectations first-years hold about the relationship between themselves and their peers, staff and the higher education institution. This set of expectations contributes towards shaping student behaviour. Violations of this contract can

lead to distrust in the organisation, disengagement from the educational experience and ultimately contribute towards the student's decision to drop out (Kuh et al., 2007a). The responsibility therefore lies with the higher education institution to manage their psychological contract with entering students as best as possible to enhance student success. The role of expectations in persistence will be elaborated on more comprehensively in Chapter 4.

Finally, Dweck's theories of self-intelligence (2000) focus on how a student perceives their own intellectual ability – either as a construct that is fixed (an entity view) or one that is malleable (an incremental view). Early learning experiences during the first-year can be structured in such a manner that enables students to positively adjust their self-beliefs about their intelligence. This research is particularly relevant to historically disadvantaged students who may have doubts about their own academic abilities (Kuh et al., 2005c).

3.2.1.4 Economic perspectives.

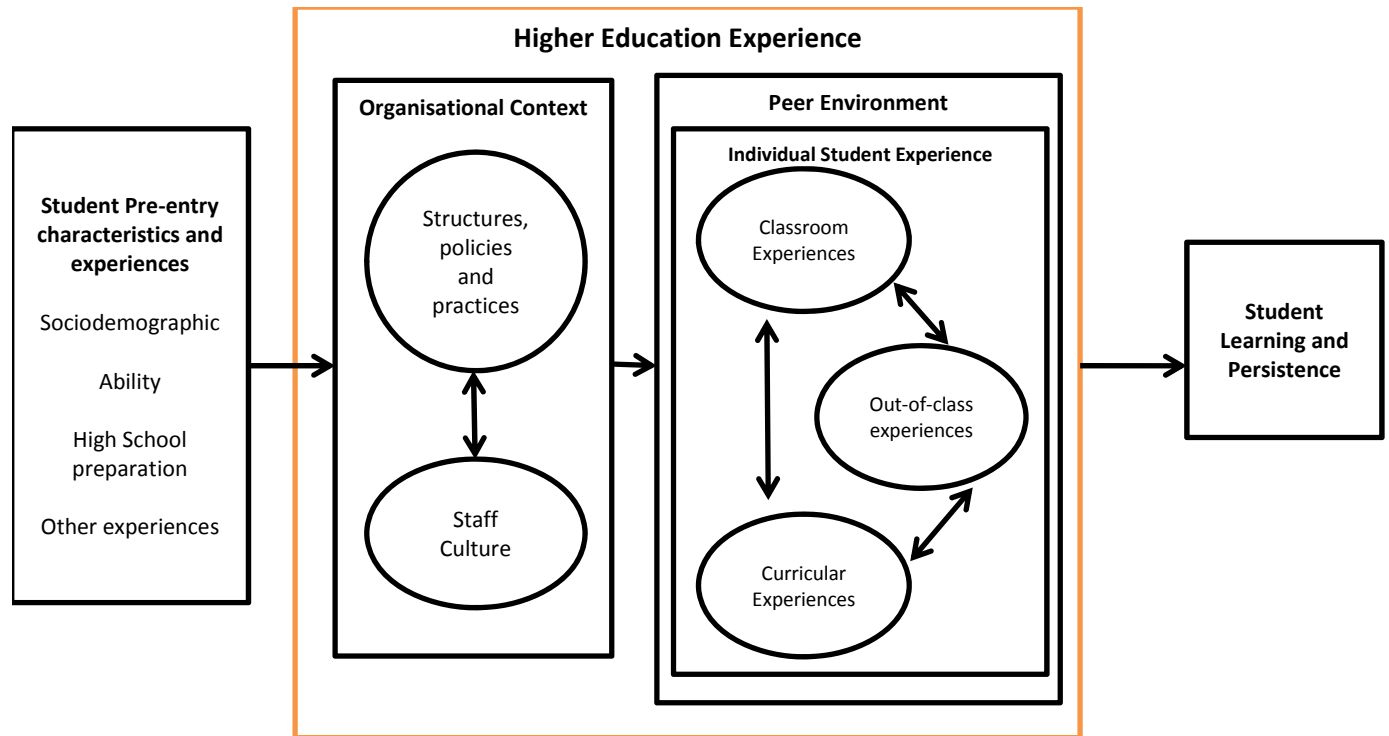
More recently economic perspectives attempt to account for how a student's analysis of the costs and benefits of HE influence their decision to persist or drop out. One example of an economic theory is the College Choice Nexus Model. The College Choice Nexus Model is a three-stage model that gives consideration to how socioeconomic factors contribute to a student's choice to enrol in HE and how their subsequent experience at the higher education institution influences their judgments as to whether their academic and social experiences are worth the price they must pay (financially and in terms of time/effort) (Paulsen & St. John, 1997, 2002). In SA economic factors play a particularly important role in the decision to both enrol and persist in HE (Letseka & Breier, 2008; Letseka & Maile, 2008; Van Koller, 2010).

3.2.1.5 Cultural perspectives.

In recent literature, researchers have given attention to the role that institutional cultures play in contributing to student success. Cultural perspectives suggest that the normative patterns of an institution favour the traditional student, and that historically underrepresented students have to contend with additional challenges in adjusting to these cultures upon their arrival (Thomas, 2002). This influences the extent to which they engage in various campus activities and whether or not they make use of relevant support services (Kuh et al., 2007a). Given what is known about the importance of social integration and the role of the environment, a supportive institutional environment that makes sufficient accommodations for students from all backgrounds is critical in promoting student success (Kuh, 2001-2002). Various South African studies point to the impact that institutional cultures have on the student experience and performance (CHE, 2010; Soudien, 2008a, 2008b).

3.2.1.6 Towards an integrated approach.

Over the past three decades the theoretical models above, as well as numerous research studies, have helped to deepen an understanding of student success. However, as indicated earlier, the ill-structured nature of the student success problem has made it particularly challenging to define any one model which accounts for all relevant factors (Braxton et al., 2004; Reason, 2009a; Tinto, 2006-2007). In an attempt to consolidate findings from various perspectives, Reason et al. (2006) have recently proposed a broader framework which attempts to account for a wider range of factors (shown in the diagram below). The framework proposed by Reason et al. (2006) provides a conceptual overview that encompasses the most important factors of many of its predecessors, and thus provides a useful model within which to understand student success.



This framework hypothesises that students arrive at a specific higher education institution with a range of demographic, personal and academic characteristics and experiences. These factors predispose a student to engage in varying manners with the formal and informal learning environment. This leads to subsequent interactions with the institutional and peer environments, as well as with major socialisation agents. The complex interaction of all of these determines the extent to which student learning takes place, and influences the student's decision to persist in their studies (Reason, 2009a; Reason et al., 2006). A particular strength of the model proposed by Reason et al. (2006) is that it has been tested specifically in first-year samples.

The following section will examine a number of specific factors that have been linked to student success in various research studies. The factors discussed relate primarily (although not exclusively) to the initial component of Reason et al.'s (2006) model, namely pre-university

characteristics and experiences. Specific attention is paid to institutional and environment factors in Chapter 4.

3.2.2 Factors related to student success: Empirical research.

Although access to HE has theoretically expanded to make provision for everyone, not all groups of students are equally likely to succeed once they have enrolled. This is supported by an extensive body of research indicating that who students are when they enter HE will make a difference to their chances of eventually completing their studies (Kuh et al., 2007a).

The following section discusses specific factors related to success in HE under the following three broad categorisations: demographic characteristics, individual characteristics and additional factors. It should however be noted that the factors discussed hereunder refer primarily to traditional age students (18-24 years old), and research suggests that the factors influencing non-traditional students (older, married, with dependents) may differ somewhat (Bean & Metzner, 1985; Engle & O'Brien, 2007). Furthermore, as will be highlighted throughout the discussion in this section, for the most part these factors represent variables that are not within the institutions sphere of influence.

It must also be noted that studies related to the factors that lead to student success in SA are not as extensive in nature or quantity as in the US and very few national or multi-institutional studies exist. As a result, the literature presented in this section is biased towards the US context, but where possible South African research is presented. This lack of comprehensive, systemic research in the South African context further highlights the necessity of studies such as the current research project to understand student success more comprehensively from a South African perspective.

3.2.2.1 Demographic characteristics.

In recent years there is a move away from using socio-demographic variables as predictors of student retention as researchers have struggled to find actionable results from these studies. The within-group variance makes socio-demographic findings difficult to interpret, and they often have very little practical usefulness. However, the inclusion of socio-demographic variables remains important in research to enhance understanding of the conditional effects of interventions for different groups (Reason, 2009a; Tinto, 2006-2007). The demographic characteristics that are known to be related to student success include: gender, race/ethnicity, SES, and first-generational status – each of which will be discussed briefly hereunder.

In their review of the research into socio-demographic characteristics, Peltier, Laden and Matranga (1999) concluded that in the US women were significantly more likely to persist in HE than men. However, later research studies on the role of gender have found mixed results. It appears that race, marital status and residency affect the retention of women and men differently and that these conditions must be taken into account in conducting research about gender (Leppel, 2002; St. John, Hu, Simmons, & Musoba, 2001). The recent *State of Higher Education* report (CHE, 2009) in South Africa indicates that currently women are more successful in HE than men, but much scope remains for a more in-depth examination of how gender interacts with other demographic and individual variables in the South African context.

In the US, a number of studies suggest that race is a significant predictor of retention (Astin, 1997; Astin, Tsui, & Avalos, 1996; Murtaugh et al., 1999) and that students of colour are less likely to persist to graduation (Carey, 2004; Horn & Maw, 1995; Porter, 1990). The success of students from different racial groups in South Africa has been discussed in Chapter 2, and it is

clear that pervasive differences in success between students from different ethnic groups remain one of the critical challenges faced by the sector.

However, evidence in this regard is not unequivocal. Allen (1999) found that different variables predicted retention in students of colour compared to White students. Studies using multivariate models show that the effect of race on retention is less consistent when SES and pre-university experiences are accounted for (Murtaugh et al., 1999; St. John et al., 2001), and that adequate access to financial aid may in fact equalise retention rates across racial groups (Hu & St. John, 2001; Pascarella & Terenzini, 2005).

These types of interactions are not surprising, given that family socioeconomic status sets the stage for students' academic performance by increasing the likelihood that a child will attend a high-quality school, have high educational aspirations and experience sufficient familial support (Kuh et al., 2007a). Low-income students are less likely to enrol in HE, and once they are in the system, they are more likely to be juggling the demands of university with work, children and other family responsibilities, and are less aware of support structures available to them on campus (O'Brien, 2004; Swaner & Bronwell, 2008). Large scale national research studies in the US provide evidence of the role that SES plays in retention and graduation, illustrating clearly the lowered success rates for low-income students (Bowen et al., 2009), even after gender and race/ethnicity have been accounted for (Adelman, 2006; Pascarella & Terenzini, 1991, 2005). In addition, research indicates that SES was the best predictor of earning a bachelor's degree in the US, after controlling for academic ability (ACT 2004a; Astin, 1993).

A recent study in SA found that students from lower SES groups find the transition from school to university significantly more challenging than students from higher SES groups (Nel, et al., 2009) and another study in the context of a rural university (Pillay & Ngcobo, 2010) found

that family responsibilities was a significant source of stress for the first-year students contributing to the difficulty of making a successful transition into HE. Although these findings do not directly illustrate the interaction between race and SES in South Africa, they point towards the need for such research in this context.

However, neither race nor SES can be fully understood (especially in South Africa) without taking into account the role that first-generation status plays in student success. There are many disadvantages facing first-generation students as they enter university. For example, they typically have less familial support to attend university, have less knowledge about HE, are more likely to be working full-time and often feel isolated in the new university environment (Swaner & Bronwell, 2008). First-generation students are more likely to come from lower income families, to study part-time, work full-time and to live off campus. Furthermore, there is a disproportionate representation of racial and ethnic minority groups in the population of first-generation students (Kuh et al., 2007a). An additional risk factor for these students is that they do not typically engage in the wide range of academic and social activities associated with success in HE to the same extent as their second-generation peers (Pike & Kuh, 2005) and find the transition into HE more difficult (Pascarella, Pierson, & Wolniak, 2004). Some evidence suggests that due to their lack of understanding of what is required to be successful in HE, first-generation students do not spend adequate time studying and preparing for class (Asrat, 2007).

It is therefore not surprising that there is a difference in the retention and graduation rates of first-generation and second-generation students (Horn & Carroll, 1998). Overall, Pascarella and Terenzini (2005) found that students whose parents had a postsecondary qualification were five times more likely to obtain a bachelors' degree than first-generation students. Research conducted by the National Centre for Education Statistics found that there is a 15% gap between

the persistence rates of first- and second-generation students. First-generation students were also more likely to stop out of their studies (Warburton, Bugarin, & Nunez, 2001), they are also more likely than second-generation students to stay out (Horn & Carroll, 1998), and they are more likely to drop out in the first year (Ishitani, 2003). In the South African context, first-generation students have been found to be more likely to drop out than their second-generation peers (MacGregor, 2007).

In summary, whilst socio-demographic variables are outside of the institution's sphere of influence – understanding the complex interactions between them in relation to student success remains important for institutions who want to understand their student populations more accurately.

3.2.2.2 Individual characteristics.

Aside from demographic characteristics, which neither the individual nor the higher education institution has any measure of control over, there are also a number of individual characteristics that impact on a student's success. Research has repeatedly shown that the roots of success in university are found in the past experiences of individuals, experiences whose influence is not simply erased when they enrol (Hearn, 2006). These individual characteristics include academic ability and preparedness; educational aspirations and goals; individual psychological factors; and personal motivation. Again, Reason (2009a) points out that although there are differences in the outcomes for students who differ in terms of these characteristics, these findings are not necessarily actionable because higher education institutions can assert little, if any, influence over them. Each of these factors is discussed briefly hereunder.

What students experience in their high school classroom is an important precursor to how they will interact with the university academic environment. Students with rigorous high school

academic preparation are thus in the best position to be successful at university – regardless of who they are, what their financial situation is or which institution they enrol in (ACT, 2004a; Adelman, 1999; Bean & Bradley, 1986; Bean & Kuh, 1984; Choy, 2004; Kuh et al., 2007a; Pike & Saupe 2002). Not only do these students have a stronger academic grounding in terms of curriculum content, but ad hoc studies indicate that students who lack adequate preparation in high school also lack the ability to implement effective study skills and strategies (Habley, 2005). In the US context, high school grades are the strongest predictor of first year university grades, (Adelman, 1999, 2006; Bowen et al., 2009; Kuh et al., 2007b; Gonyea et al., 2006; Olani, 2009; Pike & Saupe, 2002) and some studies suggest that high school grades are a significant predictor of four-year university outcomes such as persistence and graduation (Geiser & Santelices, 2007).

Along similar lines, there is evidence in the South African context for the correlation between matric marks and performance in post-school education (particularly for certain fields of study) (Eiselen & Geyser, 2003; Foxcroft & Stumpf, 2005; Huysamen, 2003; Lourens & Smit, 2003). However, the research is not unequivocal and some studies suggest that the predictive validity of Grade 12 marks differs between demographic groups (Hurter & Oakes, 2010; Huysamen, 2003).

However, past academic performance is not the only individual level factor to influence success in higher education. Various studies point towards the relationship between academic goals and persistence, where students with higher levels of commitment to the goal of completing their degree are more likely to persist in attaining this goal (ACT, 2007, Brown, Tramayne, Hoxha, Telander, Fan, & Lent, 2008; Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). Furthermore, research suggests that educational aspirations in the form of

desire to complete university were a significant predictor of persistence for certain at-risk groups. Apart from academic performance, desire to finish university was the top-ranked effect item among minorities in terms of direct effects on persistence (Allen, 1999), and educational aspirations were the best predictor of first semester grades for first-generation students (Naumann, Bandalos, & Gutkin, 2003).

Finally, at the individual level, numerous research studies have found various psychosocial and personality factors that play a role in academic success in HE, even after traditional predictors (such as preparedness and educational aspirations) have been taken into account (Chamorro-Premuzic & Furnham, 2003; Findley & Cooper, 1983, Multon, Brown, & Lent, 1991; Parker, Hogan, Eastabrook, Oke, & Wood, 2006; Wolfe & Johnson, 1995).

Examples of specific psychological factors that have been linked to student success internationally and in South African studies include academic self-discipline, internal locus of control, high levels of self-regulation, conscientiousness, time management, emotional control, communication skills, academic self-confidence (self-efficacy) and self-confidence (ACT, 2004a, 2007; George, Dixon, Stansal, Gelb, & Pheri, 2008; Gifford, Briceno-Perriott, & Mianzo, 2006; Petersen, Louw, & Dumont, 2009; Robbins et al., 2004; Van Bragt, Bakx, Bergen, & Croon, 2010).

There is also strong evidence from cross-national studies in the US highlighting the role of personal motivation. Overall, students with high motivation are more likely to persist in their studies and succeed academically (ACT, 2007; Robbins et al., 2004). In the South African context, Bitzer (2009) found that motivation had a significant impact on the academic performance of first-year students.

3.2.2.3 *Additional factors.*

Aside from the demographic and individual characteristics that impact on a student's success, there is an additional set of factors that research has indicated have an influence on persistence and success in HE. These include: whether or not a student works on- or off-campus, enrolment patterns, residency, adequate familial encouragement, access to finances or financial aid, language of tuition and adequate involvement/engagement in their education. Each of these will be discussed briefly below.

3.2.2.3.1 *Working on- or off-campus.*

Limited on- or off-campus work (less than 15 hours on-campus and less than 20 off-campus) does not appear to hinder a student's chance of success significantly, whereas working more than this was negatively associated with grades and persistence (Choy, 1999; Horn & Carroll, 1998; Kuh et al., 2007b; Pascarella, 2001; Pike, Kuh, & Massa-McKinley, 2008; Torres, Gross & Dadashova, 2010-2011).

Additional to this, there is evidence that working on campus may actually influence student success positively (Kuh, 2009a, Kuh et al., 2005b), particularly when work-study positions for senior students are related to their academic and career interests (O'Brien & Shedd, 2001).

3.2.2.3.2 *Enrolment patterns.*

There is consistent evidence in research indicating that delaying enrolment in HE (regardless of the reason) reduces the likelihood that students will persist and complete a degree (Adelman, 2006; Horn & Carroll, 1998; Kuh et al., 2007a; Pascarella & Terenzini, 2005).

Once enrolled, the nature of the enrolment pattern impacts on student success. Students who stop out of their studies for a period of time are significantly less likely to persist to degree

completion than students with continuous enrolment (Adelman, 1999; Kuh et al., 2007a; Pascarella & Terenzini, 2005).

Lastly, students who are enrolled fulltime are more likely to persist than those who are enrolled part time (Horn & Carroll, 1998; Knapp et al., 2011).

3.2.2.3.3 *Residency.*

Extensive evidence exists to suggest that living on campus is strongly related to higher retention rates, particularly in the first-year of study (Astin, 1997; Pascarella & Terenzini, 2005), and recent national studies confirm this finding in the US context (Bowen et al., 2009). Living on campus promotes integration socially, leads to higher participation in campus cocurricular activities and aids the personal development of the student – all of which are positively correlated with persistence (Pascarella & Terenzini, 2005). First-year students in Australia who lived on campus reported a more positive university experience (McInnis et al., 2000).

Studies in the South African context resonate with these findings. Nel et al. (2009) found that commuter students (many of which live off campus for financial reasons) are at a relative disadvantage from both a social and academic perspective – particularly in the first year. However, given that student enrolments are likely to continue expanding in the foreseeable future (see discussions in Chapters 1 and 2), it is unlikely that institutions will be able to accommodate the majority of students in residences and thus it will become increasingly important to understand the contributors to success for commuter students.

3.2.2.3.4 *Parental encouragement and support.*

Reason (2009a) suggests that the influence of the family on the success of undergraduate students may be the most under researched component related to persistence. An overreliance on Tinto's model where the separation from the family of origin is the first task in successfully

integrating in HE may have led to this. Recent research suggests that family support may in fact be an influential variable that positively impacts on student success (Braxton et al., 2004).

Various studies have found that students perform better and are more likely to persist in their studies when they have families that affirm their choices and support them in the process. This is particularly evident for students from historically underserved populations and for commuter students (Braxton et al., 2004; Lafreniere, Ledgerwood, & Docherty, 1997; Pathways to College Network, 2004). In a recent South African study, Nel et al. (2009) found that not getting support for their educational goals from their parents was a source of significant discouragement for first-generation students.

3.2.2.3.5 *Finances.*

In their analysis of factors influencing the completion rates of students in the US, Bowen et al. (2009) conclude that although finances are not the only factor influencing dropout, provision of financial aid does make a difference to both enrolment and completion rates. Financial aid continues to be vital to the success of low-income students, and being certain that they will receive aid in the future is a very important factor in the decision making process of these students (Choy, 2004; Merisotis, O'Brien, Gray, Hill, & Richardson, 1995; Tinto, 2004). Access to adequate financial aid also makes a difference as to whether students stop out or stay out (Horn & Carroll, 1998; Stratton et al., 2005).

South African research shows that the high cost of HE is one of the primary reasons why many students do not complete their studies (Letseka & Breier, 2008; Letseka & Maile, 2008; Van Koller, 2010) and that financial concerns are a significant source of stress for students contributing to both poor academic performance and dropout (Firfirey & Carolissen, 2010; Pillay & Ngcobo, 2010). In recognition of the critical role that financial aid plays in improving

participation and success a comprehensive review on the National Student Financial Aid Scheme (NSFAS) has been undertaken by the ministry of Education (HESA, 2010; NSFAS, 2010).

3.2.2.3.6 *Language.*

Proficiency in the language of tuition contributes to student success (Graham, 1987). In SA, the majority of students receive tuition in a language other than their mother tongue placing additional academic strain on the student and increasing their risk for early dropout or academic failure both in high school (Umalusi, 2004) and in HE (Cross, Shalem, Backhouse, & Adam, 2009; Eiselen & Geysers, 2003; Paras, 2001; Stephen, Welman, & Jordaan, 2004; Van Der Walt, 2004; Van Dyk, Zybrands, Cillie & Coetzee, 2009). Further support for the impact of language on success is provided in a recent CHE report (CHE, 2010) which concluded that language of instruction was one of the most significant barriers to academic success in South African HE.

3.2.3 **Student engagement: Moving towards factors within the institution's sphere of influence.**

Taking into account the discussion on the theoretical perspectives and the specific factors, it can be concluded that in order to understand and promote student success it is necessary to research the student experience in a manner that takes into account the highly complex nature of success, and places emphasis on factors that are within the institution's sphere of influence.

One manner in which to do so is to focus research efforts on student engagement – the extent to which students engage in educationally purposive activities (Kuh et al., 2007a). As a field of study, student engagement provides a broad understanding of a wide domain of behaviours and practices associated with success in HE (a detailed discussion of student engagement and its relationship to student success is given in Chapters 4). Although student engagement is not an all-inclusive construct that captures each and every factor or behaviour

associated with success, it does represent a move away from a focus on single factors to a more integrated and holistic approach to understanding and promoting student success. Furthermore, one of the fundamental benefits of focussing on student engagement is that it represents a domain of behaviours and conditions within the institutions sphere of influence. In the US, student engagement is operationalized by the National Survey of Student Engagement (NSSE) and its associated surveys (e.g. the Beginning College Survey of Student Engagement (BCSSE) and the Faculty Survey of Student Engagement (FSSE)) (for a detailed discussion see Chapter 5). This family of surveys has been widely used in the US by institutions for more than 10 years as a means to understand undergraduate student success. One of the benefits associated with the student engagement surveys (i.e. NSSE, BUSSE, FSSE) is their exclusive focus on effective educational practices which are within the institution's sphere of influence and their emphasis on student behaviours (as opposed to attitudes or perceptions) (see Chapter 4 for a detailed discussion on the theoretical underpinnings of the surveys).

A review of surveys to understand the student experience in the US was conducted (Borden & Zak-Owens, 2001), and a total of 27 national surveys were identified, of which six were used to assess entering students. However, only two of these entering student surveys were linked to follow-up surveys in the later years of a student's career allowing for a more comprehensive understanding of student success over time. One of the sets of linked surveys is the family of student engagement surveys.

In conclusion, because of the longitudinal research possibilities and the multi-faceted focus on student behaviours and conditions that are actionable by the institution the student engagement surveys were selected as the lens through which to research undergraduate students in the context of enhancing success for the purposes of this study.

3.3 Chapter Summary

Although extensive research has been conducted in the US on student success in HE in the past three decades, in comparison very little research of this nature has been conducted in SA.

The ill-structured and complex nature of the student success problem has made it particularly challenging (if not impossible) to understand student success from any one theoretical perspective, and as a result, findings in this area are somewhat fragmented and there remains a need for a more comprehensive multi-theoretical and interdisciplinary approach to the problem. A further limitation in success research is an emphasis on factors which are often outside of the institution's sphere of influence (e.g. demographics or academic preparation).

Taking both of these limitations into account, this chapter has concluded that a multi-disciplinary approach that takes into account a broad range of factors which are actionable by the institution is necessary in order to improve the sector's understanding of student success.

One manner in which to do so is to focus research efforts on student engagement – the extent to which students engage in educationally purposive activities (Kuh et al., 2007a). Although student engagement is not an all-inclusive construct, it does represent a move away from a focus on single factors to a more integrated and holistic approach to understanding and promoting student success through examining a domain of behaviours and conditions within the institutions sphere of influence. Chapter 4 will provide a detailed discussion on student engagement in the first year of study as a contributor to student success.

Chapter 4: Student Engagement

Student engagement was noted as one of the factors impacting on student success in Chapter 3, and in the light of the fact that it represents one of the few factors over which institutions have a measure of influence it is important for institutions to understand patterns of engagement and the factors contributing to this within their student populations.

This chapter will provide an in-depth discussion on student engagement in the context of the first year of study, including a comprehensive definition of student engagement and the emergence of student engagement as a field of study. Thereafter, the definition of student engagement will be used as a framework for discussing student activities and institutional conditions associated with success. Additional to this, the chapter will examine the empirical relationship between student engagement and student success, highlighting the importance of increasing levels of engagement during the first year of study.

In the context of increasing engagement in the first year, the chapter will also discuss two important factors affecting levels of engagement in the first year of study, namely levels of engagement at high school and expectation to engage during the first year. The importance of understanding the interrelationship between high school engagement, expectations to engage and actual levels of engagement will be expanded upon in the light of the critical importance of creating and managing reasonable expectations in the first year.

4.1 Defining Student Engagement

Broadly speaking student engagement can be viewed as an umbrella for a domain of constructs in HE that focus on the quality of student effort and involvement in effective learning activities (Kuh, 2009b), as well as the extent to which students perceive the institutional

environment to be supportive of their learning (Gonyea, 2010; Kuh, Kinzie, Schuh, & Whitt, 2005b).

More specifically, student engagement can be defined by what students do (the time and energy they devote to educationally purposive activities) and what institutions do (the extent to which institutions employ effective educational practices to promote student participation in the most effective learning activities). These two elements are closely interlinked because the way institutions invest resources and design learning environments makes a non-trivial difference in channelling student energies into the right types of activities (Pike, Smart, Kuh, & Hayek, 2006).

4.2 Emergence of Student Engagement as a Field of Study

Student engagement research has its origins in educational research that emerged as early as the 1900's with Tyler's focus on the importance of the amount of time spent on academic tasks (Merwin, 1969) and later longitudinal research by Pace (1980, 1984, 1990) into the effect of quality of effort on desired student outcomes (Kuh, 2009a). Over the course of years, Astin's research on student involvement (1977, 1984, 1993, 1999) confirmed that any form of student involvement (the amount of physical and psychological time and energy the student invests in the educational process) was positively associated with a wide variety of academic outcomes. In fact, one of the primary findings in *How College Affects Students* (Pascarella & Terenzini, 2005), is that the time and energy students devote to their own educational experiences relate directly to student success. The study of student engagement places a strong emphasis on student involvement in learning in terms of the quality of effort, as well as time on task.

However, student engagement extends beyond the time and involvement to examine the extent of student participation in effective educational practices as outlined by Chickering and Gamson in their landmark publication *Seven principles for good practices in undergraduate*

education, (1987, 1999). In this publication, Chickering and Gamson outline seven principles that encompass what students should be doing during their undergraduate education to optimise their personal development and to promote effective learning. The primary premise of their work is that when students and staff take the responsibility to devote time and effort to tasks related to these principles student learning and success will improve (Kuh & Vesper, 1997). The principles are: student-staff interaction, cooperation between students⁷, active learning, prompt feedback, time on task, high expectations of students, and respect for diverse talents and ways of learning. Chickering and Gamson's ground breaking theoretical contribution has been cited as many as 2400 times in academic publications (Google Scholar Search, 23 November 2010). These widely researched principles continue to influence teaching and learning practices globally (Kuh & Vesper, 1997) and recently published national longitudinal projects in the US confirm continued importance of implementing these principles (Blaich & Wise, 2011).

Building on these principles the National Centre for Higher Education Management Systems (NCHEMS) in the US published their good practice guidelines, reinforcing the value of each of the seven principles (Ewell & Jones, 1996). In addition to the seven principles, the following factors emerged as good principle guidelines in undergraduate education: an emphasis on the early years of study (focus on the first year); a quality curriculum, a synthesis of experiences, on-going practice of learned skills, and an integration of education and experience.

The field of student engagement builds collectively on the contribution of all of the above mentioned research, incorporating elements of each into the overall domain of constructs

⁷ The concept of interaction and cooperation between students is frequently referred to in literature as "peer interaction". The term peer interaction will be used henceforth in this paper.

measured in engagement research. The direct measurement of student engagement, by means of the NSSE, emerged in the late 1990's arising out of a need to research the student experience in a reliable and valid way from the perspective of improving teaching and learning, without the drawbacks of cumbersome administration processes and low response rates of the assessment tools available at the time (Kuh, 2009b). The NSSE is discussed in greater detail under Section 5.1.1.

4.3 Promoting Student Success through Student Engagement

Although there are limits to what institutions can realistically do to address the effects of years of educational disadvantage, all institutions can improve levels of student engagement by promoting or even requiring participation in effective educational activities and designing environments conducive to student success (Kuh et al., 2007a). The two elements of the student engagement definition (i.e. what students do and what institutions do) will be used as the framework in the next two sections to discuss specific activities, programmes, practices and conditions associated with student success in HE. The activities and practices discussed below represent broadly the content domain assessed by the NSSE.

4.3.1 What students do: Educational activities associated with success.

The first component of the definition of student engagement is “what students do”. This section outlines the types of activities students should participate in regularly during their undergraduate education to foster effective learning and success. The activities discussed below include: sufficient time on task, adequate student-staff interaction, meaningful peer interaction, participation in cocurricular activities and meaningful interaction with diversity.

4.3.1.1 Time on task.

The amount of time students invest in activities related to their education (such as studying, doing homework and attending scheduled academic activities) matters to their learning and development (Astin, 1993; Chickering & Gamson, 1987; Ewell & Jones, 1996; Merwin, 1969; Pace, 1980, 1984, 1990).

More specifically, the amount of time students spent studying is positively related to retention, graduation, enrolment in postgraduate studies, academic performance, standardised test scores, and self-reported increases in cognitive and affective skills (Astin, 1993; Kuh et al., 2007b; Webber, 2010). Various studies internationally and in SA suggest that increased time spent in formal class attendance has a positive impact on academic performance (Baard, Steenkamp, & Frick, 2010; Thatcher, Fridjhon, & Cockcroft, 2007), and some evidence suggests that class attendance in the first weeks of the first year are of particular importance (Swing, 2010). This is worrying in the South African context where many students miss the first weeks of class due to late registration. For example, in 2010 as many as 33% of first-time entering students registered late at the institution where this study was conducted (R. Ferreira, personal communication, 5 January, 2010).

4.3.1.2 Student-staff interaction.

Meaningful formal and informal student-staff interaction can take place both inside and outside the classroom, and can be related to class or cocurricular activities. The importance of these interactions is recognised by its inclusion as one of Chickering and Gamson's seven principles and the wide support afforded to this principle by other prominent researchers (Astin, 1993; Belcheir, 2001; Ewell & Jones, 1996; Pascarella & Terenzini, 2005; Tinto, 1987, 1993).

Increased student contact with lecturers (inside and outside the classroom) positively influences learning and is associated with student development and desired academic outcomes (Astin, 1993; Kuh, 2003, 2007; Webber, 2010). Research suggests that student-staff contact for first-years should take place as early as possible in the academic year – even as early as orientation (Terenzini et al., 1994) given the fact that intentional contact with staff has been found to predict development of academic competence for first-year students (Reason et al., 2006).

Beyond these general benefits, contact with staff has been found to have specific benefits for various at-risk groups. First-generation students who reported positive interactions with staff are more likely to experience academic success and be satisfied with their educational experience (Amelink, 2005). However, first-generation students may be particularly intimidated by academic staff and thus seldom initiate interactions with staff, as was seen in the recent CHE study in South Africa (2010). Institutions could benefit from being intentional and systematic in getting staff to initiate interactions with all students, but in particular with first-generation students (Longwell-Grice & Longwell-Grice, 2007-2008). Furthermore, strong student-staff relationships significantly mitigate negative campus climates for students of colour, women, and LGBT students (Cress, 2008).

Recent national studies in South Africa found overall low levels of student-staff interaction across different institutional types. However, students reported particularly low levels of interaction with staff outside of the classroom context (Strydom & Basson, 2010; Strydom & Mentz, 2010).

4.3.1.3 Peer interaction.

Meaningful cooperation and learning between peers, another of Chickering and Gamson's (1987) seven principles, is defined by activities where students learn together in collaborative groups or teach each other – both inside and outside the classroom. Peer interaction outside the classroom can benefit student learning when these interactions extend the broad academic agenda through in-depth conversations about topics such as religion, politics or curricular related themes (Pascarella & Terenzini, 2005).

Astin (1993, 398) states that peers are the “single most potent source of influence” on a student's life, and studies conducted by Bean (1985) found that peer interactions were a more robust predictor of persistence than informal contact with staff. This research supports the importance of social integration as purported by Tinto in his original model of persistence (Reason, 2009a). Research in the US and Australia indicates that undergraduates who engage in a meaningful manner with their peers on a regular basis are more satisfied with their student experience, report higher levels of achievement and are more committed to persisting with their studies (Krause, 2005a; Kuh & Vesper, 1997; Pascarella & Terenzini, 2005) are more intellectually self-confident (Antonio, 2004), participate in more diversity related activities (Antonio, 2001; Milem, Umbach, & Liang, 2004) and self-report higher levels of learning (Lundberg, 2003). Recent research has even begun to investigate the role of social networking sites such as “Facebook” in the socialisation and persistence processes of students, finding that social network sites may assist in connecting students and impact positively on success (Morris, Reese, Beck, & Mattis, 2009).

4.3.1.4 Cocurricular activities.

Cocurricular activities contribute to student success when they meaningfully involve students in activities outside of the classroom in a manner that complements the learning taking place inside the classroom. Broadly defined, these types of activities include (but are not limited to) community engagement, internships, foreign language coursework, study abroad, field experience, clinical assignments, campus organisations, publications, student government, planning committees and leadership training (Braskamp, Trautvetter, & Ward, 2006).

Participation in cocurricular activities is positively related to student success and learning (Kuh et al., 2005b) and presents an ideal environment in which to foster student-staff interactions, as well as to meaningfully integrate academic affairs/departments and student affairs (Braskamp et al., 2006). However, some students appear to benefit more from cocurricular participation. Students with low commitment to the higher education institution and their own educational goals, benefit most from cocurricular activity by increasing their commitment to the higher education institution and their own educational goals, two conditions that are known to be linked to persistence (Pascarella & Terenzini, 2005).

Two national studies in South Africa found that student participation in cocurricular activities was low (Strydom & Basson, 2010; Strydom & Mentz, 2009). In the 2009 national study students from all types of institutions reported spending two hours per week on cocurricular activities, whilst in the 2010 study they reported spending three hours per week. A greater alignment between academic and student affairs can facilitate more intentional and meaningful participation in such activities (Kuh, 2005c).

4.3.1.5 Experiences with diversity.

Meaningful informal and formal interactions with diverse others both inside and outside the classroom is an important student activity. Interactions with students who differ from the individual in terms of race, politics, religion, sexual orientation, ability and even SES can be considered diversity experiences on university campuses.

Research in HE has documented a wide-array of benefits for students from meaningful diversity interactions (Gurin, Dey, Hurtado & Gurin, 2002; Reason et al., 2006; Terenzini, Cabrera, Colbeck, Bjorklund, & Parente, 2001). Specific outcomes include improved critical thinking (Antonio, 2004; Chang, 1999; Hu & Kuh, 2003), improved ability to think in complex ways (Sugrue et al., 1999), increased self-reported learning (Gurin, Nagda, & Lopez, 2004; Milem, 2003), improved academic and social self-confidence (Chang, 1999), increased likelihood to work or live in diverse environments after graduation (Hurtado, Dey, Gurin, & Gurin, 2003), a deeper understanding of themselves and greater respect for the complex identities of others (Palmer, 2000).

Beyond the educational benefits of diversity interactions, learning to interact effectively with diverse others is an important goal of HE in order to prepare students to participate in a democratic society and to equip them with the skills necessary for the world of work in the 21st century (Gurin et al., 2004; Luo & Jamieson-Drake, 2009). Given the historical context in SA, structured experiences with diversity are of particular importance in preparing students for the world of work and participation as democratic citizens in the broader community. However, the widespread evidence of problematic institutional cultures (Schrieff, Tredoux, Dixon, & Finchilescu, 2005; Soudein, 2008a, 2008b; Strydom & Mentz, 2008a) points to the burden of

responsibility that lies with institutions to effectively address diversity in the HE context (see also Section 3.2.2.1).

4.3.2 What institutions do: Institutional conditions associated with success.

The second component of the definition of student engagement is “what institutions do”. This section will briefly expound on the four broad categories of institutional related factors that have been researched as contributors to student success, namely: the structural and organisational characteristics of the institution, campus programmes and services, teaching and learning approaches, and student-centred campus cultures.

When reflecting on the institutional conditions associated with success it should be borne in mind that although there are numerous institutional conditions that contribute to an effective educational environment, a synergistic approach incorporating a wide array of these elements has the potential to yield far greater gains than any single strategy on its own (Kuh et al., 2007a).

4.3.2.1 Structural and organisational characteristics of the institution.

The structural and organisational characteristics of institutions which have been researched include the size (number of students enrolled), sector (type of institution), mission, residential character (number of students living in campus residences), structural diversity (percentage of diverse students enrolled) and selectivity (how stringent entrance requirements are) (Kuh et al., 2007a). The bulk of research suggests that these largely immutable characteristics have less of an influence on student success than organisational behaviour's and the organisational cultures do (Terenzini & Reason, 2005), and that once student characteristics are controlled for structural and organisational characteristics make less of a contribution to student success than initially supposed (Kuh et al., 2007a; Reason, 2009a). However, some research such as Porter (2006) contend this on the basis of both theoretical and statistical

grounds, asserting that institutional structures do affect student engagement and learning in predictable and substantively significant ways. Porter found that students benefitted most from being at a more selective, smaller institution that focused on a liberal arts education (as opposed to a research intensive focus).

As pointed out under Section 2.1.2.3, there are differences in the overall graduation and throughput rates between different institutional typologies in South Africa; no research studies investigating the impact of institutional characteristics on success after taking into consideration individual student characteristics were found.

4.3.2.2 Programmes and services.

Offering high quality programmes and services on campus that are supported by adequate human and financial resources are an example of how institutions can intentionally design the campus environment to promote success in the first year of study (see discussion hereunder for examples) (Kuh et al., 2007a).

However, in choosing which programmes to implement it is becoming increasingly evident that one size does not fit all and individual institutions should make it their business to understand the needs and experiences of their own students in order to address student success most effectively by paying specific attention to the unique subgroups within the institution (Bai & Pan, 2009-2010). In shifting student success outcomes, a few research driven, well-coordinated, intentionally designed and effectively managed projects may be more effective than many programmes of inferior quality (Hossler, Zinskin, & Gross, 2009).

Numerous examples of a wide variety of programmes and practices can be found in literature on promoting student success in HE. A summative, but not comprehensive list is provided below:

4.3.2.2.1 *New student adjustment programmes.*

The specific nature of adjustment programmes and activities vary widely between institutions, but this category includes all institutional intentional actions designed to help first-year students make the initial transition into university (Ferguson, 2006; Reason et al., 2006; Upcraft et al., 2005). These can include – but are not limited to – learning communities, study groups, common first-year readings, orientation programmes and first-year seminars.

Learning communities can take on various forms and create the opportunity for students to develop an academic and social network whilst engaging actively in the educational experience and have been positively associated with retention and academic performance (Baker & Pomerantz, 2000; Crutcher, Corrigan, O'Brien, & Schneider, 2007; Froyd, 2008; Johnson, 2000; Taylor, Moore, MacGregor, & Lindblad, 2003; Turley & Wodtke, 2010).

One particular type of adjustment programme that has received a great deal of attention is extended orientation and first-year seminar programmes. Extended orientation programmes have been correlated with intention to persist and higher graduation rates (Colton, Ulysses, Shultz & Easter, 1999; Crutcher et al., 2007; Hossler et al., 2009; Kuh et al., 2007a; Porter & Swing, 2006; Williford, Cross, Chapman, & Kahrig, 2000) and increased levels of deep learning (Reason, Cox, McIntosh & Terenzini, 2010). However, evidence is not entirely unequivocal and may be conditional on individual student commitment, academic aptitude and SES (Cavote & Koper-Frye, 2006-2007; Pascarella & Terenzini, 2005). It is however worth noting that first-year seminars can have a positive compensatory effect for unprepared students in terms of grades and persistence, and possibly for first-generation students (Swaner & Bronwell, 2008).

Universities employing more of these programmes were found to have higher graduation rates (O'Brien, 2004) and they create powerful ways for institutions to communicate clear

pathways to success to students (Kuh et al., 2005c). This is particularly relevant in the South African context where programmes that clearly communicate pathways to success for students are not widespread (CHE, 2010), and current programmes need to be redesigned in order to more effectively address relevant student concerns during the first weeks of the academic year (Strydom & Mentz, 2008b).

4.3.2.2.2 *Academic advising.*

Research indications are that high quality, structured advising systems improve academic and retention outcomes for all students, and in particular for at-risk groups (Habley, 2005; Karp & Logue, 2002-2003; Kramer & Associates, 2003; Tinto, 2004; Willet, 2002). Overall, institutions with high graduation rates have proactive advising programmes that are actively monitored to supplement early warning systems (Engle & O'Brien, 2007).

Comprehensive academic advising programmes are not widespread in SA, and there is little integration of academic and administrative/support services with respect to advising. A recent study (CHE, 2010) indicates that the lack of academic advising, particularly in the first-year of study, contributes negatively to student success.

4.3.2.2.3 *Early warning systems.*

Effective early warning systems that can accurately identify students at risk of leaving the institution during or after the first year of study are especially important for students who enter university with one or more of the risk factors discussed in Section 2.2.1 (Kuh et al., 2007a). Examples of how early interventions can improve academic success and promote deep learning provide a rationale for the design and implementation of early warning systems which use both academic and non-academic factors as predictors (Beck & Davidson, 2001; Budig, Koenig & Weaver, 1995; Greene, 1994; Miller, 2005; Reason et al., 2010).

Examples of early warning programmes for first-year students in the South African context are emerging at various institutions for example the first-year Academy at the University of Stellenbosch (Van Schalkwyk, 2010) and the first-year experience at the University of Johannesburg (Van Zyl & Jacobs, 2010).

4.3.2.2.4 *Campus residences.*

Although living on campus is not a specific programme offered by an institution, the residence environment is ideal for the implementation of effective programmes and services within both the social and academic domain and will therefore be discussed under the heading of programmes and services.

Given the contained environment in which to implement effective success strategies, it is not surprising that living on campus (especially during the first year of study) has been positively associated with a number of desired outcomes in HE (Astin, 1993; Chickering & Reisser, 1993; Jones-White et al., 2010). More specifically, living on-campus in the first year has a positive impact on retention, extracurricular activities, perceptions of the campus environment, individual student growth, interpersonal relationships, relationships with university staff, openness to diverse others and overall satisfaction with the university experience (Blimling, 2003; Pike, 2009) as well as higher academic performance for Black students (Flowers, 2004; Peltier et al., 1999; Turley & Wodtke, 2010).

A recent study in SA (CHE, 2010) points towards the positive impact that residence life can have on socialisation and assisting students to make the transition from high school. However, the study also points out how the historical traditions associated with residence structures must be carefully mediated in order to create positive climates for students from all demographic groups.

4.3.2.2.5 *General student support services on campus.*

Research suggests that having a well-developed system of student support services on campus (for example writing centres, counselling centres, technology centres, career services etc.) contributes to student success and persistence (Kuh et al., 2007a). Creating awareness of such support services is of particular importance for low-income and first-generation students who are often unaware of the support available to them (Engle & O'Brien, 2007; Grant-Vallone, Reid, Umali, & Pohlert, 2004).

Although this list is not exhaustive, it provides an indication of how institutions can become intentional about creating institutional conditions in the first year of study that promote student engagement and contribute to both individual and institutional success. The following section will focus on specific teaching and learning pedagogies associated with student success.

4.3.2.3 *Teaching and learning approaches.*

One of the core functions of a university is teaching and learning, and it is therefore imperative that the widespread implementation of effective pedagogical practices form the core of the student success agenda on any campus (Pascarella, Seifert, & Whitt, 2008; Pascarella & Terenzini, 2005). Stimulating and effective classrooms encourage and entice students to engage themselves in the learning process, leading them down the path to success (Giaquinto, 2009-2010). A strong teaching mission is a defining feature of institutions with high graduation rates (Engle & O'Brien, 2007).

A body of literature which has been emerging since 2008 focuses on high impact pedagogies that have been widely tested and shown to benefit students from a variety of backgrounds (Kinzie, 2010, 2011; Kinzie & Ross, 2009; Kuh, 2008). Examples of high impact engaging pedagogies associated with improved learning and success include active learning

(Braxton, Milem, & Sullivan, 2000), collaborative learning, peer facilitated learning programmes, such as Supplemental Instruction (SI) (Congos & Schoeps, 1993; Damons & Snoer, 2010; Hutcheson & Tse, 2006; Martin & Arendale, 1994; Martin, Arendale, & Associates, 1992; Smuts, 2003), writing intensive classes, undergraduate research, common intellectual experiences, service and community based learning, internships and capstone experiences (Crutcher et al., 2007; Froyd, 2008; Kinzie, Ross & Evansbeck, 2010).

Given the importance of effective teaching and learning to student success, it is not surprising that four of Chickering and Gamson's principles (1987) are directly related to classroom activities – namely active learning, prompt feedback, high expectations and respect for diverse ways of learning. However, despite the importance of teaching and learning practices there remains relatively little research on the impact of classroom practices on student outcomes (Barefoot, 2004). It is beyond the scope of this study to explore any of these principles in depth, however a brief discussion of the impact and importance of each is provided below.

4.3.2.3.1 *Active learning.*

Active learning is any class or class related activity that involves students doing things and/or reflecting on the things they do (Bonwell & Eison, 1991). This includes activities such as asking questions, participating in discussions, cooperative learning in small groups, debating or even role playing. Student participation in these types of activities improves learning, academic and social integration, and impacts positively on persistence (Braxton, Jones, Hirschy & Hartley, 2008; Braxton et al., 2000; Froyd, 2008; Pascarella & Terenzini, 2005).

Ad hoc research evidence in the South African context points towards the positive contribution of active learning on critical thinking in undergraduate students (Allers & Vreken, 2005; Horn & Jansen, 2009). However, national studies conducted among South African

undergraduates found that many students do not frequently participate in active learning experiences during the first year (Strydom & Basson, 2010; Strydom & Mentz, 2010).

4.3.2.3.2 *Prompt feedback.*

Research suggests that when students are provided with timely feedback that is both supportive and corrective, their learning is directed toward higher order learning goals and the development of self-regulated learning is fostered (Black & Wiliam, 1998; Gibbs & Simpson, 2004; Higgins, Hartley & Skelton, 2002; Nicol & Macfarlane-Dick, 2006; Pascarella & Terenzini, 2005).

Case studies in SA suggest that due to various factors, such as large classes and heavy staff workloads feedback provided to students does not contribute to the learning experience of the students (CHE, 2010). In a recent national study in South Africa it was found that the majority of students reported that they did not often receive prompt feedback on their academic work (Strydom & Basson, 2010).

4.3.2.3.3 *High expectations.*

The principle of setting high expectations for student performance is supported by extensive research evidence (Chickering & Reisser, 1993; Ewell & Jones, 1996; Sanford, 1968; Schilling & Schilling, 2005; Upcraft et al., 2005). By setting high expectations for students in terms of academic achievement, class attendance and work requirements for classes, instructors help to cultivate a sense of responsibility among students, who in turn adjust their behaviour accordingly (Schilling & Schilling, 2005). One of the characteristics associated with higher than expected graduation rates is setting high expectations for student academic achievement (Kuh et al., 2005c).

However, it is critical to balance the challenge of high expectations with high-quality support systems and realistic academic advising (refer to discussion in Section 4.3.2.2 on campus programmes and services) so as not to create unrealistic expectations on the part of the student and set them up for failure (Chickering & Reisser, 1993; Dalton & Crosby, 2008; Gonyea et al., 2006; Sanford, 1968; Upcraft et al., 2005).

A study on student success in the South African context (CHE, 2010) points to a potentially problematic trend where undergraduate lecturing staff communicates to students the expectation that they will not be able to master the academic environment. In light of the role of high expectations on student success, the pervasiveness of this phenomenon and its impact of student success in SA may warrant further research attention.

4.3.2.3.4 *Respect for diverse ways of learning.*

At the core of the implementation of effective pedagogical approaches lies an educational philosophy that values individual students for their diverse needs and unique talents. Teaching methodologies that focus on individual student strengths are particularly effective in promoting success among historically underserved students (Alexander & Murphy, 1998; Ewell & Jones, 1996; Pascarella & Terenzini, 2005). This approach may prove particularly useful in reframing the current conversations in SA that focus solely on the underprepared student, to a debate which also takes into account the extent to which the institutions is underprepared to cater to the unique characteristics of the student population (Scott, 2004).

The use of information and communication technologies (ICT's) in HE is becoming an increasingly important manner in which to creatively address diverse and unique ways of learning, particularly for millennial students (see discussion in Section 2.2.2) (Krause, 2005b). Intentional use of technology in the classroom has the potential to employ a wide array of

effective pedagogies in diverse and unique ways. For example ICT's can be used to increase active learning, enable more collaboration between peers and with staff, provide platforms for peer tutoring, and ultimately contribute to improving student academic achievement. These types of online pedagogies are proving particularly useful for underserved students, especially those who are low income, first-generation, distance students and working adults (Chickering & Ehrmann, 1996; Damons & Snoer, 2010; Twigg, 2005).

There is limited research on the use of ICT's in South African HE (Van der Westhuizen & Henning, 2004) and the use of IT in the classroom is riddled with the complexity of availability, access and affordability (Brown & Czerniewicz, 2007; CHE, 2006), leaving educators with the task of creatively including technology whilst overcoming these obstacles (Brown, Thomas, Van der Merwe, & Van Dyk, 2008; MacGregor, 2008; Nel & Dreyer, 2005; Wessels & Steenkamp, 2009).

4.3.2.4 *Student-centred campus cultures.*

In their book entitled *Student Success in College: Creating Conditions that Matter*, Kuh et al. (2005c) highlight the importance of having an unshakeable focus on student success that permeates every level of an institution, including the physical campus and an intellectual climate that fosters an attitude of "positive restlessness" towards the improvement of student learning. Large scale research studies suggest that perception of the extent of support they receive on campus was the single greatest influence on student's self-reported academic gains during the first year on campus (Reason et al., 2006), and students who perceived campus environments more positively were more likely to be engaged in educationally purposive activities (Hu & Kuh, 2001). Research also shows how intentional planning to accommodate minority groups into the dominant campus culture facilitates their success (Eimers & Pike, 1997; Terenzini, Yaeger,

Bohr, Pascarella, & Amaury, 1997), although meta-analyses indicate that the effects of racial climate on degree completion may be indirect for the overall population of university students (Pascarella & Terenzini, 2005).

In SA, Cross et al. (2009) found that a perceived lack of support for minority students led to lack of motivation and adequate engagement in academic tasks.

4.4 Relationship between Student Engagement and Success

All factors considered, evidence suggests that for first-years, the nature and quality of the classroom experience is a better predictor of desired HE outcomes than their pre-university characteristics (Gerken & Volkwien, 2000; Kuh et al., 2007b; Reason et al., 2006) and it is thus not surprising that higher levels of student engagement in the first year are associated with higher academic grades, higher first-to-second year retention, and improved graduation rates. Regardless of students' pre-university experiences, academic preparation and personal motivation, student engagement is associated with desired outcomes for all groups of students. Additional to this, there is evidence of a positive compensatory effect for at-risk students including low-income, first-generation students and students of colour, suggesting that these students benefit even more than their peers from increased levels of engagement (Bowen et al., 2009; Carini et al., 2006; Gonyea et al., 2006; Greene et al., 2008; Kuh et al., 2007a; Kuh et al., 2007b; Kuh et al., 2008; Miller, 2008; Pascarella et al., 2009; Pike et al., 2007; Svanum & Bigatti, 2009).

To date, no research into the empirical link between student engagement and success in HE has been conducted in the South African context. Evidence for such relationships established through longitudinal research on student engagement in this context would provide institutional leaders and policy makers with evidence to confidently design and implement policies that

promote the use of effective educational practices in HE nationally. The current research study can contribute directly to the establishment of such a body of research.

4.5 Factors Influencing Levels of Student Engagement in the First Year

As evidenced in the discussion above, despite pre-university characteristics engaging in educationally purposive activities on a regular basis during the first year is associated with higher levels of student success.

Regrettably, not all students are equally engaged during the first year because actual levels of engagement are influenced by a number of institutional and individual factors (Cole & Korkmaz, 2010). Thus, in the attempt to improve student success through increasing student engagement, it is important for institutions to understand how these factors interact with each other to promote or hinder levels of student engagement. For the purposes of this study, two specific factors that influence levels of engagement during the first year will be explored, namely: engagement in previous educational settings and expectations to engage in new educational settings (Cole & Korkmaz, 2010).

If institutions can understand to what extent different groups of students (especially at-risk groups such as first-generation or commuter students) are engaged in educationally purposive behaviours during high school, what their expectations for engagement are in their first year and how these factors relate to the actual engagement in the first year, then this information can be utilised to shape the first-year experience through intentional curriculum design, purposefully created orientation programmes and personalised support services (e.g. academic advising) (Cole et al., 2009). In this manner, institutions have the opportunity to increase levels of engagement in the first year, ultimately contributing to student persistence and academic performance.

The focus of the following section is to examine the importance of and the interrelationship between high school engagement, expected engagement and actual levels of engagement during the first year.

4.5.1 High school engagement.

A number of factors which influence engagement are present (to varying degrees) in both high school and HE. Cole (2010a) lists a set of variables that include both institutional factors and personal factors (e.g. social support, SES, academic ability, academic motivation, personality traits/dispositions, expectations of academic environments). A student's behaviour (in either high school or HE) is influenced by the interaction of this complex set of factors.

In light of this overlap in factors, it can be expected that engagement at high school will be related to engagement during the first year. Various studies find support for a level of consistency between past behaviours and future behaviours – even in different contexts and for varied activities (Funder & Colvin, 1991; Ickes, Snyder & Garcia, 1997; Perkins, Jacobs, Barber & Eccles, 2004; Raymore, Barber, Eccles & Godbey 1999; Van Bragt et al., 2010).

Flowing from this it can be expected that a student who engaged frequently during high school is more likely to continue to do so in HE (and vice-versa). A number of studies confirm this general consistency of engagement in both academic and non-academic activities between high school and HE (Astin & Lee, 2003; Cook & Leckey, 1999; Davey, 2010). This continuity of behaviour represents a student's predisposition to engage at a given level in an educational setting. Thus, by systematically assessing students past patterns of engagement at high school when they enter into HE, it is possible to understand the extent to which entering students may be ready and prepared to engage during the first year (Cole et al., 2009).

A further reason why it is important to understand patterns of engagement at high school is that past experiences shape future expectations, which in turn influences behaviour in future settings. Research has found support for consistency between high levels of engagement at high school and high expectations for engagement during the first year in the context of student engagement (Cole & Kinzie, 2007).

However, Davey (2010) reports that despite this conceptual link between past and future behaviour, there remains relatively little research on the relationship between high school and HE engagement. Furthermore, although some research has linked high school engagement in a wide variety of academic and non-academic activities to academic performance and retention, findings in this regard are not unequivocal and Davey (2010) concludes that continued research in this area is necessary to clarify and better understand this relationship. The current research study which explicitly examines the link between engagement at high school, expectations to engage and student success makes a contribution to understanding this relationship in the South African context.

The following section will examine the role of expectations in determining engagement behaviours in the first year of study.

4.5.2 Student expectations of academic environments.

Student expectations of the academic environment matter because they impact behavioural choices, engagement, academic performance, and ultimately the decision to remain enrolled. Expectations are mental representations of anticipated futures and form the fundamental building blocks of behaviour because people tend to act in manners consistent with their expectations. Expectations for a given environment/event have a significant impact on individuals by influencing how they perceive and interpret events, which situational cues they

respond to and how much effort they are willing to exert in various tasks (Olson, Roese, & Zanna, 1996). However, expectations are not fixed. In contrast, they are perpetually in flux and are constantly being redefined by an individual's experience as they interact with their environment (Pintrich & Schunk, 2002). The malleable nature of expectations implies that they are a student level characteristic over which institutions can exert a measure of influence (as opposed to fixed characteristics such as gender, SES or race over which the institution has no influence) and are thus an important variable to study in educational settings.

Students form expectations for HE in various ways, such as previous high school experiences (Cole & Kinzie, 2007). Expectations are also shaped by other factors such as informal and formal sources of information. Examples of formal sources of information students use to create their expectations of a new environment include official institutional communications, marketing materials and websites (all of which are directly influenced by the institution). Informal sources of information include family, friends, popular media (movies, television and the internet) which are not likely to be directly influenced by the institution (Cole et al. 2009). Students use their past experiences and this host of information to create expectations both for the overall campus experience and for their specific study programme.

However, not all of the information students use to create their expectations is accurate and as a result students arrive on campus with a mix of reasonable and unreasonable expectations for their first year. For example, they may reasonably expect to receive prompt and meaningful feedback on a regular basis from lecturers), however it may not be reasonable to expect to be able to perform well academically whilst investing less energy in educational tasks than at high school. Not surprisingly, students who have more realistic and complex expectations of university have been exposed to a wider range of accurate information sources (often in the form

of family and friends who have been at the institution before); whilst students who have not been exposed to this information (often time first-generation students) often have less realistic expectations (Kuh et al., 2005a).

Additionally, expectations in HE environments are bi-directional. Whilst students have expectations of the learning environment, the institution also has expectations of its students. For example, institutions can reasonably expect that students should invest adequate energy in educational tasks, that they should attend classes and to obey the specified code of conduct. The fundamental difference between the two is that student expectations represent intentions and beliefs about what they will do and encounter in the first year of study (and can be reasonable or unreasonable), in contrast institutional expectations can be more accurately described in terms of what will be required of a student at the institution (Gonyea, 2001). This set of bi-directional expectations serve as a form of psychological contract between individuals and the institution.

4.5.2.1 Relationship between expectations and engagement.

Upon arrival at the institution, expectations will influence on a daily basis how a student perceives and makes meaning of the events that take place in the new learning environment (inside and outside the classroom), which in turn affects their motivation, engagement and the amount of effort they are willing to invest in the learning process (Konings, Brand-Gruwel, Van Merriënboer, & Broers, 2008). Additional to this, expectations influence which opportunity cues a student will pay attention to in the new learning environment, resulting in a situation where students who expect to do more, in fact end up doing more. If a student does not expect something to occur in a given context, then they are more likely to filter out opportunities presented to them. For example, if a student does not expect to interact with staff it is less likely that they will seek out opportunities to do so on their own (Kuh et al., 2005c). Kuh et al. (2005a)

found evidence to confirm this relationship by matching student's experiences in the first year of HE with their initial expectations. Moderate, significant correlations between expectations and behaviour were found for various activities such as writing, learning and interaction with staff. Furthermore, those students who expected to engage a wider variety of activities did eventually do so.

4.5.2.2 Misalignment between expectations and engagement.

Despite the link between expectations to engage and actual engagement, research shows that students tend to engage less during their first year than anticipated (Davey, 2010; Gonyea et al., 2006) and do not have accurate perceptions about what will be expected of them at university or what the nature of the teaching and learning environment will be like (Lowe & Cook, 2003). This phenomenon, more commonly known as the freshman myth, has been studied in various contexts and provides consistent evidence that students have overly optimistic beliefs about the HE environment, and think they are going to do far more than they actually do (Baker et al., 1985; Kuh, et al., 2005a; Smith & Wertlieb, 2005). A number of examples from research are discussed below in support of this.

Students expect to be more academically successful than they actually are in the first year. For example, most students in the US expect that they are going to complete their degree and that they will achieve mostly above B grades (Miller, 2005). Earlier discussions on academic success show that this is not the reality for most students. One possible reason for the poor performance may be the amount of time students invest in academic tasks. In general, student expectations of the number of hours they will spend studying is greater than actual reported hours during the first year (Gonyea, Kuh, Kinzie, Cruce, & Nelson Laird, 2010; Kuh et al., 2005a). Babcock and Marks (2010) found that current student populations are spending less time

per week studying than previous student populations. Some evidence suggests that students' expectations for a challenging academic environment are not being met (Gonyea et al., 2010; Kuh, 2005a), and because little is expected of them, they disengage and underperform. Furthermore, the mismatch between expectations and engagement extends beyond the classroom, to out-of-class experiences. Gonyea et al., (2010) found that students spent substantially less time participating in cocurricular activities than they expected to, and that their expectations for support from the institution were not met.

However, this misalignment is not unexpected because behaviour in any setting is not entirely determined by past behaviours and expectations, but mediated to some extent by the influence of the environment (Bandura, 1986). Thus, regardless of a student's engagement in high school or expectation to engage, the campus environment plays an important role in facilitating or hindering high levels of engagement from students during the first year by setting high expectations for them and creating conditions conducive to engagement.

4.5.2.3 Consequences of misaligned expectations and experiences.

Regardless of whether student expectations are realistic or not, unmet expectations can lead to a breach in the psychological contract between the two parties – resulting in students becoming disillusioned, potentially losing trust in the institution and disengaging from the academic experience (Kuh et al., 2007a). Outside of classroom activities, unmet expectations can negatively impact on the extent to which a student will integrate socially into the institution. This lowered social integration in turn contributes to decreased institutional commitments and may ultimately increase the likelihood of dropout (Helland, Stallings, & Braxton, 2001-2002). This link between expectations on persistence and academic performance has been confirmed in other studies (Reason et al., 2006) and unrealistically high expectations have been linked to lower

academic achievement (Smith & Wertlieb, 2005). Conversely, realistic expectations have been associated with increased academic effort and study time (Weissberg, Owen, Jenkins, & Harburg, 2003).

In summary, given the malleable nature of expectations, their influence on actual behaviours in educational settings, and the negative consequences associated with unmet expectations, thus the value of understanding student expectations to engage as they enter higher education in order to manage them effectively becomes clear. However, despite the importance of expectations, literature on student expectations is limited and continued investigation is needed (Kuh, 1999). Kuh et al. (2005a) call for research on what first-year expectations are, what counts for different levels of expectations between different groups of students and what role student expectations play in shaping behaviours during the first year. The current research study makes a direct contribution to this body of knowledge by investigating student expectations by means of administering the BUSSE to first-time entering students in the South African context.

4.5.2.4 Intentionally managing expectations in higher education.

The psychological contract that exists between the student and the institution needs to be intentionally managed to avoid the negative consequences associated with misalignment discussed above. Maintaining a positive psychological contract between the two parties requires informational exchanges in both directions. As a starting point, institutions must know what students expect from their first year. An appropriate manner for institutions to reliably collect this information is to systematically conduct assessments of students as they arrive on the campus (Cole et al., 2009). Surveys, such as the BUSSE, are meaningful ways in which institutions can gather information from students regarding their expectations and past experiences. Once student expectations have been communicated to the institution, the data can

be used to identify reasonable and unreasonable student expectations, responding appropriately to each.

An appropriate response to reasonable student expectations is to create a campus environment that facilitates (or even requires) participation in the anticipated activities by ensuring that opportunities to do so exist inside and outside of the classroom (Howard, 2005). From this perspective, assessing student expectations on entry can serve to guide institutions in designing learning environments that meet reasonable student expectations and maintain a positive psychological contract.

Informational exchange from the institution to the student, on the other hand, serves two primary purposes: to intentionally reshape unreasonable student expectations and to make explicit what the institution expects from the student.

Formal activities (such as first-year experience programmes or orientation) in the institutional environment can be utilised to reshape unreasonable expectations and communicate the institutions high expectations (Cole et al., 2009). Explicitly communicating institutional expectations to students in this manner is valuable because institutions who expect more from students will get more from them (cf. Chickering and Gamson's principles (Section 4.2)) (Schilling & Schilling, 2005).

Intentionally managing expectations in this manner between the institution and the student body is one way in which the institution can actively work towards communicating clear pathways to success as recommended by Kuh et al. (2005b) and encouraged in the SA report on throughput and access (CHE, 2010). This is particularly important in the South African context where there are many first-generation students who may not have reasonable and accurate expectations related to their first year (Kuh et al., 2005a).

4.6 Chapter Summary

As a contributor to student success and a variable over which institutions have some measure of influence, student engagement is an important variable of study within higher education institutions. Student engagement can be viewed as an umbrella for a domain of constructs in HE that focus on the quality of student effort and involvement in educationally purposive activities. More specifically, student engagement can be defined by what students do (the time and energy they devote to educationally purposive activities) and what institutions do (the extent to which institutions employ effective educational practices to induce students to involve themselves in the most effective learning activities). As a field of study, student engagement is strongly grounded in educational research and is directly measured by the NSSE.

This chapter has discussed promoting student success through student engagement by using the definition of engagement to highlight the educational activities and the institutional conditions that are related to student success in HE, citing a number of studies (both national and institutional) that support these assertions.

Higher levels of student engagement are associated with higher academic grades, improved retention to the second year, and higher graduation rates. However, not all students are equally engaged during their first year as actual engagement is influenced by various factors. Two important factors influencing first-year engagement are engagement during high school and expectations to engage during the first year. Understanding how these two factors interact with actual levels of engagement can help institutions to intentionally design the campus environment in a manner that encourages higher levels of engagement.

Engagement in high school and engagement in first year are influenced by a number of factors that transcend both environments and it is therefore not surprising that there is evidence

of consistency in levels of engagement between different educational contexts. Understanding high school engagement is important to institutions as it provides an understanding of a students' predisposition to engage and contributes to the formation of the expectations students have for their first year. However, the relationship between past and future behaviours does not account for all of the variation in levels of engagement during the first year because the environment plays a pivotal role in creating conditions that either inhibit or facilitate participation. By comparing past engagement and expectations with actual levels of engagement in the first year, institutions can begin to evaluate the extent to which the campus facilitated or hindered engagement for students (Astin & Lee, 2003; Gonyea et al., 2010).

Expectations on HE campuses are bi-directional, and this psychological contract between the student and the institution must be intentionally communicated and managed in order to avoid a breach in the psychological contract and the negative consequences associated with this. One way in which to intentionally managing this psychological contract is to systematically assess students upon entry so that the institution can understand their expectations accurately and respond appropriately by striving to meet those that are reasonable (by providing sufficient opportunities to engage (Howard, 2005)), and renegotiate those that are not (Miller, 2005). In doing so, institutions can begin to communicate pathways and create conditions conducive to student success right from the start of a student's academic career, especially for groups of students who are known to be at-risk.

Despite the importance of past engagement and expectations to engage in relation to student success, research is limited and continued investigation is needed (Davey, 2010; Kuh 1999). The current research project makes a multidisciplinary contribution to this research agenda in the South African context.

Chapter 5: Student Engagement: Measurement and Practical Application

As indicated in Chapter 4, the NSSE survey is the most widely used instrument to measure student engagement in the US. This chapter will discuss the NSSE in greater detail and a related survey, the Beginning College Survey of Student Engagement (BCSSE). Furthermore, details on the international application and the adaption of both of these surveys for the South African context will be provided. The chapter concludes with a discussion on how student engagement data can be applied in practical settings at the institutional and individual level.

5.1 Measurement of Student Engagement

As noted earlier, the NSSE emerged out of a need to research the student experience in a reliable and valid way from the perspective of improving teaching and learning (Kuh, 2009b). The survey was designed as an instrument to measure the extent to which students participate in educationally effective practices in undergraduate programmes across the US and since its inception a number of directly related surveys have been developed. The section below discusses the purpose, content and international applications of the NSSE and BCSSE.

5.1.1 National Survey of Student Engagement (NSSE).

The NSSE annually obtains information from hundreds of four-year colleges and universities in the US regarding the levels of student engagement at their institutions by asking students questions related to the activities and conditions discussed in Chapter 3.

The overarching aim of the survey is to provide high-quality data to institutions that allows for data-driven change management strategies inside the institution. The three core purposes of the survey are institutional improvement, documentation of good practice and public advocacy (Kuh, 2009b). Data collected through the survey can be used diagnostically to provide

information to institutions that is actionable and can enhance the discourse about quality in education from the perspective of teaching, learning and effective educational practices (Gonyea, 2010).

The NSSE requires students to reflect and report on how they spend their time at university, as well as the intellectual, personal and social gains they have drawn from their studies (NSSE, 2010a). The survey contains 108 items and focuses primarily on student behaviours (as opposed to attitudes) directly related to engagement and success in HE (NSSE, 2008, 2010b). The survey asks students questions about the following domains (Kuh, 2009b): participation in educationally purposeful activities (student-staff interaction, time spent studying, participation active learning, participation in collaborative learning etc.); institutional requirements (for example the amount of reading and writing required of the student); perceptions of the university environment (to what extent the higher education institution offers students the support to succeed and the quality of campus relationships); perceptions of their own educational and personal growth since starting at university; and background characteristics (age, gender, race, etc.)

Participating institutions receive annual reports detailing student responses to all items, however in order to allow inter-institutional benchmarking and provide a common framework for reporting a number of item clusters were identified. These clusters of activities are referred to as the benchmarks of effective educational practice and are reported on annually (Kuh, 2009b). The benchmarks, constructed through a combination of empirical and conceptual analyses (Kuh, 2009b), represent important student behaviours and institutional factors that are related to student success (Kuh et al., 2005c) and can be used by an institution to assess the prevalence of effective educational outcomes, as an estimate of the efficacy of their improvement efforts (Kuh, 2003)

and as a proxy measure for the quality of undergraduate education (Kuh, Hayek, Carini, Ouimet, Gonyea, & Kennedy, 2001). The five benchmarks are named level of academic challenge, active and collaborative learning, student-faculty⁸ interaction, enriching educational experiences and supportive campus environment.

Since the first administration in 2000, more than 1300 different colleges and universities in the US and Canada have participated in NSSE (NSSE, 2010a). The survey was designed in 1998 and piloted at 75 American institutions during 1999, and thereafter approximately 275 institutions participated in the first administration during 2000.

The study of student engagement has been growing internationally in recent years. There have been administrations of the NSSE in the following countries: Canada, Mexico, Australasia, Puerto Rico, South Africa and China. Single-institution administrations over a three-year period have also taken place in Macedonia. Additional to this, various international US institutions, for instance in Rome, Lebanon and Qatar, have also administered the NSSE (T. Chamberlain, R. M. Gonyea, & J. Kinzie, personal communication, September 10, 2010; Coates, 2006, 2010; Strydom, Kuh, & Mentz, 2010). The growing popularity of the survey can be partly attributed to the fact that it focuses attention on aspects of student and institutional performance that can be addressed almost immediately (as opposed to focusing on issues or characteristics that institutions have no influence over such as individual characteristics or traits) (Kuh, 2005c).

⁸ The use of the word faculty in the U.S. context is equivalent to lecturers/academic staff in the South African context.

5.1.2 Beginning College Survey of Student Engagement (BCSSE).

The popularity of the NSSE in the US led to the development of a number of supplementary measures directly related to student engagement, including the BCSSE (NSSE, 2010a). The BCSSE measures entering first-year students' pre-university academic and cocurricular experiences, as well as their expectations for participating in educationally purposeful activities during the first year. The BCSSE is administered prior to the start of the academic year and items are purposefully designed to be matched with the NSSE items, allowing an in-depth understanding of first-year engagement within an institution (NSSE, 2011a). Participating institutions receive an electronic report of the results, as well as an individual advising report for each student who completed the survey. If institutions participate in the NSSE in the same academic year, they also receive a combined BCSSE/NSSE report matching student responses from the two surveys.

The survey asks students questions about the following domains (Cole & Guidry, 2008): participation in educationally purposeful activities at high school; expectation to engage in educationally purposeful activities during the first year of study; expectations for support from the institution and the campus; perceived academic preparation to deal with the academic environment; perceived ability to persevere in the face of adverse circumstances and perceived difficulty; and background characteristics (age, gender, race, etc.). These domains broadly represent the six survey subscales, two of which will be examined for the purposes of this study. The six subscales are named: high school academic engagement, expected academic engagement, expected academic perseverance, expected academic difficulty, perceived academic preparation and importance of the campus environment – the high school academic engagement

and the expected academic engagement will be used for data analysis purposes in this study as indicators of past engagement and expected engagement.

As an indicator of past engagement, the High School Engagement (HSE) subscale asks students to indicate the extent to which they participated in effective educational activities during their last year of high school. The Expected University Engagement (EUE) subscale is an indicator of a students' expectation to engage in effective educational behaviours during the first year. Items in this subscale are parallels of the items in the HSE subscale allowing for matched student responses.

Since the first administration in 2009, a total of 259 different colleges and universities in the US and Canada have participated in the BCSSE (NSSE, 2010d). To date, the BUSSE (an adaption of the survey for the South African context) is the only international application of the BCSSE survey (J. Cole, Personal Communication, 12 April 2011).

5.1.3 Measuring student engagement in the South African context.

The measurement of student engagement in South Africa is far more recent than in the US. In 2006, the Division of Student Development and Success (SDS) at the University of the Free State (UFS) requested permission from the NSSE Institute to adapt the NSSE for use in SA and to administer the revised survey known as the SASSE, for field testing purposes. The original survey was contextualised, translated (and thereafter back translated) and piloted at the UFS for two consecutive years. After examining the psychometric reliability and validity in the South African context at the UFS (Strydom et al., 2010) a national pilot of the SASSE was conducted at seven institutions in SA by the SDS during 2009 (Strydom & Basson, 2010; Strydom & Mentz, 2009). The success of this pilot study led to the continuation of a national investigation on student engagement during 2010 (Strydom & Basson, 2010).

The process of contextualising the BCSSE for the South African context followed a similar process to the SASSE. All of the items in the original survey were retained and only minor edits were made to some items. A number of words and phrases in the original survey had to be changed in order to be relevant in South Africa. For example “faculty” was substituted with “lecturer”; the word “university” replaced “college” and “marks” replaced “grades”. After the English version of the survey was finalised it was translated into Afrikaans, and then back-translated to ensure accuracy. The adapted survey is known as the BUSSE. To date no multi-institutional administrations of the BUSSE have been conducted in SA. Furthermore, no studies related to the psychometric properties of data obtained from the BUSSE have been conducted to date in the South African context, and the current research project makes a direct and unique contribution in this regard.

The section below will discuss practical applications of student engagement data at the institutional and individual level.

5.2 Practical Applications of Student Engagement Data

Given that one of the primary purposes of the student engagement surveys is to produce actionable data that can be used by institutions to improve the nature and quality of the undergraduate experience, it is important to discuss how the data can be practically applied within an institution.

Whilst it remains important to gather data on the student experience, the research becomes even more valuable when it is used to close the assessment loop by translating data into action (Kinzie & Pennipede, 2009). Even in the US, where the topic of student success has been extensively investigated, translating data into action remains one of the key challenges to effective monitoring and evaluation (Blair & Wise, 2011). As research on student engagement

becomes more widespread in SA, meaningful applications of engagement data in institutional efforts to improve student learning and success will become one of the key challenges.

This section will discuss some of the practical uses of the BUSSE at the institutional and individual level by providing specific examples. Applications of the data at the institutional level will focus on practical uses of the survey for student support, teaching and learning, as well as institutional processes (research and management). The application of the data in providing individual student support will be examined in the context of academic advising and personalised electronic support.

The examples and suggestions included in this section are by no means exhaustive, but rather serve to give an indication of the vast array of contexts and situations where the survey data can be utilised. In the US, where the field of engagement is well established, websites administered by the NSSE Institute provide a far more comprehensive database of examples of how individual institutions are meaningfully using their engagement results to transform the undergraduate student experience (NSSE, 2011c). In addition to this, recent books such as *Student engagement techniques: A handbook for college faculty* (Barkley, 2010), provide a wealth of practical suggestions for improving student engagement.

5.2.1 Using BUSSE data at the institutional level.

One of the primary strengths of the BUSSE is that the data is collected as soon as new students arrive on campus and can be used relatively soon thereafter. However, this data is not only useful at the beginning of the academic year, but also at the end of the first year and longitudinally throughout the cohort's academic career at the institution as will be evidenced in the discussion below.

With effective data management and planning, institutions can begin to use their BUSSE data as early as a few weeks after the administration of the survey on campus. This will allow the institution to identify unique characteristics and trends within an entering cohort and to compare the new cohort with previous years thereby gaining an understanding of long term trends in first-year expectations. The usefulness of using the data at the time of entry is that it allows for the BUSSE data to be used as part of an institutional early warning system allowing for in-time interventions to be designed and implemented (Miller, 2005).

Beyond the applications of the data within the first weeks of arrival, the BUSSE can be used in combination with SASSE data obtained after the completion of the first semester. This type of longitudinal research allows an institution to evaluate how well student expectations have been realised, to what extent efforts to engage students inside and outside the classroom have been effective and to adjust institutional plans for the future. At the end of the first year, data from the BUSSE and the SASSE can be combined with institutional level data to study the impact of engagement on desired outcomes such as persistence and academic performance (Cole & Guidry, 2008).

Well-designed institutional research plans can extend the engagement project even further by following up administrations during the first year with intentionally matched SASSE samples at the end of a three-year period to assess progress and change from first-year to later undergraduate years within a cohort. Multiple cohort studies such as these can be combined to gain a comprehensive understanding of engagement patterns within the institution over time and if implemented nationally can lead to an understanding of patterns of engagement in South African HE.

If implemented in a systematic manner as part of a broader institutional assessment agenda on campus, the biographical data gathered in the survey can allow institutions to gather additional data about their incoming cohorts not routinely collected during admission and registration processes (such as the identification of first-generation students, type of high school attended and language of tuition at high school). Furthermore, this biographical information obtained from respondents allows researchers to analyse patterns of engagement and expectations from a number of different perspectives and within different subpopulations of students (Cole & Guidry, 2008). By doing so an institution can begin to understand the perspectives and experiences of various at-risk groups on campus, such as commuter students and first-generation students who represent a large proportion of modern student populations. Well-planned samples that are representative at faculty and departmental level can prove particularly useful in understanding the experiences and success of students within various academic disciplines. Specific examples of how this type of research can be used in the context of student support services, teaching and learning, as well as institutional research and planning are discussed below.

5.2.1.1 Student support services.

Institutions that create conditions conducive to success in the first year are able to balance academic challenge with appropriate support structures and place emphasis on student learning both inside and outside the classroom (Upcraft et al., 2005). BUSSE data can be used in the context of student support services to promote synergy between academic and student affairs, as well as in the design of appropriate orientation and first year experience curriculum – as will be discussed briefly in this section.

One of the principles of best practice in the first year provided by Upcraft et al. (2005), and supported by other researchers (Getty, Young & Whitaker-Lea, 2008; Kuh, 2005c), is to create synergy between academic affairs and student affairs. One manner in which to do so is to involve support staff in institutional research processes by sharing relevant research results (such as student expectations for support), but this can be taken a step further by involving campus support structures in the actual research process. An example of how this can be done is through incorporating the monitoring and evaluation of the support services into the broader institutional research agenda (e.g. student tracking systems) so that these two vital functions can be more effectively aligned (NSSE, 2011d). Additional specific examples of how BUSSE data can be used in the context of advising and counselling are discussed at a later point within this section.

One of the reasons it is particularly important to get student affairs units involved is the need to create greater awareness of the support available on campus and to communicate realistic expectations to students (Moneta & Kuh, 2005). As pointed out in the literature review, many students (in particular first-generation students) may not be aware of the support that is available to them on campuses, and thus providing a supportive campus environment for first-year students begins by explicitly educating students about the support that is available to them (Cole & Kinzie, 2010). Traditional communication methods such as print materials and websites serve this purpose to some extent; however orientation programmes and first-year experience curricula (most often run primarily from within support divisions) provide two additional avenues of communication.

Both orientation and first-year experience curricula allow the institution to explicitly teach students what it takes to be successful in the academic environment (as encouraged by Upcraft et al., 2005), whilst simultaneously creating new spaces for a synergy between academic

and student affairs on campus. Both of these support initiatives can draw heavily on the BUSSE data for their planning, design and monitoring processes (Cole et al., 2009) ensuring that they are optimally aligned with current student cohort background characteristics and expectations.

BUSSE results can be used as part of the curriculum taught to students during orientation. One specific example would be to explicitly emphasise to students the importance of spending significant amounts of time studying, the dangers of spending too much time socialising and how to avoid these pitfalls (Cole & Kinzie, 2010). Using data from recent BUSSE/SASSE administrations is a powerful way of bringing research results “closer to home” and making students aware of the experiences of their peers. Furthermore, by incorporating research results into programmes such as orientation, students are made aware right from the start of their campus experience that the institution takes assessment seriously and that their input in research processes is not only valuable, but used meaningfully by campus leaders.

First-year experience (FYE) curriculum presents a unique opportunity for a campus to require students to participate in a wide range of effective educational practices. Data from the engagement surveys can be used to identify specific types of activities that need emphasis in the design of a curriculum that facilitates high levels of student engagement over the course of the first year (Cole et al., 2009).

After the purposeful and careful design of an engaging curriculum, FYE coordinators can use the FYE curriculum to coach students about what effective educational behaviours they should be seeking out during the first year and what the benefits of these activities are (Cole & Guidry, 2008). FYE programmes create an ideal context to make clear the pathways to success and provide safe environments for students to become comfortable in participating in these activities. Such programmes are also an avenue for the institution to clearly communicate what

their expectations of students are, and to provide learning activities that meet reasonable student expectations. By requiring students to participate in FYE programmes and awarding credit for participation and achievement of outcomes, institutions introduce students to a campus culture of engagement in educationally effective practices, particularly for commuter students and first-generation students who may otherwise remain disengaged. When campus cultures are made explicit verbally and through the types of experiences students have, over time, an engaged experience is what students come to expect of a particular institution.

The application of the BUSSE in the teaching and learning context is provided in the section below.

5.2.1.2 Teaching and learning context.

Despite pervasive changes to the nature and size of the undergraduate student population in SA, many of the academic practices remain stagnant, possibly contributing to the lack of success among students. It has become crucial for undergraduate teaching staff to teach in engaging and challenging manners, and to adopt success oriented attitudes towards historically disadvantaged students (CHE, 2010). However, it is not only imperative to implement effective teaching and learning strategies, but it is also crucial to investigate through research which methods are most effective in promoting success in South Africa (Hay, 2008). The strong emphasis of the engagement surveys on effective educational practices means that they are an ideal manner of researching and promoting success through effective teaching and learning.

Monitoring the teaching and learning climate through surveys such as the BUSSE and SASSE can allow institutional management teams to set actionable goals and track progress towards these goals over time (Cole et al., 2009; NSSE, 2003), ultimately contributing to the creation of a renewed academic campus climate. This section will provide a brief description of

how these results can be meaningfully used in the context of reforming teaching and learning practices at the institutional and faculty levels, as well as for staff development.

One of the most effective ways to ensure that students engage in effective practices is to design environments that require them to do so (Kinzie, 2005), and intentionally designed classrooms provide an ideal platform for this. Furthermore, the classroom remains the most effective method of engaging commuter students (Reason, 2009; Tinto, 1997) and reforming teaching and learning practices may be a high-impact solution to promoting success in this high-risk group in predominantly commuter institutions (for example the institution in this study).

Problematic trends in teaching and learning identified by the engagement data can be used as research-based evidence (as opposed to a purely rhetorical argument) for the need to implement reforms in teaching and learning practices. This same data thereafter serves as a baseline for tracking the impact of policy and/or practical reforms in identified areas over time. Impact assessment of teaching and learning reforms by means of the engagement surveys can be driven and tracked either at the institutional level or at the faculty/departmental level (in the case of well-planned samples) (NSSE, 2003).

Sharing engagement data with institutional and academic staff, as well as with staff development offices can assist in the design of appropriate and timely training programmes for lecturers who are responsible for teaching first-year students. Reports on the state of HE in the South African context suggest that the under preparedness and lack of knowledge about effective teaching and learning methods among staff contributes to the lack of success in modern diverse student populations, reinforcing the need for research-driven staff development initiatives (Paras, 2001; Scott et al., 2004).

As was pointed out in the literature review, student populations have changed radically in the past year both in terms of demographic characteristics and their levels of preparedness. BUSSE data can readily be used to help staff understand new student populations, and can be used to equip staff in what types of teaching methodologies new cohorts are comfortable with and expecting to engage in (Cole, 2010b; Cole & Korkmaz, 2010). This information can be purposively used in training staff to design classroom environments that create adequate opportunities for students to engage in manners which they expect to, but which simultaneously challenge them to engage above and beyond their expectations.

An additional measure that can be taken to get staff more directly involved and invested in understanding student populations is to administer the Lecturer Survey of Student Engagement (LSSE) to all lecturers who are involved in teaching first-years. As was the case with the BUSSE and the SASSE, the LSSE items are designed in such a manner that they match with selected items in the student surveys (NSSE, 2011b). Results from the LSSE can be incorporated with student engagement results to create an even more comprehensive understanding of how lecturer activities can impact positively on student learning and involvement.

The final section on the use of engagement results in group contexts below focuses on institutional research and planning.

5.2.1.3 Institutional research and planning.

One of the key strengths of the engagement surveys, including the BUSSE, is that the data is actionable in the short-term. Human and financial resources are often spread thinly across institutions, and it is therefore important to make use of assessment tools that can readily be translated into change initiatives in short time spans (Kinzie & Pennipede, 2009). This section

will describe how data can be used by both institutional researchers and institutional management teams to improve the student experience.

Although BUSSE data has some value as a standalone assessment tool, it becomes even more valuable when meaningfully incorporated into the broader institutional research agenda. For example, student engagement researchers in the US recognise that the engagement data becomes more powerful when combined with data such as retention records, additional institutional surveys and academic grades (Kinzie & Pennipede, 2009; Miller, 2005; NSSE, 2009). Understanding academic success is critical to the HE endeavour in SA (as was evidenced in the literature review), but it is unlikely that any one source of evidence will provide all the answers to deciphering the student success puzzle. When combined with multiple sources of information, engagement data can potentially become an extra piece in the puzzle of deciphering the paths to student success in South Africa. The multiple and logistic regression analyses to be investigated in this research project are a small scale example of how multiple sources of data can be merged to gain a better understanding of student success.

Early warning systems and comprehensive student tracking systems are not widespread in the South African context, and research into designing effective systems of this nature are important in the pursuit of increased academic success and improved graduation rates. However, the effective development of such systems will inevitably require merging data from a variety of sources, and the BUSSE (as an indicator of the pre-university experience) is one potential source of data that could be considered in modelling a comprehensive institutional monitoring system. Over time, data gathered from such monitoring mechanisms can be used in the design of predictive models that lead to a comprehensive understanding of factors contributing to student success in the South African context.

Additional to the applications discussed above, merging data from the engagement surveys with additional sources of information can also form part of a validation research study conducted by institutional researchers using the survey (Shoup & Williams, 2009). For example, confirming the accuracy of self-reported grades and institutional records is one possible means of building a strong validity argument for the use of self-report surveys (such as the BUSSE) in the HE context. Furthermore, although the results from a survey such as the BUSSE provide a broad perspective on campus life, engagement results can also serve as indicators of areas in need of more in-depth qualitative study (Kinzie, 2008).

Flowing from institutional assessment agenda, as described above, engagement data can be effectively used in the context of data-driven approaches to strategic planning and decision making at the institutional level. Examples of this include policy decision-making, decisions related to project funding and the design of customised institutional level support services for at-risk groups (NSSE, 2003).

The following section will discuss the application of BUSSE data at the individual student level.

5.2.2 Using BUSSE data to create individualised reports.

The previous section has elaborated on the multiple contexts in which group level engagement data can be used. This section will present a potentially powerful application of the BUSSE survey at the individual student level.

One of the features of the BUSSE survey is that personalised student advising reports can be generated for each participant. This individual level report summarises the BUSSE responses of the student in a one-page format and contains information that can be used by academic advisors, counselling services and academic departments. Specific information contained in the

report is a summary of the student's biographical details (gender, race, home language and first-generation status). Furthermore it includes information on the student's high school academic performance, type of high school attended and self-reported expected academic performance at the institution. The remainder of the report provides item level responses for the student on each of the subscales allowing for personalised advising.

Personalised BUSSE reports can assist advisors within academic departments, first year lecturers who meet with individual students, institutional academic advisors or even student counselling departments to prepare for student interactions ahead of time and to more accurately understand the unexpressed needs of students during such interactions. By examining a student's individual report staff can identify realistic and unreasonable expectations at the individual level and counsel the student accordingly.

However, this type of individual level advising and counselling is both time and resource intense and it may not be realistic to expect that all students will be able to receive this type of support. One promising application of the BUSSE is that when the data is gathered online it becomes possible to further customise the advising and support process in an electronic manner. Various online survey software packages allow for customised emails to be sent to students who have a particular pattern of responses. For example, students who indicate that they are not confident in their ability to write clearly and effectively will receive an email informing them of various support initiatives on the campus that can assist with developing writing skills. By customising support in this manner students are not overwhelmed by mass emails circulated to all students which have the potential to result in additional "information overload" during an already overwhelming transition period. Rather, students are provided only with notifications that are designed to uniquely address their current and expressed needs. In cases where no

relevant support service directly related to the student need is currently available, access to online reference material and resources can be customised for the individual student.

This type of needs identification and notification can be applied in a bi-directional manner by customising notifications to respective support services on campus of students who may be in need of their services. For example, the counselling department could be provided with a list of students who indicated they anticipate great difficulty in managing their time. This information can be used to determine the number of students in need of support related to time management, and workshops can be planned accordingly. Using the list of students provided to them, the counselling department could then send personal invites to these specific students notifying them of the workshop opportunities throughout the first year.

If well managed and monitored this individualised bi-directional feedback system can be used as a source of data to supplement a student tracking system. In this way, institutional researchers will be able to evaluate the impact of personalised feedback on the frequency of support services utilisation and the potential contribution of support services to student success on campus.

5.3 Chapter Summary.

This chapter has discussed the most widely used survey for measuring student engagement, namely the NSSE and introduced the related survey for entering undergraduate students, the BCSSE. A brief outline of the purposes of the survey, the survey content and the extent of administration in the US and internationally were provided. The contextualisation of the two engagement surveys in the South African context has been elaborated on, and the subscales to be used in the current research study were discussed.

The chapter concluded by discussing the practical applications of the engagement data at the institutional and individual level. Examples of the usefulness of the survey in the context of student support, teaching and learning, as well as institutional research and planning were provided.

Chapter 6 will discuss the methodology employed for the current research project.

Chapter 6: Methodology

This chapter will provide a discussion of the methodology employed for the current research project. First, an examination of the research design employed (including a critical reflection on the validity of self-report measures) and a description of the primary research objective and related research questions (including an outline of the data analysis employed to answer each) will be given. Thereafter, a detailed summary of the characteristics of the research participants, ethical considerations and sampling procedures used will be provided. The chapter concludes with a detailed explanation of the BUSSE as the primary measuring instrument used in this study.

6.1 Research Design

The research design for this study was non-experimental survey research (Bless & Higson-Smith, 2007). Although there are various criticisms levelled at the use of survey research in HE (Porter, 2009), it remains extensively used in institutional research processes (Schlitz, 1998). The section below will highlight and discuss some of the primary challenges of survey research. This detailed discussion on the limitations of the design is provided because of its direct applicability to the validity of the research project.

6.1.1 Validity of self-report measures.

Examining the cognitive processes involved in participant responses to surveys is an essential part of establishing the validity of a measuring instrument (Kane, 2001). This section offers a critical reflection on self-report measures by summarising some of the major concerns and debates around the use of self-report survey data in educational research. This aspect of the validity argument is essential because even if evidence can be provided that an instrument accurately and adequately covers the relevant content domain, data collection methods that elicit

inaccurate or untrue responses from participants will still ultimately yield invalid results and conclusions. Addressing this issue is of particular importance given that the BUSSE survey relies exclusively on student self-report data and the discussion relates directly to Research question 1. Although self-report surveys remain widely used in a wide range of higher educational research areas (e.g. institutional research, attrition research and outcomes evaluation), research on this particular methodology and how to improve its effectiveness in the field is far less extensive (Schiltz, 1998). Major arguments against and in defence of self-report survey research are presented briefly below.

Various studies have shown that valid responses have been obtained through self-report measures when certain conditions are present (Baird, 1976; Pace, 1985; Pike, 1995) and when items do not threaten respondents by asking questions about highly sensitive topics (Bradburn & Sudman, 1988). Kuh (2005b) summarises the conditions conducive to accurate and valid self-report data, asserting that the validity of self-report surveys is high if the information requested is known to the respondent, the questions are phrased clearly and unambiguously, questions refer to recent activities, the respondent thinks the question merits a thoughtful response and the answers do not threaten privacy. The family of student engagement surveys (including the BCSSE which is the basis for the BUSSE used in this study) were intentionally designed to adhere to all these requirements (Kuh, 2004).

On the other hand, since the early 1980's researchers have been investigating the intersection between cognitive psychology and survey methodology (Jobe & Mingay, 1991), providing evidence from the field of human cognition which suggests that the inaccuracies of self-report surveys extend beyond topic sensitivity and socially desirability. Critics of self-report measures contend that this method of data collection is susceptible to a wide range of

inaccuracies due to the nature of the response process and how humans store and recall memories (Porter, 2009). The widely referenced response model proposed by Tourangeau (1984) highlights the substantial cognitive effort required of participants in responding to self-report surveys. The nature of this process, as well as the energy required to optimize the quality of responses, makes participants susceptible to providing inaccurate answers. Tourangeau's model (1984) states that when participants respond to questions, they must work through four processes, namely: comprehension and understanding of the question posed; retrieval of information related to the question; judgment and/or estimation of the response; and, reporting the actual response. Inaccuracies in responses can occur during any one of the four phases.

Various problems have been identified related to the first process (comprehension and understanding of the question posed). The four specific problems that will be highlighted in this discussion are misinterpretation, the use of jargon, vague and/or ambiguous wording and response categories.

If respondents do not understand (i.e. interpret) the intended meaning of the words in the question in the same way that the researcher does, then inaccurate (and by implication invalid) data is potentially being collected. The lack of detail provided in many surveys, often in an attempt to minimize survey length, may contribute to plurality of interpretations (Porter, 2009). Misinterpretation of survey questions may be particularly pertinent when respondents are not completing the survey in their mother tongue, as is the case for the majority of students who will be completing the BUSSE.

Furthermore, survey questions may be difficult to comprehend if the questions employ discipline-specific jargon. For example, HE surveys often use words such as "cocurricular activities", "community engagement projects" or "critical thinking skills" in their questions.

These terms are used in a very specific manner by the researcher, but may have little (if any meaning) to a first-year student who has been on campus for a mere couple of weeks. Cognitive interviews related to student engagement surveys confirm that some students may struggle to interpret jargon specific terms used in the parent survey of the BUSSE, the NSSE (NSSE, 2010b). As a result of these cognitive interviews, minor adjustments have been made to the survey in the US context. No similar investigation on the interpretation of jargon have been conducted in relation to the BUSSE in SA and it is recommended that this research be undertaken as an essential element in making an holistic validity argument in this context.

A third problem related to the first process, comprehension, is the actual wording and phrasing of questions. The use of vague terminologies and/or the use of double-barrelled questions can lead to further confusion on the part of the respondent. An examination of the items on the student engagement surveys reveals only a few instances where this may be problematic, and focus groups in the US based on the NSSE have confirmed that some items were interpreted ambiguously by students (NSSE, 2010a; Ouimet, Carini, Kuh, & Bunnage, 2001). In response to these qualitative studies, a number of items have been adapted and reworded over time on the NSSE survey (Ouimet et al., 2001). Again, similar studies involving entering first-year students who complete the BUSSE have not been done in SA. In order to provide a stronger validity argument for the survey, in-depth cognitive interview and focus groups are recommended for future administrations.

The final concern related to the comprehension of survey questions relates to response categories. Various studies illustrate how response categories serve not only as options, but are used by respondents as a source of information to determine their responses (Bradburn, Rips, & Shevell, 1987; Schwarz, 1990). For example, research indicates that the range used to delimit

categories (Smyth, Dillman, & Christian, 2007), the ordering of categories (Krosnick, 1991), the distance between the mid-point and the maximum value, the value of the midpoint (Bradburn et al., 1987), and the intuitive match between the numbering chosen and the construct being measured (Schwarz, Knäuper, Hippler, Noelle-Neumann, & Clark, 1991) can all influence the participants choice of response, leading to choices different from those they would have selected in open ended questions. Furthermore, visual cues such as spacing of response options, order of options and grouping of questions also affect how quickly respondents answer questions and which options they select (Tourangeau, Couper, & Conrad, 2004).

One matter of particular importance to the BUSSE is the choice of wording for response categories. Although there are various sets of response categories used within the survey, a number of questions require respondents to select between categories such as *Never*, *Sometimes*, *Often* and *Very often*. Categories such as these are potentially problematic as they leave the interpretation of how often is often entirely up to the respondent. The vagueness of such categories may contribute to significant differences in interpretation not only between individuals, but also between different sub-groups of interest, potentially masking real differences between groups. NSSE researchers made use of cognitive interviews and focus groups to investigate how students from different racial/ethnic groupings were interpreting the categories and found that most students were interpreting the categories in a fairly consistent and accurate manner (NSSE, 2010b). No similar validation studies have been conducted in South Africa related to the BUSSE, and given that response categories play a particularly important role in the nature of participant responses it is highly recommended that cross-validation studies are conducted to investigate this aspect of the survey.

Each of the four areas described above (associated with the first process of survey response), highlight ways in which inaccurate data may be collected, even if it was not the intention of the participant to misrepresent themselves. It is evident that innovative research projects and follow-up qualitative research is required in order to improve and/or validate survey responses. Additional to the cognitive interview and focus group approach mentioned in this section, researchers working in the field of survey methodology suggest a number of ways in which the reliability and validity of responses can be improved and these will be discussed in Chapter 8 which focuses on limitations and recommendations.

The second and third processes in responding to surveys (retrieval of information and estimating a response) present the greatest challenge to valid self-report surveys. Asking students to recall the frequency they participated in various behaviours in the past is inherently flawed as it is contrary to the manner in which memories are stored (Bradburn et al., 1987). Cognitive research suggests that humans are particularly inept at recalling information related to mundane and frequent activities in their lives (such as going to class, studying, participating in group discussions etc.). When asked to report the frequency of a particular behaviour humans do not merely recall the number of events and determine the sum and then report the answer. This recall-and-count model fails to take into account that humans are forced to use inference strategies to estimate the frequency of behaviours given their inability to accurately recall them. A further problem associated with asking respondents to recall behavioural frequency retrospectively is that it is particularly difficult for humans to associate memories with very specific time frames (known as blurring), remembering more the general sense of frequency than the actual number of events. This blurring effect is less pronounced the shorter the period of time over which the students must recall the behaviour (Stinebrickner & Stinebrickner, 2004).

Responses to some BUSSE items (e.g. those that ask students to recall their behaviour during the last year of high school) may be potentially problematic from this perspective as they ask student not only to recall behaviours that are mundane, but also ask students to reflect on these activities over a long period of time (a full year) thus increasing the likelihood of blurring.

The fourth process, actual reporting of the response involves the respondents indicating what their selected response on the survey instrument is. Once a participant has determined their response based on the processes above they theoretically indicate this to the researcher. However, error can still occur at this point in the process if a respondent accidentally skips over a question, accidentally marks the incorrect answer or intentionally marks an answer other than their predetermined response for various reasons (such as social desirability).

It takes considerable mental energy for the respondent to go through the four processes for each and every question, and thus the longer the survey the more likely it is that respondents will begin to satisfice by not expending the necessary cognitive energy and hence answer fewer questions accurately (Krosnick, 1991). The BUSSE is over 100 questions long (when biographical questions are included) and this may have an influence on the quality of responses particularly towards the end of the survey.

Aside from the technical survey matters discussed above, other areas in need of investigation include the role of self-esteem, gender, the provision of incentives, motivation and personality traits (such as need for cognition or introspection) on the accuracy of self-report (Krosnick, 1999; Porter, 2009; Schwartz, 1990).

Despite the concerns raised in this section, self-report assessment remain one of the most widely implemented and useful tools for collecting large amounts of data from students (Borden & Zak-Owens, 2001). It is however important for researches and administrators to recognise the

limitations of these measures and to work towards constantly improving the reliability and validity of the data collected from their surveys, in order to most appropriately use the data in the intended contexts to achieve specified outcomes. The current study is an example of this continuous improvement approach, as results obtained in this study will be used to improve the BUSSE for future administrations.

6.2 Aim of the Research Project

As stated in Chapter 1, the study aims to use the BUSSE, administered during the first weeks of the academic year over a two year period to investigate how measuring levels of student engagement at high school, expectation to engage at University and levels of engagement during the first year can be appropriately used by HE institutions in South Africa. This broad objective will be measured by investigating a number of related research questions outlined below.

6.2.1 Research question one.

The first research question for the current study is stated as follows: *Can engagement at high school and expectation to engage in educationally purposeful activities at university be meaningfully measured among first-year students in SA?*

This research question is answered by combining the theoretical arguments made in the literature review, the description of the process of adapting the survey to the South African context, by the examination of the psychometric properties of the data obtained from the 2008 and 2009 administrations of the survey, and by providing a detailed discussion related to the establishment of a unified validity argument for the use of the BUSSE in South Africa (Chapter 5).

6.2.2 Research question two.

The second research question for the current study is stated as follows: *What are the engagement and expectation profiles of first-year students at a university in central South Africa, and do these differ by gender and race?*

This research question will be addressed by means of both descriptive and inferential statistics. The discussion in this chapter will highlight salient item findings, descriptively discuss two subscales and draw parallels between the 2008 and 2009 samples. Student engagement profiles will be further investigated from the perspective of race and gender by testing for significant differences in the mean scores for each group by conducting a two-way factorial analysis of variance.

6.2.3 Research question three.

The third research question for the current study is stated as follows: *What is the difference between expectations to engage, engagement at high school and actual engagement levels among first-year students, and does this differ by gender and race?*

In order to address this question individual level scores on measures of engagement will be matched and significant differences investigated by means of a repeated measures ANOVA. Again, this question will be further addressed by investigating the relationship between the scores on the three engagement measures for race and gender. In order to complete this section of the analysis BUSSE participants will be matched with SASSE responses.

6.2.4 Research question four.

The fourth research question for the current research study is stated as follows: *Do student's engagement expectations and high school engagement accurately predict academic*

performance and persistence at the end of the first-year of study, after controlling for past academic performance and selected demographic variables?

As defined in Section 3.1.1.4, persistence in the context of this study is measured by whether or not the student returns the following year to continue studying and academic performance is measured by the percentage of credits a student has passed. The limitations of these measures have been highlighted in earlier discussions. In order to predict academic performance sequential Ordinary Least Squares (OLS) regression will be utilised as the most appropriate method to use when predicting a continuous variable from a number of predictors whilst controlling for the effect of variables selected by the researcher (Tabachnick & Fidell, 2007). In order to predict retention (whilst controlling for high school academic performance, gender and race) a logistic regression will be conducted as it is the most appropriate method when the predictor variables include both discrete and continuous variables and the researcher wants to control for additional variables (Tabachnick & Fidell, 2007).

6.3 Sampling Procedures

The data for the current research project was collected from first time entering first-year students at a university in the Free State within the first two weeks of the 2008 and 2009 academic years by means of pencil and paper surveys.

During 2008, a non-probability, non-proportional quota sampling method was used (Trochim, 2006). Although probability sampling has distinct advantages over non-probability sampling it is not always feasible. In such instances, the representativeness of the sample (when compared to a convenience sample) can be improved by employing purposeful methods of selecting participants. Non-proportional quota sampling allows for smaller groups within the population to be adequately represented (Trochim, 2006). During the 2008 administration, data

was collected during scheduled lecture periods and five of the six faculties on the institution's main campus were represented. In order to ensure that the sample was representative of the defined population, classes were identified within each faculty where the majority of students would be enrolled – this included either core modules or large classes.

A census approach to data collection has the advantage that all persons in the defined population are presented with the opportunity to participate in the study. Although desirable, a census approach is often not possible due to practical and economic reasons (Bless & Higson-Smith, 2007). However, in the case of the 2009 study there were no practical or economic matters preventing the use of a census as the data collection process formed part of the university's entrance-test battery.

At both administrations, students were given the option to complete the survey in either English or Afrikaans.

6.4 Ethical Considerations

Ethical clearance was obtained from all necessary authorities prior to the administration of the survey. Additional to the ethical clearance obtained from the institution, the purpose of the survey was explained to all prospective participants and informed consent was obtained from participants at both administrations. Participation in the survey was voluntary and all responses were treated with confidentiality. Complete anonymity was not possible as student numbers were required to match survey responses with institutional data, however it was explained to students that no data would be reported in a manner that would divulge any individual's identity..

6.5 Participant Characteristics

This quantitative study was conducted over a two year period at a university in the Free State and included two primary data collection periods, the first in January/February 2008 and

the second in January/February 2009. The target population of students eligible to participate in the study in both 2008 and 2009 included all degree seeking, first-time entering undergraduate students at the university. First-time entering students are defined by the institution as any student who is entering the higher education system at any institution for the first time. This specific population was chosen primarily for the reason that the survey instrument was specifically designed for administration within this group of students.

Using the abovementioned criteria, a total of 1107 valid surveys were completed in 2008 and a total of 2214 in 2009. However, given the aim of the study to link responses on the BUSSE to quantitative outcomes obtained from the institutional database, only students who provided a valid student number on their survey were included in the study. Thus, the sample for 2008 was 866 and the sample for 2009 was 1918.

There was minimal missing data in the biographical section of the survey despite the lengthy nature of the survey and the fact that the majority of the biographical items are placed at the end of the survey. In 2008 it is noted that the percentage of missing responses does not exceed 5% for any of the questions, with the exception of the first-generational status. For 2009, there is slightly more missing data, with two items (whether the student is local or international and place of residence during current year) having almost 10% missing data. It is not clear why the pattern of responses on these two items is so different from the rest of the items in the 2009 survey and the response patterns in the 2008 survey. In both years, the only item which appears to be highly problematic is the questions used to determine whether a student is first-generational or not. Although the length of the survey may negatively influence the likelihood of a student responding to the questions right at the end of the survey, the relatively low amount of missing

data on the other items suggests that this is not the case with the items related to level of parental education.

Table 2 below provides the demographic characteristics of the samples obtained from the respective populations in 2008 and 2009, and compares each sample to the population of first-time entering undergraduate students of that year.

Table 2

Student responses to biographical questions 2008 and 2009

Variable	Response options	2008				2009			
		Sample		Population		Sample		Population	
		Count	%	Count	%	Count	%	Count	%
Gender	Male	348	40.18%	1368	42.40%	775	40.68%	1630	39.00%
	Female	518	59.82%	1855	57.60%	1130	59.32%	2549	61.00%
	Total ⁹	866	100.00%	3223	100.00%	1905	100.00%	4179	100.00%
	Missing responses	0	0.00%	n/a	n/a	13	0.68%	n/a	n/a
Race/ethnicity	Black African	253	29.52%	1655	51.30%	926	48.89%	2400	57.40%
	Coloured	43	5.02%	117	3.60%	97	5.12%	216	5.20%
	Indian/Asian	9	1.05%	43	1.30%	26	1.37%	41	1.0%
	White	527	61.49%	1408	43.70%	756	39.92%	1522	36.40%
	Prefer not to answer	23	2.68%	n/a	n/a	87	4.59%	n/a	n/a
	Other	2	0.23%	0	0.00%	2	0.11%	0	0.00%
	Total	857	100.00%	3223	100.00%	1894	100.00%	4179	100.00%
	Missing responses	9	1.04%	n/a	n/a	24	1.25%	n/a	n/a

⁹ The total values displayed in the table represent the total number of respondents who provided a valid response to the question, and the percentages provided for each response option are the percentages of this total. The number of missing responses for each question is reflected below the total and the percentage of missing responses is a percentage of the total number of respondents.

Variable	Response options	2008				2009			
		Sample		Population		Sample		Population	
		Count	%	Count	%	Count	%	Count	%
Home Language	English	88	10.34%	380	11.80%	183	9.83%	483	11.60%
	Afrikaans	506	59.46%	1312	40.70%	771	41.41%	1471	35.20%
	IsiXhosa	36	4.23%	186	5.80%	129	6.93%	253	6.10%
	IsiZulu	14	1.65%	88	2.70%	81	4.35%	383	9.20%
	IsiNdebele	1	0.12%	9	0.30%	0	0.00%	5	.10%
	North Sotho	57	6.70%	729	22.60%	37	1.99%	1143	27.40%
	SeSotho	75	8.81%			362	19.44%	0	0%
	Setswana	43	5.05%	414	12.85%	197	10.58%	299	7.20%
	Tshivenda	7	0.82%	39	1.20%	51	2.74%	57	1.40%
	SiSwati	2	0.24%	11	0.30%	9	0.48%	13	.30%
	Xitsonga	9	1.06%	23	0.70%	14	0.75%	25	.60
	Other	13	1.53%	23	0.80%	28	1.50%	47	1.10%
	Total	851	100.00%	3223	100.00%	1862	100.00%	4179	100.00%
	Missing responses	15	1.73%	n/a	n/a	56	2.92%	n/a	n/a
Housing during current year	On-campus	287	33.76%			439	24.91%		
	Off-Campus	563	66.24%	Not available	Not available	1323	75.09%	Not available	Not available
	Total	850	100.00%			1762	100.00%		
	Missing responses	16	1.85%			156	8.13%		

From the table above it is noted that in both 2008 and 2009 the majority of respondents in the sample were female, and in both years the proportion of respondents within each gender category very closely resembled the proportion of enrolments by gender within the defined population.

However, in 2008 the majority of the respondents were White (62%) making this group of students highly overrepresented in the sample as only 43% of the defined population are White. In contrast, Black African students only represent 30% of the respondents and are underrepresented in the 2008 sample as they make up just more than 50% of the defined population. In 2009, the representation is somewhat better with respect to ethnicity, where the Black African students constitute around 50% of the sample (compared to 57% of the defined population). White students remain slightly overrepresented. In the 2009 sample 5% of students preferred not to indicate their ethnicity, compared to around 3% in 2008. For the purposes of statistical analysis on the basis of race/ethnicity only the Black African and White students will be included due to the limited number of responses from other ethnic groups ($n < 50$ in all cases).

In the 2008 sample Afrikaans first language speakers (60%) are overrepresented, whilst Sotho speakers are underrepresented. Other language groups are proportionally well represented in the sample. The 2009 sample Afrikaans students remain slightly overrepresented, Sotho speaking students are slightly underrepresented and English speaking students are proportionally well represented in the sample.

In both samples, the number of students living in campus residences is overrepresented, given the fact that campus housing accommodates less than 15% of students at the institution.

The biographical section of the survey also asked students a number of additional biographical questions not routinely captured by institutional databases, indicating the potential

usefulness of the survey to institutional researchers wishing to more accurately understand student cohorts. These include questions related to their parent's level of education, their high school careers such as the year of completion, the type of high school and the language of tuition. Responses from students to these questions can be found in Table 3 below.

Table 3
Student responses to additional biographical questions 2008 and 2009

Variable	Response options	2008		2009	
		Count	%	Count	%
Parent level of education	Not first-generation	558	77.07%	859	58.24%
	First-generation	166	22.93%	616	41.76%
	Total	724	100.00%	1475	100.00%
	Missing responses	142	16.40%	443	23.10%
High school language of instruction	English	369	42.96%	1048	58.16%
	Afrikaans	460	53.55%	695	38.57%
	Other	30	3.49%	59	3.27%
	Total	859	100.00%	1802	100.00%
Language of tuition (higher education)	English	395	46.69%	1146	62.69%
	Afrikaans	451	53.31%	682	37.31%
	Total	846	100.00%	1828	100.00%
	Missing responses	20	2.31%	90	4.69%

In the 2008 sample it appears as if less than 25% of the students are first-generation students, a figure that appears to be somewhat low given what is known about recent cohorts of students entering HE. The figure of 42% first-generation students in the 2009 sample appears somewhat more realistic of what would be expected of students currently enrolled in HE. This low number of first-generation students may be influenced by two factors: the relatively large amount

of missing data (16% of the respondents in 2008 and 25% of respondents in 2009 did not provide sufficient information for this variable to be calculated) and the underrepresentation of Black African students (who are more likely to be first-generation students) in the sample. A closer examination of the items used for determining first-generational status (level of education of both the father and mother) revealed that not insignificant amounts of the missing data on this variable were a result of the fact that students indicated they do not know their parents' level of education. However, even when this is taken into account the amount of missing data on this item is higher than the other items possibly indicating a problematic item that may need revising. A combination of the above mentioned has most likely resulted in a situation where first-generation students are not accurately identified in the sample.

The vast majority of both samples entered HE immediately after completing high school (86% of the 2008 sample and 79% of the 2009 sample). This is a positive trend given the research evidence linking immediate entrance into HE with improved retention rates (see discussion in Section 3.2.2.3). Furthermore, the vast majority of students indicated that they came from public high school (82% of the 2008 sample and 77% of the 2009 sample).

Language of tuition at high school appears to be more influential in determining the choice of instruction language in HE than home language. Almost exactly the same number of students who attended Afrikaans high schools, indicated that they will be attending their classes in Afrikaans. The students who received tuition in English and those who received tuition in other languages at high school are more likely to opt for tuition in English at the institution.

6.6 Data Collection Instruments

Data from three sources was used for the purposes of analysis in this study, namely the BUSSE (primary data source), institutional level data and selected student responses to the SASSE (secondary data source). Each of these is discussed below.

6.6.1 BUSSE.

The primary method of data collection for the study was the BUSSE. As previously noted the BUSSE is an adaptation of a US survey instrument the BCSSE. In order to allow for students to participate in both languages of instruction offered at the institution where the survey was administered, the English version of the BUSSE was translated into Afrikaans and then back-translated to ensure accuracy.

The BUSSE contains a total of 72 items (excluding biographical items) from which six subscales are calculated (two of which will be used in this study), namely high school engagement and expected university engagement. Individual items used to construct the subscales are rescaled from their original scale to a scale ranging from one to ten (where ten represents high levels of engagement on the subscale and one represents low levels of engagement). Not all items in the survey are measured on the same scale. For the purposes of clarity the original scaling of the subscale items will be discussed under each of the subscale headings. Thus, it should be noted that item measurement scales that are mentioned in the subscale items refer to the original survey prior to rescaling. Thereafter, a total score is obtained for each of the subscales by determining an average for the items. Each of the subscales used in the context of this study is described in more detail below.

6.6.1.1 High school engagement subscale (HSE).

The high school academic engagement (HSE) subscale consists of 13 items. The questions ask students to indicate the extent to which they participated in effective educational activities during their last year of high school. This includes questions about the amount of assigned reading, the number of short papers written, the number of longer papers written (these three items are measured in the survey on a 5-point scale, where 1 represents *None* and 5 represents *Very much*), how much time a student spent preparing for class (this item is measured in the survey on an 8-point scale where 1 represents *No time* and 8 represents *More than 30 hours per week*), how often students asked questions in class, made class presentations, discussed their grades with a teacher, worked with other students during class on tasks, worked with others outside of class to prepare tasks, prepared two or more drafts of a paper before handing it in, talked with teachers about class materials outside of class and talked with others (e.g. family members or friends) about class materials outside of class (these items are measured in the survey on a 4-point scale, where 1 represents *Never* and 4 represents *Very often*). In order for a mean score to be calculated for an individual they must have responded to at least seven of the 13 items.

6.6.1.2 Expected university engagement subscale (EUE).

The expected university engagement (EUE) subscale asks students to indicate the extent to which they expect that they will participate in various educationally effective activities during their first year of university. Many of the items in the subscale are parallels of the items in the HSE subscale allowing for matched student responses. The subscale consists of eight items, seven of which are measured on a 4-point scale in the survey. These items ask students how often they expect to ask questions in class, make class presentations, discuss their grades with a lecturer, work with other students during class on tasks, work with others outside of class to prepare tasks,

talk with teachers about class materials outside of class and talk with others (e.g. family members or friends) about class materials outside of class. The final item (measured on an 8-point scale in the survey, where 1 represents *None* and 8 represents *More than 30 hours*) asks students to indicate the amount of time they expect to spend preparing for classes during their first year. A mean score for this subscale was calculated for all students who responded to at least six of the eight items.

6.6.1.3 Biographical data.

Biographical data for each participant was also obtained from this survey. The biographical information obtained included gender, age, race/ethnicity, home language, language of tuition in high school, parents' educational level, faculty enrolment, residential status and intended language of tuition at university.

6.6.2 SASSE.

The actual levels of engagement during the first year reported by students were measured by their responses to the SASSE which was administered during August 2009. In order to calculate the actual levels of engagement 13 items in the SASSE which match with the questions asked in the BUSSE were selected. Scores on the items were transformed onto a scale of 10, summed and averaged to determine a score for each individual for the Actual University Engagement (AUE) subscale. A mean score was only determined for the individual respondent if they had answered at least nine of the 13 items.

6.6.3 Institutional data.

Finally, additional information was obtained from the institutional database including individual level data on academic performance at the institution (percentage of credits passed

during the first year of study), retention to the following year of study and high school academic performance (estimated by their performance in the final Grade 12 national examination).

6.7 Psychometric Properties

As previously mentioned, to date no studies on the use of the BUSSE have been conducted in South Africa and thus no data on the psychometric properties using this measure in South African samples is currently available. In this respect the current research project thus makes a unique contribution by assessing the psychometric properties of the scores obtained from students at one South African HE. Given that the analysis of the psychometric properties of the data is directly related to the first research question, this analysis will not be discussed under the methodology chapter, but rather in Chapter 7 (which presents the results of the study).

However, in the context of the US some studies have examined the reliability of the BCSSE subscales. For the HSE subscale, data obtained from samples drawn from first-time entering students at 91 institutions in the US demonstrated coefficient alpha values of 0.76 (NSSE, 2010c). Furthermore, for the EUE subscale, data from samples drawn from first-time entering students at 40 institutions in the US demonstrated coefficient alpha values of 0.72 (Cole & McCormick, 2009). A comparison between the coefficient alpha values obtained in the US and SA will be made in Chapter 7 where the coefficient alpha values of the BUSSE are discussed.

6.8 Chapter Summary

This chapter provided a detailed discussion of the methodology employed for the current research project. The primary research objective is to determine how measuring levels of student engagement at high school, expectation to engage at university, and levels of engagement during first year can be utilised by HE institutions to improve outcomes for individuals and institutions in South African HE. The research project aims to meet this objective by means of a non-

experimental research design collecting data over a two year period from first-time entering students at a university in the Free State. The research objective will be addressed through four interrelated research questions, each of which were expanded upon in this chapter and the analysis methods for each were described.

Furthermore, this chapter has described the samples demographically and established that the samples are mostly representative of the overall defined population in both years. In particular Black African students are underrepresented in both years, as are commuter students. The items used to determine first-generational status have relatively high levels of missing data and indications suggest that the item may be problematic and in need of revision.

The chapter concluded by describing the primary research instrument for the study, namely the BUSSE, with attention given to describing each subscale. A detailed discussion of the psychometric properties of the data obtained from the samples will be described in Chapter 7 as part of the data analysis.

Chapter 7: Results

This chapter will discuss the results from the quantitative data collected from the BUSSE survey over the two year administration period. The data checking and screening procedures that were conducted prior to the data analysis to ensure data quality will be discussed prior to the presentation of the results. Thereafter the chapter will be divided into four sections, each related to a specific research question. These four sections will thus examine: the psychometric portfolio of the subscales used for the purposes of analysis, the engagement and expectation profiles of first-year students at a university in the Free State, and how (if at all) these differ by gender and race; the difference between first-year expectations to engage, engagement at high school and actual engagement levels among first-year students, and how (if at all) these differ by gender and race; and finally, how engagement expectations and experiences can be used to predict academic performance and persistence at the end of the first-year of study, after controlling for past academic performance and selected demographic variables.

7.1 Data Screening and Cleaning

An initial screening of all items in the survey was conducted by examining the descriptive statistics for each item and the subscale scores. An examination of the range, mean and standard deviations of all individual items in the 2008 and 2009 data sets show that there were no out of range values and no items had more than 4% missing data. All subscale means could be interpreted meaningfully and the minimum and maximum scores for each subscale were within the possible range. The distribution of the subscale scores was evaluated by examining both skewness and kurtosis. Although tests of significance for skewness and kurtosis exist, these are extremely sensitive to sample size (Tabachnick & Fidell, 2007), and thus the guideline of values less than ± 1 were used to evaluate the skewness and kurtosis of the distributions (Brown, 2011). Using these

criteria no problematic values were found. The data screening of the subscale scores is summarised in the table below.

Table 4
Data screening for subscales 2008 and 2009

	2008				2009			
	<i>Mean</i>	<i>SD</i>	Skewness	Kurtosis	<i>Mean</i>	<i>SD</i>	Skewness	Kurtosis
HSE ^a	5.55	1.398	-0.74	0.177	5.65	1.20	0.117	-0.110
EUE ^b	5.55	1.54	0.83	0.428	5.35	1.61	0.234	-0.121
AUE ^c	n/a	n/a	n/a	n/a	3.79	1.25	0.396	0.63

^a HSE – High School Engagement

^b EUE – Expected University Engagement

^c AUE – Actual University Engagement

Given the impact of outliers on statistical tests, the data was screened for univariate outliers on the subscale scores (Tabachnick & Fidell, 2007). In order to identify univariate outliers subscale scores were transformed into z-scores. Minimum and maximum values for these standardised scores were examined to determine extreme outliers for each subscale. According to Tabachnick and Fidell (2007) z-score values greater than ± 3.29 can be considered outliers. For the 2008 data set, no positive extreme values were identified. However, there were negative extreme scores ($z < -3.29$). An analysis of these cases within each subscale shows that there were only one or two cases for each subscale. Given the limited number of cases ($n = 7$) it was possible for each of the outlier scores to be examined individually. One case was deleted due to large amounts of missing data across all the subscales. For the remaining outlier values the cases were not deleted as the data had been accurately captured and all responses were valid values. For the 2009 data set there was both positive and negative outliers. Given the limited number of cases ($n =$

6) it was possible for each of the outlier scores to be examined individually. None of the cases were deleted as the responses had been accurately captured and all responses were valid values.

7.2 Psychometric portfolio

The results presented in this section aim to answer research question 1: *Can engagement at high school and expectation to engage in educationally purposeful activities at university be meaningfully measured among first-year students in SA?*

The data analysis presented below includes an examination of reliability and validity for the BUSSE within the 2008 and 2009 samples.

Comprehensive psychometric discussions must contain evidence for both the reliability and validity of the scores obtained with the chosen measuring instrument within the selected sample. Although these two psychometric aspects will be discussed separately, they should not be viewed as mutually exclusive – measuring a construct consistently is meaningless unless a valid measure is being used and vice versa (Trochim, 2006). In fact a valid research claim can only be made when there is sufficient evidence for both valid and reliable measurement of the construct.

7.2.1 Reliability analysis.

Various estimates of reliability are determined by employing differing methods, such as using alternative forms (estimating equivalence), examining the results from a test-retest study (estimating stability) or determining internal consistency (the extent to which individuals within a sample answer consistently over a given set of items) (Crocker & Algina, 2008). Decisions regarding which aspects of reliability to investigate must take into account the intended use of the scores, the nature of the information required from the measure and the context of the research study. Estimating equivalence is most applicable to situations where alternate forms of the same instrument (most frequently a test of performance) are being compared and is therefore not

applicable to the survey methodology employed with the BUSSE. Test-retest reliability requires multiple administrations of the same survey to the same sample. Given that students only enter the institution once and administering the survey twice in a very short time frame within the same year would not be realistic and thus test-retest reliability coefficients cannot be estimated either. Therefore, the investigation into the reliability of the scores for the 2008 and 2009 administrations of the BUSSE will be limited to the internal consistency. Internal consistency is most frequently estimated by Cronbach's coefficient alpha (Cronbach, 1951).

Despite the widespread use of the coefficient alpha it is not without criticism, in fact Cronbach himself, recognising the limitations of this estimation (it is a crude estimation that does not bring out a number of subtleties in the data) later proposed alternative theories and methods such for assessing reliability such as the analysis of variance components and generalisability theory (Cronbach & Shavelson, 2004). In the light of the limitations of solely reporting Cronbach alpha coefficients, a slightly broader approach to assessing reliability will be taken for this study by examining item descriptive statistics and item-total correlations in addition to coefficient alpha values.

Descriptive statistics provide supplementary information which is useful for investigating reliability. Examining the standard deviation for each item will provide an indication of variability which is important given that sufficient variability is necessary to maximise reliability. Additional to this the potential impact of restricted range on the internal consistency of the subscales will be assessed by examining the frequency distributions of all items.

An examination of the item-total correlation will provide an indication of the ability of an individual item to discriminate between students with high and low levels of engagement, and an

indication of whether students are responding inconsistently on a scale. Item-total correlations of $r > 0.3$ are considered sufficient (Crocker & Algina, 2008).

Coefficient alpha values higher than 0.8 are desirable, with 0.7 being widely accepted as the minimum acceptable value (DeVellis, 2003). There is however some debate regarding the lowest acceptable coefficient alpha values, where some researchers have proposed that reliability coefficients of 0.65 or higher are acceptable for use in decision making about groups (Foxcroft & Roodt, 2006). For the purposes of this study, coefficient values of 0.65 will be considered sufficient as the results of the study will be used primarily in the context of groups.

One final consideration to take into account is the unidimensionality assumption inherent to the investigation of internal consistency. This fundamental assumption presumes that all the items on a given scale must measure the same content domain (i.e. there should be one latent/underlying factor influencing student's responses to the given set of items). However, an investigation of the internal consistency by means of Cronbach's coefficient alpha does not provide information on the unidimensionality of the subscale (Crocker & Algina, 2008; McDonald, 1981). Whilst it is beyond the stated scope of this study to conduct this type of analysis; however, it is recommended that future research projects be conducted to further investigate the unidimensionality assumption within each of the subscales.

It should not be assumed that evidence for high internal consistency in previous administrations of a measure serve as sufficient evidence for the reliability of scores for all future administrations (unless the sample is particularly similar in terms of composition and variability) especially in the case where a measure is being used in an entirely new context (Crocker & Algina, 2008; Cronbach & Shavelson, 2004). Therefore, the reliability of the scores obtained from both BUSSE administrations will be examined, and it is recommended that similar analyses be

conducted for all future administrations of the BUSSE at the current institution and for any other administrations at institutions in the South African context.

In the context of the discussion above, each subscale used within the current study will be discussed individually below. To provide an overview for the discussion, Table 5 below provides a summative perspective of the coefficient alpha values for each subscale over the two periods of administration.

Table 5

Cronbach coefficient alpha values for BUSSE subscales 2008 and 2009

Subscale	2008	2009
HSE (High School Engagement)	0.72	0.67
EUE (Expected University Engagement)	0.73	0.75
AUE (Actual University Engagement)	n/a	0.68

All values obtained with Cronbach's coefficient alpha exceed the minimum value required. The discussion below will provide a more detailed understanding of these values.

7.2.1.1 High school engagement subscale (HSE).

The coefficient alpha value for 2008 ($\alpha = 0.72$) is acceptable, but not high. However, in the 2009 data the value drops slightly ($\alpha = 0.67$), but remains acceptable for group decisions.

An examination of the frequency distribution of the items making up this subscale in both samples shows that for seven of the 12 items, the lowest response category had less than 5% of the total cases selecting the category, and in some cases no respondents selected the category. An examination of the descriptive statistics for each individual item shows that all of the items had sufficient variability ($SD > 2$) in both administrations.

Item-total correlations for the 2008 data set indicate that there are two items with correlations $r < 0.3$ (i.e. low discriminating ability). The items are: the amount of assigned reading during the last year of high school and the amount of time spent preparing for class. The Alpha-if-Item-Deleted value shows that if the amount of time spent preparing for class were deleted the coefficient alpha value would increase slightly, but would still not be greater than 0.8. For the 2009 data, there is no instance where deleting an item would improve the alpha value.

The coefficient alpha values obtained for the EUE subscale in 2008 and 2009 are similar to the value of 0.76 obtained in a US sample (NSSE, 2010c).

7.2.1.2 Expected university engagement subscale (EUE).

The coefficient alpha value for 2008 ($\alpha = 0.73$) is acceptable, but not high. In the 2009 administration the value increases very slightly to ($\alpha = 0.75$).

An examination of the frequency distribution of the items making up this subscale in both samples shows that for six of the eight items the lowest response category had less than 5% of the total cases selecting this option. An examination of the descriptive statistics for each individual item shows that all of the items had sufficient variability ($SD > 2$) in both administrations.

Item-total correlations for the 2008 and 2009 data sets show that there is only one item with a correlation $r < 0.3$, namely the amount of time students expect to spend preparing for class during their first year indicating that this item has low ability to discriminate between students of high and low levels of engagement.

In both samples the Alpha-if-Item-Deleted value shows that if the amount of time spent preparing for class were deleted the coefficient alpha value would increase slightly, but would still not exceed 0.8.

The coefficient alpha values obtained for the EUE subscale in 2008 and 2009 are similar to the value of 0.72 obtained in a US sample (Cole & McCormick, 2009).

7.2.1.3 Actual university engagement subscale (AUE).

The coefficient alpha value was only determined for the 2009 data due to the small matched sample size in the 2008 dataset. The coefficient alpha for 2009 ($\alpha = 0.68$) is acceptable, but not high.

An examination of the frequency distribution of the items making up this subscale in both samples shows that for a number of the items there are very few responses in the highest category. An examination of the descriptive statistics for each individual item shows that all of the items had sufficient variability ($SD > 2$).

Item-total correlations show that there are a total of 5 items with a correlation $r < 0.3$, indicating that these items have low ability to discriminate between students of high and low levels of engagement. The Alpha-if-Item-Deleted show that internal consistency is not improved regardless of the item which is removed.

7.2.2 Validity.

Historically the study of validity has been subdivided into examining the various “types” of validity separately (Kane, 2001). However, since the 1980’s scholars in the field of educational and psychological measurement began to propose and develop a unified theory of validity, in which these different forms of validity were all incorporated under a broader notion of validity (Messick, 1989, 1988, 1998). Cronbach (1980) makes a case for treating validity as a holistic argument that must be constantly refined, as opposed to conducting validity research which is often treated as a once off event. This validity argument must involve both theory and evidence (and not merely reporting a single correlation), and should make a case for the appropriateness and

usefulness of scores in a particular context through multiple sources of relevant evidence. The validity argument should be grounded in the intended purpose of the test and the consequences of the proposed use of the scores (Messick, 1989). Depending on the context and consequences, a validity argument could include descriptions of how the measure is related to theoretical constructs, explanations of the cognitive processes involved in completing the measure and quantitative evidence of how the measure relates to external data and behavioural outcomes (see also Kane 2001). By establishing a clear argument for the use of a specific test in a given context for a particular purpose, the test scores can then be regarded as valid. In the case of student survey work, such as the group of student engagement surveys, this will include evidence of consequential validity (Messick, 1989) which demonstrates how the results from student engagement surveys can be used practically by practitioners to deal with challenges that are encountered within the institution.

No studies explicitly arguing for the validity of the BCSSE have been published in the US context, neither has a formal validity argument been presented for the use of the BUSSE in the South African HE context. The current research study aims to initiate this by providing the following three sources of evidence: first, by the establishment of a theoretical rationale for the usefulness of the measure (as presented in Chapters 1-5); second, through a critical examination of the methodology employed to gather the data, namely self-report surveys (as discussed in Chapter 6); and thirdly by a statistical examination of quantitative evidence through the analyses of the relationship between student responses on the survey and external outcomes in the results section presented in Section 7.5 of this chapter.

The following section will examine the data related to research question two, the engagement profiles of the first-year students in both samples.

7.3 Engagement Profiles

The results presented in this section aim to answer research question 2: *What are the engagement and expectation profiles of first-year students at a university in the Free State, and do these differ by gender and race?* The data analysis presented below includes an examination of the engagement profiles of the first-year students in the 2008 and 2009 sample. The analysis includes an overall description of the mean scores for each subscale and a discussion related to selected items within each subscale to provide a more nuanced understanding of the patterns of engagement. Finally, the differences in the engagement profiles by gender and race will be examined by a two-way factorial ANOVA.

7.3.1 Descriptive statistics.

Table 6 below shows the means for both administrations for each of the subscales. In all instances the subscales means in 2008 and 2009 are very similar suggesting that there is a great deal of similarity between the experiences and expectations of the two groups of students entering the university over the two year period.

Table 6

BUSSE subscale descriptive statistics 2008 and 2009

	2008		2009	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
HSE ^a	5.55	1.40	5.65	1.20
EUE ^a	5.55	1.54	5.35	1.61

^aScales have a minimum value of 0 and a maximum value of 10

In both years, the mean scores reported on the HSE and the EUE subscales are very similar, suggesting that, within both groups, upon entering university, students expect to engage at very

similar levels during their first-year as in high school. For the purpose of interest a t-test was conducted investigating the differences in mean scores for the two subscales between the two samples, with effect size estimations determined in the case of a significant t-test. No significant difference was found for the scores in 2008 and 2009 on the HSE subscale ($t_{(2769)} = 1.633$, $p = .103$). Whilst there was a significant difference in the means scores for the EUE subscale ($t_{(2749)} = -2.580$, $p = .010$), the effect size was negligible (Cohen's $d < 0.2$).

Furthermore, both the HSE and EUE scores fall approximately in the middle of the range of possible scores suggesting that students do not intend to engage (and have not engaged) at particularly high levels. In order to provide a more nuanced understanding of the patterns of reported and expected engagement, the frequency distributions of individual subscale items were examined.

The HSE and EUE subscales are discussed together in order to facilitate a comprehensive and holistic understanding of the interrelationship between high school engagement and expected university engagement. The discussion below will report on patterns of responses to individual items included in each subscale to show areas of congruency between high school behaviours and expected university activities, as well as to highlight areas of incongruence between past engagement and expected engagement. Table 7 on the following page summarises the responses to individual items on the HSE and EUE scales which are matched for 2008 and 2009.

The table above shows the similarity in responses for 2008 and 2009 on all the items. In both administrations students expect to participate in less active classroom learning activities during their first year than at high school, but in more peer collaborative learning activities (inside and outside the classroom). Furthermore, students expect to interact with their lecturers at relatively similar levels as they did with their teachers at high school.

Table 7

Individual item responses for matched HSE and EUE scales 2008 and 2009

	2008		2009	
	HSE	EUE	HSE	EUE
Ask question in class ^a	72%	60%	69%	51%
Make class presentation ^a	46%	35%	51%	36%
Discuss marks with a teacher ^a	52%	52%	55%	55%
Discuss ideas with others outside of class ^a	45%	55%	37%	55%
Discuss ideas with teachers outside of class ^a	28%	33%	38%	35%
Work with others on projects during class ^a	58%	75%	50%	70%
Work with others on projects outside class ^a	43%	70%	49%	69%
Studying and preparing for class ^b	12.8 hrs.	18.3 hrs.	11.9 hrs.	16 hrs.

^a Represents the percentage of students who indicated they often participated in/expect to participate in the activity

^b Represents the number of hours students spend studying and preparing for class on a weekly basis

The HSE and EUE also include items asking students to report the number of hours they spend studying and preparing for class on a weekly basis. Students reported studying 12.8 hours per week during high school in the 2008 sample, and 11.5 hours studying in the 2009 sample. On average students in the 2008 sample expect to spend 18.3 hours per week studying and preparing for class, whilst students in the 2009 sample expect to spend an average of 16 hours doing so. In both instances students realistically expect to spend more time studying during their first-year than at high school, although the 2009 sample reported slightly fewer hours at high school and fewer expected hours at university.

In summary, the mean scores on the HSE and EUE subscales suggests that students are not highly engaged at high school and have similar expectations for engagement at university. However, from the item analysis it appears that students expect to participate more frequently in peer collaborative activities during their first-year, but expect less active classroom participation. They expect similar levels of interaction with staff as they experienced in high school. Students are however realistic enough to expect that they will need to spend more time in a week studying and preparing for class.

7.3.2 Inferential statistics: Two-way ANOVA.

This section of the data analysis will examine the differences in engagement profiles by gender and race for both administrations. As indicated previously, only Black African and White categories will be included in the statistical analysis for the race variable given the small sample sizes of students from other categories. In order to test the differences between scores on each of the subscales by gender and race, a series of two-way ANOVA's will be conducted with gender and race as the classification variables and the respective subscale score as the dependent variable. Furthermore, where significant results are found, effect sizes will be calculated in order to provide an indication of the practical significance of the results. Effect sizes will be determined using ω^2 , a less biased estimation than η^2 of the percentage of variance explained by the effect. Effect size values between .01 and .016 are considered small; values greater than .016, but smaller than .14 are considered medium; and effect sizes exceeding a value of .14 are considered large (Cohen, 1988).

7.3.2.1 High school engagement subscale (HSE).

The gender and racial differences in reported levels of HSE were investigated by means of a two-way ANOVA with gender and race as the classification variables. Table 8 below shows the results for the 2008 and 2009 data sets.

Table 8

Two-way ANOVA HSE (2008 and 2009)

Year	Effect	<i>df</i>	<i>F</i>	<i>p</i>	ω^2
2008	Gender	1; 769	46.424	.000*	.054
	Race	1; 769	20.040	.000*	.024
	Interaction	1; 769	0.925	.336	
2009	Gender	1; 1666	65.676	.000*	.037
	Race	1; 1666	4.054	.044*	.002
	Interaction	1; 1666	4.175	.041*	.002

In the 2008 sample, there is a significant main effect for gender and race, but no significant interaction. The mean score for the female students ($\bar{X} = 5.7$, $SD = 1.28$) was significantly higher than the mean score for male students ($\bar{X} = 5.36$, $SD = 1.48$), suggesting higher levels of engagement in educationally purposive behaviours among the female students at high school. The mean score for White students ($\bar{X} = 5.35$, $SD = 1.29$) was significantly lower than the mean score for Black African students ($\bar{X} = 6.05$, $SD = 1.41$), suggesting that the White students were less engaged at high school. Effect sizes for both gender and race are medium ($\omega^2 = .053$ and $\omega^2 = .024$ respectively).

For the 2009 sample, there is a significant main effect for gender and race, as well as a significant interaction. The mean score for the female students ($\bar{X} = 5.72$, $SD = 1.18$) was significantly higher than the mean score for male students ($\bar{X} = 5.56$, $SD = 1.22$), suggesting higher levels of engagement in educationally purposive behaviours among the female students at high school. The mean score for White students ($\bar{X} = 5.39$, $SD = 1.12$) was significantly lower than the mean score for Black African students ($\bar{X} = 5.86$, $SD = 1.13$), suggesting that the White students were less engaged at high school. A medium effect size was determined for the gender main effect and a negligible effect size was determined for the race main effect ($\omega^2 = .037$ and $\omega^2 = .002$ respectively). The effect size for the interaction was negligible ($\omega^2 = .002$).

Even though the effect size for the interaction was negligible it was decided to examine this interaction in greater detail. In order to do this the cell means were compared by conducting an ANOVA with a *post-hoc* Scheffe test (Oshima & McCarty, 2000). This allowed for the mean scores of Black African males, White males, Black African females and White females to be compared. From this it is concluded that the mean HSE score for the White male students ($\bar{X} = 5.26$, $SD = 1.24$) is significantly lower than all the other groups. Furthermore, the mean HSE scores for the Black African male ($\bar{X} = 5.86$, $SD = 1.24$) and Black African female students ($\bar{X} = 5.86$, $SD = 1.14$) do not differ significantly from each other, but are significantly higher than the scores for the White males and females ($\bar{X} = 5.5$, $SD = 1.21$).

7.3.2.2 *Expected university engagement subscale (EUE)*

The differences in reported levels of EUE were investigated by means of a two-way ANOVA with gender and race as the classification variables. Table 9 below shows the results for the 2008 and 2009 data sets.

Table 9

Two-way ANOVA EUE (2008 and 2009)

Year	Effect	<i>Df</i>	<i>F</i>	<i>P</i>	ω^2
2008	Gender	1; 769	38.439	.000*	.046
	Race	1; 769	5.898	.015*	.007
	Interaction	1; 769	1.211	.271	
2009	Gender	1; 1649	43.864	.000*	.025
	Race	1; 1649	2.174	.141	
	Interaction	1; 1649	4.825	.028*	.002

For the 2008 sample, the mean score for females on the EUE subscale ($\bar{X} = 5.63$, $SD = 1.47$) is significantly higher than the mean score for male students ($\bar{X} = 5.35$, $SD = 1.61$), indicating that females expect to engage more in educationally purposive activities than males during their first year at university. Furthermore, the mean score for Black African students ($\bar{X} = 5.98$, $SD = 1.64$) is significantly higher than the mean score for White students ($\bar{X} = 5.30$, $SD = 1.39$), indicating that Black African students expect to engage significantly more than during the first year of university. There is a medium effect size for gender, but only a negligible effect size for race ($\omega^2 = .046$ and $\omega^2 = .007$ respectively). There is no significant interaction.

In the 2009 data set, there is a significant interaction between gender and race with regards to scores on the EUE subscale, with a significant main effect for gender but not for race.

The mean score for females on the EUE subscale ($\bar{X} = 5.42$, $SD = 1.58$) is significantly higher than the mean score for male students ($\bar{X} = 5.24$, $SD = 1.64$), indicating that females expect to engage more in educationally purposive activities than males during their first year at university.

There is a medium effect size for gender, but only a negligible effect size for the interaction ($\omega^2 = .025$ and $\omega^2 = .002$ respectively).

Even though the effect size for the interaction was negligible it was decided to examine this interaction in greater detail. In order to do this the cell means were compared by conducting an ANOVA with a *post-hoc* Scheffe test (Oshima & McCarty, 2000). This allowed for the mean scores of Black African males, White males, Black African females and White females to be compared. From this it is concluded that the mean EUE score for the White male students ($\bar{X} = 4.91$, $SD = 1.47$) is significantly lower than all the other groups. Furthermore, the mean EUE scores for the Black African male ($\bar{X} = 5.61$, $SD = 1.75$) and Black African female students ($\bar{X} = 5.56$, $SD = 1.63$) do not differ significantly from each other, but are significantly higher than the scores for the White males and females ($\bar{X} = 5.2$, $SD = 1.47$).

7.3.3 Summary two-way ANOVA.

Table 10 on the following page summarises the results from the two-way ANOVA for the HSE and EUE scales.

There was a significant main effect for gender in both samples for both subscales. Female students were significantly more engaged at high school than male students, and expect to be significantly more engaged during the first year of university. All effect sizes related to gender were found to be of medium strength.

Table 10

Summary of two-way ANOVA for HSE and EUE

		2008		2009	
		Significance	Effect size	Significance	Effect size
	Gender	Yes	Medium	Yes	Medium
HSE	Race	Yes	Medium	Yes	Negligible
	Interaction	No	n/a	Yes	Negligible
	Gender	Yes	Medium	Yes	Medium
EUE	Race	Yes	Negligible	No	n/a
	Interaction	No	n/a	Yes	Negligible

In both administrations, Black African students reported being significantly more engaged at high school than White students (a medium effect size was determined for the 2008 data, but a negligible effect size for the 2009 data). The results for the main effect for race regarding expected university engagement were not consistent between the two administrations. In the 2008 sample, Black African students report expecting to be significantly more engaged in effective educational activities than White students, however effect sizes were negligible. However, in the 2009 sample there is no significant difference between Black African and White students in terms of their expected levels of engagement.

In the 2008 sample, no significant interactions between race and gender were found for either the HSE or EUE subscales. In the 2009 sample a significant interaction between gender and race was found with regards to scores on both subscales. A comparison of the cell means with a *post-hoc* Scheffé test showed that White males engaged at significantly lower levels than all other

groups at high school and expected to engage at significantly lower levels than all other groups during their first year. Furthermore, Black African males and females did not differ from each other in terms of their high school engagement or expected engagement in the first year; however their scores on both the subscales are significantly higher than White males and females.

7.4 Matching Past, Expected and Actual Levels of Engagement

The results in this section aim to answer research question three: *What is the difference between expectations to engage, engagement at high school and actual engagement levels among first-year students, and does this differ by gender and race?*

Thus, in order to answer this question the data analysis in this section examines the difference between first-year expectations to engage (as measured by the EUE), engagement at high school (as measured by the HSE) and actual engagement levels among first-year students (as measured by the AUE). The analysis includes a combination of descriptive and inferential statistics: descriptive statistics compare both the means and frequency distributions of the matched items on the three scales, and the inferential statistics will examine the differences between individual level responses on the three scores. This analysis was originally planned to be conducted in the 2008 and 2009 data sets. However, in the 2008 data set only 152 cases were matched in the BUSSE and SASSE datasets compared to a total of 410 cases that were matched in the 2009 data set. Due to the small number of matched responses in the 2008 data set (75% of the subgroups of interest had cell sizes smaller than 30), only the data from the 2009 dataset was included in the data analysis for this section.

7.4.1 Descriptive statistics.

Table 11 on the following page presents the means and standard deviations for the HSE, EUE and AUE subscales.

Table 11

HSE, EUE and AUE descriptive statistics 2009

Subscale	Mean	SD
HSE ^a	5.59	1.18
EUE ^a	5.27	1.56
AUE ^a	3.79	1.22

^aScales have a minimum value of 0 and a maximum value of 10

The means for the matched subscale items were examined (see Table 12 below) to get a sense of the types of activities where there was incongruence between past, expected and actual levels of engagement. All individual items that were matched on at least two of the three scales are included in Table 12 on the following page.

There was no item where the mean actual engagement was higher than the mean expected engagement. There were only two items (peer collaboration) where the mean engagement at university exceeded the mean high school engagement.

Despite the lower overall engagement in the first-year, there is a great deal of overlap in the activities students expect to engage in and the activities they eventually do engage in. The EUE items with the highest means were the three items related to peer collaborative activities, and although students collaborated less than they anticipated, the two items related to peer collaboration outside of class were the AUE items with the highest means. Similarly, the two activities that students expected to engage in the least were making class presentations and discussing ideas with lecturers outside of class. In both instances these activities were the two activities with the lowest reported means, and thus in both instances participation was even lower than the low expectations to participate students had upon entering.

Table 12

HSE, EUE and AUE matched item level descriptive statistics 2008 and 2009a

	HSE		EUE		AUE	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Amount of assigned reading	8.19	1.85	n/a	n/a	5.15	2.29
Number of short papers (> 5 pages)	7.73	2.06	n/a	n/a	4.16	2.74
Number of papers (5+ pages)	6.68	2.86	n/a	n/a	3.67	2.58
Studying and preparing for class	3.97	2.62	5.35	2.66	2.94	2.25
Ask questions in class	6.72	2.61	5.25	2.52	3.49	2.49
Make class presentations	5.09	2.48	4.00	2.71	1.61	2.33
Discuss marks with lecturer/teacher	5.48	2.51	5.43	2.54	3.24	2.71
Work with others on projects during class	5.59	2.33	6.35	2.59	4.75	2.99
Work with others on projects outside of class	4.76	2.76	6.16	2.60	5.31	2.78
Frequency of writing more than one draft of a paper	5.42	3.03	n/a	n/a	4.93	3.11
Discuss ideas with lecturer outside of class	3.47	2.75	4.03	2.55	1.78	2.46
Discuss ideas with others outside of class	4.23	2.65	5.58	2.46	5.35	2.87

^aAll items measured on a scale of 1 to 10

Low expectations for active classroom learning experiences were realised. Only 21% often participated in class discussion or asked questions in class, even though 69% of students indicated they frequently did so in high school and 51% expected to do so often during their first year. Just over half of the students frequently made class presentations at high school (although only 36%

expected to do so frequently in their first year) and as many as 62% of the sample reported that they never made a class presentation during their first-year.

In line with their initial expectations, students engaged in more peer collaborative learning activities than active classroom learning experiences. However, their level of engagement in collaborative activities was still lower than their initial expectations. During the first year, almost half of the students (48%) had often worked with other students on projects during class, whilst more than 70% expected to do so often at university (and around 60% had often done so in high school). In high school less than half of the sample had often worked with others outside of class to prepare assignments. Slightly more students (56%) reported that they often did so during their first year, but this is somewhat fewer than the 69% who had expected to do so frequently.

Student expectations for interaction with lecturers were not realised. About 55% of the sample had often discussed marks with their teacher during high school (and similar numbers expected to do so in their first-year). However, only a quarter of students actually did. At high school, 38% of students had often discussed ideas with teachers outside of class, but only a quarter of students often did so during their first year. Although as many as 16% did not expect to ever discuss ideas with academic staff members outside of class, almost double that number (31%) report never having done so during their first year.

Students grossly overestimated the amount of time they would spend studying during their first year. During high school the students in the sample had spent an average of 11.5 hours per week and expected to spend 16 hours per week studying during their first year, but the actual reported average was 8.35 hours per week (almost half of what was anticipated). More than half (52%) of the sample reported spending less than five hours per week studying. Around 35% of students expected to spend more than 20 hours per week studying, but only 9% actually did so.

In summary, a descriptive examination of the mean scores on the HSE and EUE subscales suggests that students are not highly engaged at high school and have similar expectations for engagement at university. Despite these relatively low levels of engagement and expectations, students report engaging even less than they had anticipated in all areas including active classroom learning activities, peer collaborative learning activities, interaction with lecturers and in particular the amount of time that will be spent studying and preparing for class.

7.4.2 Matching past, expected and actual levels of engagement: Inferential statistics.

To investigate whether there are significant differences between an individual's HSE, EUE and AUE scores a repeated measures ANOVA was conducted (Field, 2009) allowing for the same subjects to be used for all three scores. Prior to conducting the analysis, the assumption of sphericity was tested with the Mauchly's test (testing that the variances of the differences between conditions are equal). Violations of the assumption can be controlled by applying reduced degrees of freedom. In the 2009 sample, the Mauchly's test was significant indicating that the assumption has been violated ($\chi^2_{(2)} = 23.362, p < 0.001, \epsilon = 0.949$) and thus the degrees of freedom were corrected using the Huynh-Feldt estimates of sphericity (Field, 2009). Table 13 below shows the results of the repeated measures ANOVA.

Table 13

Repeated measures ANOVA 2009

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Engagement	741.928	1.898	390.850	267.702	.000*
Error	1125.217	770.687	1.460		

Table 13 above shows that there is a significant difference between HSE, EUE and AUE scores for the 2009 sample ($F_{(1.898, 770.687)} = 267.702, p < 0.001$). This significant result was followed up by means of *post-hoc* tests with the modified Bonferroni adjustment to control for inflated Type I error rates (Field, 2009). The results of the *post-hoc* tests can be found in Table 14 below, and shows that there are significant differences between all the sets of scores.

Table 14

Pairwise post-hoc comparisons HSE, EUE and AUE 2009

Subscale	Comparison	Mean Difference	SE	P
HSE	EUE	0.317*	.078	.000*
	AUE	1.789*	.078	.000*
EUE	HSE	-0.317*	.078	.000*
	AUE	1.472*	.093	.000*

It can thus be concluded that students expect to engage significantly less at university than they did at high school and do in fact report significantly less actual engagement than at high school. Furthermore, it can be concluded that at the end of their first-year they have engaged significantly less than they expected to.

In order to investigate the differences in HSE, EUE and AUE in the first-year of study by gender and race, a mixed between-within ANOVA was conducted for the 2009 data set (Field, 2009). Prior to conducting the analysis, the assumption of sphericity was tested with the Mauchly's test (testing that the variances of the differences between conditions are equal). Violations of the assumption can be controlled by applying reduced degrees of freedom. In the 2009 data, the Mauchly's test was significant indicating that the assumption has been violated ($\chi^2_{(2)} = 26.525, p <$

0.001, $\epsilon = 0.946$) and thus the degrees of freedom were corrected using the Huynh-Feldt estimates (Field, 2009). The results of the within-subjects effects are shown below in Table 15.

Table 15

Within-subjects ANOVA by gender and race 2009

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Engagement	645.601	1.892	341.173	230.910	.000*
Engagement*race	19.507	1.892	10.309	6.977	.001*
Engagement*gender	2.414	1.892	1.276	.863	.417
Engagement*race*gender	.336	1.892	.178	.120	.876
Error	1009.319	683.119	1.478		

Table 15 shows that there is a significant difference between HSE, EUE and AUE scores for the 2009 sample for students of different races ($F_{(1,9, 683,1)} = 698$, $p = 0.001$). However, there is no significant difference between males and females and no significant differences for the interaction between gender and race on these three variables.

The significant differences on the three engagement variables by race were further investigated with a series of pairwise comparisons with the modified Bonferroni adjustment to control for inflated Type I error rates (Field, 2009). In this case, three comparisons are being made and thus the initial p value = 0.05 is divided by 3, and $p = 0.0167$ is used as the criteria for determining statistical significance. The results of these *post-hoc* tests can be found in Table 16 below.

Table 16

Post-hoc tests HSE, EUE and AUE 2009

Levene test for equality of variance						
	<i>F</i>	<i>P</i>	<i>T</i>	<i>df</i>	<i>P</i>	SE
HSE	0.122	0.727	3.747	367	0.000*	0.122
EUE	7.961	0.005	3.021	246.99	0.003*	0.174
AUE	0.717	0.717	-0.58	367	0.562	0.131

The Levene's test for equality of variance was not significant in the case of the HSE and the AUE scales, and the straightforward t-test results are reported in these cases. In the case of the EUE score equal variances cannot be assumed given the significant *F*-test and therefore the adjusted degrees of freedom were used. Taking into account the Bonferroni adjustment it is concluded that there are significant differences between Black African and White students on the HSE and EUE scores, but not on the AUE score. By examining the means it is concluded that Black African students ($\bar{X} = 5.85$; $SD = 1.11$) report being significantly more engaged than White students ($\bar{X} = 5.38$; $SD = 1.18$) at high school, and that Black African students ($\bar{X} = 5.61$; $SD = 1.72$) expect to engage significantly more than White students ($\bar{X} = 5.08$; $SD = 1.42$) during their first-year. However, actual levels of engagement during first-year are not significantly different for these two groups.

7.5 Predicting Academic Performance and Retention

The results in this section answer research question four: *Can student engagement expectations and experiences effectively be used to predict academic performance and persistence*

at the end of the first-year of study, after controlling for past academic performance and selected demographic variables?

Thus, the data analysis examines the extent to which expectations to engage (as measured by the EUE) and high school (as measured by the HSE) explain the percentage of credits passed by the end of the first-year and retention (whether or not the student returned in the following year to continue their studies) after controlling for gender, race and high school academic performance. Each analysis will be discussed separately below.

7.5.1 Predicting academic performance.

In order to examine the association between academic performance in the first year of study and engagement, whilst controlling for gender, race and past academic performance a sequential OLS regression was conducted. The following variables were included: gender (dummy coded with 0 = female and 1 = male); race (dummy coded with 0 = White and 1 = Black African); academic performance at high school (M score in the case of the 2008 sample and TP score in the case of the 2009 sample) (HSAP score); engagement in educationally purposive activities during high school (HSE subscale) and expectation to engage in educationally purposive activities during the first year (EUE subscale). Academic performance in the first year was measured by the percentage of credits passed at the end of the first year (refer back to Section 3.1.1.4).

Gender, race and high school academic performance were entered into the regression equation in the first step as controlling variables. Thereafter, in the second step the variables measured by the BUSSE were entered, namely HSE and EUE. The rationale for taking this sequential approach is to examine what additional variance in percentage of credits passed can be explained by the information obtained from the BUSSE. This analysis was conducted for both the 2008 and the 2009 data sets and the results are discussed separately below.

7.5.1.1 Multiple regression analysis 2008 data.

Prior to reporting on the results of the OLS regression the assumptions of linearity, multicollinearity, homoscedasticity, independence of errors and normality are reported on.

The assumption of linearity was investigated by examining the scatterplots of the relationship between the dependent variable (percentage of credits passed) and each of the explanatory variables. The scatterplots suggest that there is not a linear relationship between the dependent variable and HSE, EUE or HSAP, thus violating this assumption.

The assumption of multicollinearity holds in this data set and a number of indicators confirm this. First, none of the correlations between the explanatory variables is higher than 0.7, the VIF (variance inflation factor) values obtained for each of the coefficients are much smaller than 10, the tolerance values are large and none of the condition indexes are greater than 30. All of these statistics confirm that there are no multicollinearity concerns in the data set.

The histogram of the standardised residuals indicates that the residuals are not normally distributed and skewed to the left and the deviation from normality is confirmed by the normal P-P (probability-probability) plot.

In order to assess the assumptions of homoscedasticity and independence of errors, the scatterplot of the standardised residuals and unstandardised predicted values were examined. Although the scatterplot suggests that there are not a large number of outliers (defined as greater than ± 3 SD), for the assumption of homoscedasticity to hold the residuals should be equally variable around all predicted values – which is not the case in the current data set. For the assumption of independence of errors to hold there should be no distinguishable pattern in the residuals, which is very clearly not the case with the current data.

Skewness values for all explanatory variables are lower than 1.00 and thus not problematic (Brown, 2011). The dependent variable is negatively skewed, with very few low scores. An examination of the frequency table indicates that 41% of the respondents in this data set had passed all of their modules.

Lastly, the presence of outliers was examined. Outliers in regression analysis are problematic because the regression line is particularly sensitive to them and they introduce a large error variance. The presence of outliers can be identified in a number of different manners: namely, examining standardised residuals (cases with residuals of ± 3 or larger are considered outliers), by examining the maximum Mahalanobis distance (using a Chi-squared distribution, in this study the critical value is $\chi^2_{(5)} = 15.08627$, $p = 0.01$), examining the maximum leverage (values > 0.5 are considered problematic) and the maximum Cooks distance (values > 1 are problematic). In the case of the current data set, the maximum Cook's distance value was 0.053 and the maximum leverage value was 0.041 suggesting that there are no problematic outliers. However, the maximum Mahalanobis distance (31.631) exceeded the χ^2 criteria ($\chi^2_{(5)} = 15.08627$, $p = 0.01$) suggesting the presence of outliers. Concurring with the Mahalanobis distance the case wise diagnostics identified five cases where the standardised residuals exceeded 3 *SD*. These cases were examined individually, but not removed from the data set as the combination of scores was plausible and not out of range.

In summary, although there are few identifiable outliers and no problem with multicollinearity, the assumptions of independence of errors, normality and homoscedasticity are violated. Of particular concern is the absence of a linear relationship between the explanatory variables and the dependent variable, as this is fundamental to OLS regression. This lack of linearity is reflected in the correlation matrix (Table 17 below) where none of the correlations

between the dependent and explanatory variables (except for HSAP) is greater than |0.3|. The results for the sequential OLS regression should be interpreted with these limitations in mind.

Table 17

Correlation Matrix OLS regression 2008

	<i>Credits passed</i>	<i>HSAP</i>	<i>Race</i>	<i>Gender</i>	<i>HSE</i>	<i>EUE</i>
Credits passed	1.000	.397	-.245	-.156	.028	.044
HSAP		1.000	-.371	-.106	-.009	-.101
Race			1.000	.038	.230	.212
Gender				1.000	-.151	-.099
HSE					1.000	.501
EUE						1.000

Table 18 below presents the results for the OLS regression.

Table 18

Sequential OLS regression 2008

Step	R	R Square	Adjusted R Square	SE	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.427	.182	.179	25.751	.182	57.591	3	776	.000*
2	.437	.191	.186	25.644	.009	4.255	2	774	.015*

From Table 18 above it is concluded that the first step of the model explains a significant percentage of the variance in percentage of credits passed in the first year, and that the addition of the BUSSE variables significantly improves the amount of the overall variance that is explained. The percentage of variance that can be explained increases from 18.2% to 19.1% with the addition

of the BUSSE variables. However, the large values for the standard error of estimate is an indication that there is a high amount of error associated in predicting the percentage of credits passed with the current set of variables. The significant F -test is an indication that the model is significant after entering the full set of selected variables ($F_{(5, 774)} = 36.547, p < 0.001$) and therefore the individual contributions of each of the explanatory variables was examined and these results are reflected in Table 19 below.

Table 19

Standardised and unstandardised coefficients: Step 1 and 2 OLS regression 2008

	Unstandardised Coefficients		Standardised Coefficients	T	p	
	B	SE	B			
1	Gender	1.208	.124	.343	9.772	.000*
	Race	-6.837	2.121	-.113	-3.223	.001*
	HSAP	-6.679	1.887	-.116	-3.540	.000*
2	Gender	1.222	.124	.347	9.874	.000*
	Race	-7.984	2.187	-.132	-3.651	.000*
	HSAP	-6.082	1.905	-.105	-3.193	.001*
	HSE	-.083	.780	-.004	-.106	.915
	EUE	1.843	.703	.099	2.623	.009*

From this table it is concluded that in the first step of the model all three variables were significant predictors of the percentage of credits passed. In the second step of the model all of these predictors remained significant, and the EUE score was also a significant predictor. Thus, at

the second step of the model, the only variable which was not a significant predictor was the level of engagement at high school.

From the coefficients for each predictor it can be concluded that being male is associated with a significantly higher percentage of credits passed, and being Black African is associated with a significantly lower percentage of credits passed. Higher expectations to engage are associated with a higher number of credits passed.

7.5.1.2 Multiple regression analysis 2009 data.

Prior to reporting on the results of the OLS regression for the 2009 data, the assumptions of linearity, multicollinearity, homoscedasticity, independence of errors and normality are reported on. The assumption of linearity was investigated by examining the scatterplots of the relationship between the dependent variable (percentage of credits passed) and each of the explanatory variables. The scatterplots suggest that there is not a linear relationship between the dependent variable and HSE, EUE or HSAP.

The assumption of multicollinearity is assumed to hold in this data set, and a number of indicators confirm this. First, none of the correlations between the explanatory variables is higher than 0.7, the VIF values obtained for each of the coefficients are much smaller than 10, the tolerance values are large and none of the condition indexes are greater than 30. All of these statistics confirm that there are no multicollinearity concerns in the data set. The histogram of the standardised residuals indicates that the residuals are not normally distributed and skewed to the left and the deviation from normality is confirmed by the normal P-P plot. In order to assess the assumptions of homoscedasticity and independence of errors, the scatterplot of the standardised residuals and unstandardised predicted values were examined. Although the scatterplot suggests there were few outliers (defined as greater than $\pm 3 SD$), for the assumption of homoscedasticity to hold

the residuals should be equally variable around all predicted values – which is not the case in the current data set. For the assumption of independence of errors to hold there should be no distinguishable pattern in the residuals, which is very clearly not the case with the current data.

Skewness values for all explanatory variables and the dependent variable are lower than 1.00, indicating that the variables are not too skewed to be included in the regression. There are a limited number of scores on the EUE variable with no data, but these are few and are not highly problematic.

Lastly, the presence of outliers was examined. Outliers in regression analysis are problematic because the regression line is particularly sensitive to them and they introduce a large error variance. The presence of outliers can be identified in a number of different manners: namely, examining standardised residuals (cases with residuals of ± 3 or larger are considered outliers), by examining the maximum Mahalanobis distance (using a Chi-squared distribution, in this study the critical value is $\chi^2_{(5)} = 15.08627$, $p = 0.01$), examining the maximum leverage (values > 0.5 are considered problematic) and the maximum Cooks distance (values > 1 are problematic). In the case of the current data set, the maximum Cook's distance value was 0.014 and the maximum leverage value was 0.012 suggesting that there are no problematic outliers. However, the maximum Mahalanobis Distance (21.512) exceeded the χ^2 criteria suggesting the presence of outliers. Concurring with the Mahalanobis Distance the case wise diagnostics identified two cases where the standardised residuals exceeded 3 SD. These cases were examined individually, but not removed from the data set as the combination of scores was not implausible.

In summary, although there are few identifiable outliers and no problem with multicollinearity, the assumptions of independence of errors, normality and homoscedasticity are violated. Of particular concern is the lack of linear relationship between the explanatory variables

and the dependent variable, as this is fundamental to multiple regression. This lack of linearity is reflected in the correlation matrix (see Table 20 below) where none of the correlations between the dependent and explanatory variables (except for HSAP) is greater than $|0.1|$, where a correlation of at least $|0.3|$ is desirable. The results presented for the sequential multiple regression below should be interpreted with these limitations in mind.

Table 20

Correlation Matrix OLS regression 2009

	<i>Credits passed</i>	<i>HSAP</i>	<i>Race</i>	<i>Gender</i>	<i>HSE</i>	<i>EUE</i>
Credits passed	1.000	-.051	-.074	.341	.026	.050
HSAP		1.000	-.069	-.025	-.061	-.056
Race			1.000	-.290	.173	.139
Gender				1.000	.019	-.001
HSE					1.000	.283
EUE						1.000

Table 21 below presents the results for the OLS regression.

Table 21

Sequential OLS regression 2009

Step	R	R Square	Adjusted R Square	Std. Error of Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.344 ^a	.118	.117	29.462	.118	83.111	3	1858	.000*
2	.347 ^b	.120	.118	29.443	.002	2.209	2	1856	.110

From Table 21 above it is concluded that the first step of the model explains a significant percentage of the variance in percentage of credits passed in the first year, but that the addition of the BUSSE variables does not significantly improve the amount of variance that is explained in this sample. The percentage of variance that can be explained increases from 11.8% to 12% with the addition of the BUSSE variables. Furthermore, the standard error of estimate in both models is an indication that there is a high amount of error associated in predicting the percentage of credits passed with the current set of variables. A significant F -test is an indication that the model is significant after entering the selected variables ($F_{(5, 1856)} = 50.815, p = 0.00$) and thus the individual contributions of each of the explanatory variables was examined. The results are reflected in Table 22 below.

Table 22

Standardised and unstandardised coefficients: Step 1 and 2 OLS regression 2008

		Unstandardised Coefficients		Standardised Coefficients	t	p
		B	SE	B		
1	Gender	-2.591	1.396	-.041	-1.856	.064
	Race	1.491	1.462	.023	1.019	.308
	HSAP	2.019	.133	.346	15.202	.000*
2	Gender	-2.454	1.397	-.038	-1.756	.079
	Race	1.040	1.493	.016	.696	.486
	HSAP	2.008	.133	.344	15.082	.000*
	HSE	.039	.599	.001	.065	.948
	EUE	.896	.446	.046	2.011	.045*

From this table it is concluded that in the first step of the model only previous academic performance was a predictor of academic performance in the first year, and in the second step of the model EUE scores were also significant predictors of academic performance, where the higher expectations to engage were associated with higher levels of academic performance.

7.5.2 Predicting retention.

A sequential logistic regression analysis was performed with retention to the second year of study as the outcome variable (coded with 0 = returned and 1 = did not return). A total of five predictor variables were included: race (coded with 0 = White and 1 = Black African), gender (coded with 0 = female and 1 = male), high school academic performance (M score in the case of the 2008 sample and TP score in the case of the 2009 sample) (HSAP) and two engagement variables (HSE and EUE). This analysis was done for both the 2008 (N = 773) and 2009 (N = 1862) datasets.

Gender, race and high school academic performance were entered into the logistic regression equation in the first step as controlling variables. Thereafter, in the second step the variables measured by the BUSSE were entered, namely HSE and EUE. The rationale for taking this sequential approach is to examine if there are improvements in accuracy to predict retention by adding the information obtained from the BUSSE. This analysis was conducted for both the 2008 and the 2009 data sets and the results are discussed separately below.

7.5.2.1 Logistic regression analysis 2008.

All expected cell frequencies for all pairs of categorical predictor variable and the outcome variable were acceptable.

In the 2008 dataset, there were 73 (9%) students who did not return in 2009 to continue with their studies, and 700 (91%) who did return.

Given the base rate of the two groups (73/773 for non-returning students and 700/773 for returning students), and no other information, the best strategy is to predict that each student will return in the following year resulting in a 91% overall accuracy rate. At baseline the predicted odds of dropping out are $Exp(B) = 0.104$.

The Hosmer-Lemeshow tests the null hypothesis that there is a linear relationship between the predictor variables and the log odds of the criterion variable. In the first step of the model, the non-significant result ($\chi^2_{(8)} = 9.509, p = 0.301$) indicates that the data fit the model well.

The test of the first step of the model against the constant-only model was significant, $\chi^2_{(3)} = 36.295, p < 0.001$, indicating that race, gender and high school academic performance as a set of variables reliably distinguished between students who did not return for their second year and students who did return.

A total of 69% of the cases were correctly classified, with 60% of the non-returning students being correctly classified. Table 23 below shows the Wald statistics, odds ratios and 95% confidence intervals for each of the predictors.

Table 23

Wald statistics, odds ratios and 95% confidence intervals 2008

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI	
							Lower	Upper
HSAP	-.075	.015	25.298	1	.000*	.927	-.075	.015
Race	-.050	.088	.319	1	.572	.951	-.050	.088
Gender	-.542	.255	4.542	1	.033*	.581	-.542	.255

From this table it is concluded that gender [$\chi^2(1) = 4.542, p < 0.000$] and academic performance in high school reliably predicted retention [$\chi^2(1) = 25.298, p < 0.000$].

The odds ratio for gender ($Exp(B) = 0.581$), indicates that being male results in a reduction in the odds of not returning for the second year of study. The inverted odds ratio for gender thus indicates that the odds of not returning in the second year of studies for females are 1.72 times higher than the odds for males. The odds ratio for high school academic performance is $Exp(B) = 0.927$, indicating that the odds of dropout increase by a multiplicative factor almost equal to 1 for each one point decrease in the student's Grade 12 academic performance.

The Hosmer-Lemeshow tests the null hypothesis that there is a linear relationship between the predictor variables and the log odds of the criterion variable. In the second step of the model, the non-significant result ($\chi^2_{(8)} = 10.667, p = 0.221$) indicates that the data fit the model well.

The second step of the model did not improve prediction [$\chi^2(2) = 0.885, p = 0.653$], indicating that the engagement variables do not improve the prediction of retention to the second year of study. The number of non-returning cases correctly predicted increased slightly to 64.4%, however the total number of correctly classified cases decreased to 66.9%.

7.5.2.2 Logistic regression analysis 2009.

All expected cell frequencies for all pairs of categorical predictor variables and the outcome variable were acceptable.

In the 2009 dataset, there were 240 (13%) students who did not return in 2010 to continue with their studies, and 1622 (87%) who did return.

Given the base rate of the two groups (240/1862 for non-returning students and 1670/1862 for returning students), and no other information, the best strategy is to predict that each student

will return in the following year resulting in an 87% overall accuracy rate. At baseline the predicted odds of dropping out are $Exp(B) = 0.148$.

The Hosmer-Lemeshow tests the null hypothesis that there is a linear relationship between the predictor variables and the log odds of the criterion variable. In the first step of the model, the non-significant result ($\chi^2_{(8)} = 15.273, p = 0.054$) indicates that the data fit the model well.

The test of the first step of the model against the constant-only model was significant, $\chi^2_{(3)} = 45.454$ value, $p < 0.001$, indicating that the race, gender and high school academic performance as a set of variables reliably distinguished between students who did not return for their second year and students who did return.

A total of 57.4% of the cases were correctly classified, with 63.5% of the non-returning students being correctly classified.

Table 24 below shows the Wald statistics, odds ratios and 95% confidence intervals for each of the predictors.

Table 24

Wald statistics, odds ratios and 95% confidence intervals 2009

	<i>B</i>	<i>SE</i>	Wald	<i>Df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI	
							Lower	Upper
HSAP	-.085	.015	32.462	1	.000*	.919	.893	.946
Race	.194	.155	1.567	1	.211	1.215	.896	1.647
Gender	.171	.142	1.447	1	.229	1.186	.898	1.566

From this table it is concluded that only academic performance in high school reliably predicted retention $\chi^2_{(1)} = 32.462, p < 0.001$. The odds ratio for this variable is $Exp(B) = 0.919$,

indicating that the odds of dropout increase by a multiplicative factor almost equal to 1 for each one point decrease in the student's Grade 12 academic performance.

The Hosmer-Lemeshow tests the null hypothesis that there is a linear relationship between the predictor variables and the log odds of the criterion variable. In the first step of the model, the non-significant result ($\chi^2_{(8)} = 9.552, p = 0.298$) indicates that the data fit the model well.

The second step of the model did not improve prediction [$\chi^2_{(2)} = 0.6, p = 0.741$], indicating that the engagement variables do not improve the prediction of retention to the second year of study. In fact, the number of non-returning cases correctly predicted dropped slightly to 61.7%, and the number of overall correctly classified cases dropped slightly to 56.6%.

7.5.3 Summary predicting student outcomes.

For the OLS regression in both the 2008 and the 2009 data sets the assumptions of normality, linearity, homoscedasticity and independence of errors appear to be violated. In both regression analyses, the first step of the model (gender, race and academic performance at high school) explain a significant amount of the variance in the percentage of credits passed in the first-year. However, in the 2008 data the second set of variables explains a significant percentage of variance in addition to the initial block of variables, whilst in the 2009 data it does not. Furthermore, in the 2008 data set all of the variables aside from HSE are significant predictors, whilst in the 2009 data set only academic performance at high school and EUE scores are significant predictors.

Whilst the first step of the model for the logistic regression (both 2008 and 2009) was significant, adding the engagement variables did not significantly improve the prediction of retention in either sample. In the 2008 sample, a total of 69% of the cases were correctly classified, with 60% of the non-returning students being correctly classified in the first step of the model. In

the second step the number of non-returning cases correctly predicted increased slightly to 64.4%, however the total number of correctly classified cases decreased to 66.9%. Furthermore, gender and high school academic performance were significant predictors in the first step of the model. It was concluded that being male results in a reduction in the odds of not returning for the second year of study and that the odds of not returning increased with a drop in students' Grade 12 academic performance. In the 2009 sample, a total of 57.4% of the cases were correctly classified, with 63.5% of the non-returning students being correctly classified in the first step of the model. In the second step of the model, the number of non-returning cases correctly predicted dropped slightly to 61.7%, and the number of overall correctly classified cases dropped slightly to 56.6%. In the 2009 sample only Grade 12 academic performance reliably predicted retention, and the odds of not returning increased with a drop in students' Grade 12 academic performance.

Chapter 8: Discussion, Limitations and Conclusion

This chapter will *summarise* the major findings of this research project, outline the major limitations of the study and make recommendations for future research projects. This will be done by revisiting each of the four research questions, providing a summary of the major research findings and comparing the results of this project with findings from similar studies. Where applicable, recommendations for future research will be highlighted. Thereafter, the major limitations of the research project will be presented along with recommendations for future studies. The chapter ends with concluding thoughts on the research project.

8.1 Discussion: Major Findings of the Study

The overall research objective of the study was to use the BUSSE, a survey administered during the first weeks of the academic year to investigate how measuring levels of student engagement at high school, expectation to engage at university and levels of engagement during first-year can be appropriately used by higher education institutions in South Africa at an institutional and individual level in the context of student success.

This multi-disciplinary study is at the intersection between higher education and psychology and the study makes a unique contribution to understanding student success in the South African context on various levels. In the first instance the study is the only international adaptation of the BCSSE to date (J. Cole, Personal Communication, 12 April 2011). In the second instance, no studies using the BUSSE have been conducted in South Africa prior to the current research project, and thus the findings in this project offer a fresh perspective to stakeholders in the fields of both higher education and psychology as the discussion in this chapter will illustrate.

The study was conducted over a two year period (2008-2009) at a university in SA amongst first-time entering degree-seeking undergraduate students. Samples obtained in both administrations were generally representative of the population

The four research questions which guided this study serve as the framework for the discussion of the major findings presented below.

8.1.1 Research question one.

The first research question for the current study was stated as: *Can engagement at high school and expectation to engage in educationally purposeful activities at university be meaningfully measured among first-year students in SA?*

In accordance with good practice guidelines for using adapted measures in new contexts (Crocker & Algina, 2008; Cronbach & Shavelson, 2004) and the good practice principle of consistently evaluating the usefulness of assessment measures (Blaich & Wise, 2011), the psychometric properties of the BUSSE in the South African context was examined.

It can be concluded from the literature and data analysis that has been presented throughout this study that research on student engagement in South Africa is potentially of great value for a number of reasons. First and foremost, student engagement represents a multi-faceted approach to understanding students that focuses almost exclusively on student behaviours and conditions over which institutions can exert a measure of influence. Strongly grounded in a rich history of theoretical work on effective undergraduate education, student engagement offers a concrete, theoretically solid manner in which to understand undergraduate students in South Africa longitudinally with the goal of understanding the factors that contribute to student success. The current study serves as the first research project of its kind to provide contextualised research

results in support of the theoretical rationale presented in the literature review for the use of student engagement surveys in South Africa.

The reliability of scores obtained in the 2008 and 2009 administrations for each of the subscales was investigated by an examination of individual item descriptive statistics, item-total correlations, as well as an estimation of Cronbach's coefficient alpha. The reliability statistics obtained were highly similar between the two administrations, and acceptable coefficient alpha values were obtained for the data on all subscales. Furthermore, the coefficient alpha values obtained were highly similar to values obtained in other samples in the US (Cole & McCormick, 2009; NSSE, 2010c).

These acceptable coefficient alpha values across both administrations of the survey, as well as the similarity with values obtained in other samples is an indication of the usefulness of the BUSSE as an instrument for assessing first-time entering students in the South African context.

However it should be noted that for the majority of the items across the subscales there are very few responses in the lowest categories which has some implications for accurately assessing the reliability of the subscales due to restricted variability (Foxcroft & Roodt, 2006). Researchers seeking to investigate and improve the psychometric properties in the future administrations of the survey should consider testing alternative response categories to see if there is any significant change in response patterns and evaluate the impact of this on item variability. Continued theoretical work of this nature is important in the South African context in order to establish a robust body of knowledge about the reliability data obtained from of the survey, and to strengthen the research based rationale for the continued application of the survey in higher education institutions within the South African context.

Furthermore, the current study did not investigate the unidimensionality assumption inherent to the calculation of Cronbach's coefficient alpha and it is recommended that future studies examine unidimensionality as part of a broader reliability investigation.

No formal argument for the validity of the BUSSE in the South African context has been published to date, and the current research project thus makes a contribution to the establishment of such a body of evidence. This has been accomplished in three ways: first, by the presentation of a theoretical rationale for the applicability of the measure in the current higher education context by means of an extensive literature review; second, by a critical reflection on the methodology used for data collection (namely self-report surveys); and thirdly through the analysis of the relationship between student responses on the survey and external outcomes (OLS regression and logistic regression analyses).

As stated earlier, it can be concluded that research on student engagement in South Africa is potentially of great value for a number of reasons. However, whilst acknowledging the value of using surveys as a means of obtaining information about students, the limitations associated with this method of data collection should also be taken into account. In light of this, the current study has presented arguments both for and against the accuracy of self-report data. Given the many factors which influence responses to surveys (misinterpretation of the intended meaning, the use of jargon, the use of vague/ambiguous wording and the effect of response categories on actual responses), coupled with the fact that many students complete the survey in their second language, it is recommended that a series of cognitive interviews, focus groups and experimental studies be conducted in order to strengthen the validity argument for the use of the survey in the South African context. This is especially important given that no qualitative data has been collected to date from students to assess their understanding and interpretation of the questions. More detailed

recommendations related to self-report data and validity are presented under the discussion on the limitations of the study.

Results related to the third element of the validity argument, namely the analysis of the relationship between student responses on the survey and external outcomes (OLS regression and logistic regression analyses) will be discussed under research question four that deals directly with this matter.

8.1.2 Research question two.

The second research question was stated as follows: *What are the engagement and expectation profiles of first-year students at a university in the Free State, and do these differ by gender and race?*

Based on the analysis for research question 2, the following has been concluded: the scores on the subscales for the two administrations were highly similar, confirming the stability of scores over time on student engagement surveys found in other contexts; there is a level of consistency between high school engagement and expectations to engage during the first year; this consistency between high school engagement and expectations to engage is not uniform for all types of activities; there are consistent differences between male and female students in terms of their high school engagement and expectation to engage during the first year; there is some evidence to suggest differences between students from different racial groups; and there is some evidence to suggest an interaction between gender and race in terms of high school engagement and expectations to engage during the first year. Each of these findings will be elaborated on in the discussion below.

In both samples, the mean scores reported on the HSE subscale and the EUE subscales are highly similar. This finding was expected given the stability of scores obtained from student

engagement surveys in other contexts, and this serves as one source of evidence that reliable data can be obtained from the survey (Kuh, 2001; NSSE, 2010e).

In both administrations of the survey, a level of consistency was found between engagement at high school and expected engagement during the first-year. This finding was expected given the theoretical link between past behaviours and expectations discussed in the literature (see Cole et al., 2009; Funder & Colvin, 1991; Ickes et al., 1997; Perkins et al., 2004; Raymore, Barber, Eccles & Gogbey, 1999; Van Bragt et al., 2010). Furthermore, this finding concurs with other research in the US that has found consistency between past behaviour and future expectations using student engagement surveys (Cole, 2010a; Cole & Kinzie, 2007; Kuh, Gonyea, & Williams, 2005a). Within the South African context, this evidence for behavioural consistency reemphasises the important role that the school sector plays in preparing students for higher education. However, given the numerous challenges facing the school sector it may be necessary for higher education institutions to forge partnerships with school to provide guidelines on how to promote and implement engaging teaching practices.

Neither the reported or expected levels of engagement in either sample were found to be particularly high; suggesting that students who are entering the institution are not predisposed to engage and will most likely not proactively seek out opportunities to engage extensively during their first year. This profile of low engagement at high school and relatively low expectation to engage is a possible warning signal to institutions, and highlights the importance of being intentional about student engagement in the first year of study.

One of the ways in which institutions can become intentional about this is to follow the good practice guideline of annually assessing first-year students upon their arrival (Upcraft et al., 2005) through a survey such as the BUSSE¹⁰. By systematically obtaining information from students related to their past engagement and expectations, institutions are equipped to proactively manage the psychological contract between themselves and the entering first-year cohort thereby avoiding to some extent the negative consequences of the breach in this contract (Gonyea, 2001; Howard, 2005; Kuh et al., 2007a; Miller, 2005).

Because of the malleable nature of expectations it is possible for the institution to use data obtained from the BUSSE to promote realistic expectations (Pintrich & Schunck, 2002) of what students need to invest in their studies, and by intentionally doing so soon after a student's arrival on campus institutions can be proactive about influencing student success. By doing so institutions assume responsibility for creating conditions conducive to improved student performance by communicating their high expectations to students (Cole et al., 2009; Chickering & Gamson, 1987) and making explicit the pathways to success (CHE, 2010; Cole et al., 2009; Gonyea et al., 2006; Kuh 2005b).

A specific example of how this type of profiling information can be practically useful is in the context of support initiatives for first year students such as orientation or first-year experience programmes. In both of these programmes the institution can purposefully teach students about the

¹⁰ Whilst it is not expected that high school engagement and/or engagement expectations will vary greatly from year to year, annual administrations of the survey allow for individual level data to be used in the context of interventions such as early warning systems. If no individual level applications of the survey are anticipated an institution could consider administering the survey in 3-5 year cycles.

importance and benefits of being engaged in educationally purposive activities and how this can impact on their success (Cole et al., 2009, Cole & Guidry, 2008; Cole & Kinzie, 2010; Upcraft et al., 2005). By incorporating institution specific research results into programmes in this manner, students become aware right from the start of their campus experience that the institution takes assessment seriously and that their input in research processes is not only valuable, but used meaningfully by campus leaders.

In the context of institutional research, this data obtained from the BUSSE early in the students' career can form part of a comprehensive early warning system to identify students at-risk and to design customised interventions (Miller, 2005). By disaggregating data at the faculty level and by demographic variables of interest institutional researchers can identify groups of students within faculties who report low levels of engagement at high school and low expectations to engage at university or who report high levels of engagement at high school but have low expectations to engage at university. By identifying these potentially problematic trends and communicating the results through to teaching and learning structures (committees or designated staff that promote teaching and learning) and deans within the faculty the BUSSE results can be used to inform the type of support provided to targeted groups of students, for example the development of a learning community for female students in the sciences.

The consistency between past engagement and expectations was not found to be uniform across all types of activities – students expect less active learning than at high school, but more peer collaborative learning; they expect similar levels of engagement with teaching staff as they had at high school and they realistically expect that they will have to spend more time studying. These results represent examples of the types of realistic and unrealistic expectations students have upon arriving at university that need to be managed by institutions in order to maintain a positive

psychological contract between the two parties. The expectation to engage with lecturers as often as they engaged with teachers may not be realistic given the large classes that most first-years find themselves in. The institution can use programmes such as academic advising and orientation to mentor and guide students as to how they should take responsibility to be intentional about interacting with their lecturers and help students see the difference in roles between lecturers and their high school teachers. An example of a realistic expectation is the increased amount of time they intend to spend studying. Although this is a positive expectation, it is still necessary for the institution to use programmes (e.g. academic advising and orientation) to help students understand the importance of time spent studying and to equip them with the skills to manage their time successfully in their new learning environment which will present them with many new challenges and demands on their time.

Each of these trends identified in the BUSSE data offers some information to institutions to answer the question “Who are our students?” which can be meaningfully used to design teaching and learning environments that are conducive to success. For example, the insights gleaned from this analysis can be used in the context of staff development to help first-year lecturers to understand the teaching and learning needs of their students (Cole & Guidry, 2008). For example, by creating faculty specific reports within the first month of students arriving on campus, say teaching and learning structures (committees or designated staff that promote teaching and learning) can hold workshops with first-year lecturers about what students expectations for engagement are. During such workshops specific strategies for improving engagement for millennials and in large classes can be shared, and lecturers can develop action plans for how to incorporate such strategies into their current curricula.

A number of interesting findings emerged within the two subgroups of interest: gender and race. Consistently between the two samples, female students were significantly more engaged at high school than male students, and expect to be significantly more engaged during the first year of university (medium effect sizes were obtained for each of these significant results). Similar patterns of engagement by gender have been found by researchers in the US (Cole & Kinzie, 2007). This type of engagement pattern is an example of how institutions can use BUSSE results identify subgroups who are at risk of low engagement and become intentional about how to promote engagement in the classroom for these students.

Furthermore, consistently between the two samples, Black African students reported being significantly more engaged at high school (a medium effect size was determined for the 2008 data, but a negligible effect size was determined for the 2009 data). In the 2008 sample, Black African students reported expecting to be significantly more engaged in effective educational activities than White students, however effect sizes were negligible. However, in the 2009 sample there was no significant difference between Black African and White students in terms of their expected levels of engagement.

In the 2008 sample, no significant interactions between race and gender were found for either the HSE or EUE subscales. However, in the 2009 sample, a significant interaction between gender and race was found with regards to scores on both subscales (effect size was negligible for both subscales). A comparison of the cell means with a *post hoc* Scheffe test showed that White males engaged at significantly lower levels than all other groups at high school and expected to engage at significantly lower levels than all other groups during their first year. Furthermore, Black African males and females did not differ from each other in terms of their high school

engagement or expected engagement in the first year; however their scores on both the subscales are significantly higher than White males and females.

Given the disparities in success between different student populations, it is important for institutions to understand how different subgroups of interest experience the campus environment (Cole & Guidry, 2008). Once student subpopulations are understood more comprehensively it becomes possible for the institution to become intentional about nuanced initiatives to encourage higher levels of engagement from these groups. Based on the data from this study for example teaching and learning, as well as student affairs staff could investigate how to raise the expectation of White students in general, but in particular White male students when they arrive on campus.

As was highlighted in the literature review, too often there is a disjuncture between research and practice, and the examples discussed above show how institutions can move towards using student engagement data to close the assessment loop by translating data into action (Blaich & Wise, 2011; Kinzie & Pennipede, 2009). The full value of research such as the current study can only be uncovered when the gap between “what an institution knows” and “what an institution does” is overcome.

8.1.3 Research question three.

The third research question for the current study was stated as follows: *What is the difference between expectations to engage, engagement at high school and actual engagement levels among first-year students, and does this differ by gender and race?*

Only the 2009 data was used to examine the relationship between high school engagement (HSE), expected university engagement (EUE) and actual university engagement (AUE) scores given the small number of students whose SASSE and BUSSE responses could be matched in the 2008 dataset.

The following are the major findings of the study related to research question 3: student expectations to engage during their first year exceeded their actual levels of engagement; despite this disjuncture, there is evidence to suggest that students tend to engage more frequently in the activities they expected to engage in; and despite the differences between Black African and White students in terms of their high school engagement and their expected levels of engagement at university (as discussed under research question 2)– there is no significant difference in actual levels of engagement during the first year. Each of these major findings will be discussed below.

Student expectations to engage exceeded their actual levels of engagement during their first-year. These findings confirm the theoretical notion of the “freshman myth” (i.e. the overly positive expectations students have at the time of entering HE) in South African students (Baker et al., 1985; Braxton et al., 1995; Cole et al., 2009; Smith & Wertlieb, 2005). Furthermore, these findings concur with other studies (e.g. Gonyea et al., 2010) which found that students’ expectations for participation in a broad range of activities during the first-year are not met – and that they systematically overestimate their levels of engagement (Davey, 2010; Gonyea et al., 2006). Additional to this, students grossly overestimated the amount of time they would spend studying, only studying approximately half the amount of time they had anticipated – a finding that has also been confirmed in various other studies (Babcock & Marks, 2010; Gonyea et al., 2010; Kuh et al., 2005a).

The negative consequences of the “freshman myth” pointed out in the literature review; namely poor academic adjustment, lack of social integration and possibly dropout (Helland et al., 2001-2002; Lowe & Cook, 2003; Paul & Breir, 2001; Reason et al., 2006; Yorke, 2002) compel institutions to intentionally manage the expectations of their entering first year students through intentional intervention (Baker et al., 1985). Evidence for the “freshman myth” in this study

reinforces the responsibility of HE institutions to make explicit the “hidden rules and routines of academic and social engagement within the university environment” (CHE, 2010, p.210) and the importance of communicating to all groups of students the support that is available to them (Cole & Kinzie, 2010).

Furthermore, this disconnect between expectations for engagement and actual engagement highlights the importance of research (possibly through in-depth focus groups with first-year students) into the factors within the institutional culture and campus environment that may be inhibiting engagement during the first year in order to establish a more facilitating teaching and learning culture (Howard, 2005). This type of research can in turn inform staff development initiatives aimed at the renewal of teaching and learning practices that meet the needs of modern day student populations within the classroom context (Cole & Korkmaz, 2010; Scott et al., 2004). A focus on renewal at the classroom level is particularly important given the high numbers of commuter students on campuses (Kinzie, 2005, Reason, 2009; Tinto, 1997). Similar to the example discussed under research question two, if student engagement research results are disaggregated at the faculty level then say teaching and learning structures (committees or designated staff that promote teaching and learning) can use the data to lead workshops and discussions with lecturers within the faculty in order to design discipline appropriate interventions to improve engagement during the first year and decrease the disconnect between expectations and actual engagement.

However, despite the mismatch between expected and actual levels of participation in educationally purposive activities, there is a great deal of overlap between the types of activities students expected to participate more frequently in, and those they actually did participate more frequently in. For example, students expected more collaborative than active learning experiences

at the time of entry, and they also reported higher levels of collaborative learning than active learning at the end of their first-year. These findings confirm the theoretical link between expected and actual levels of engagement, and the results obtained in other studies investigating consistency between expectations and engagement (Kuh et al., 2005a).

Within the subgroups of interest (gender and race), it was found that Black African students report being significantly more engaged than White students at high school, and expect to engage significantly more than White students during their first-year. However, actual levels of engagement during first-year are not significantly different for these two groups. This particularly interesting finding is somewhat counterintuitive as it would be expected that given their predisposition to be highly engaged (based on past behaviours) and their high expectations to engage that Black African students would have higher levels of actual engagement. One possible explanation for this finding could be that Black African students encounter a problematic institutional teaching and learning culture that either implicitly or explicitly hinders their levels of engagement (see Thomas (2002) regarding the impact of culture on non-traditional students). Future research should investigate in a more in-depth manner the extent to which the campus culture inhibits participation in the teaching and learning context from this group of students in order to understand and ultimately overcome this lower than expected engagement in the first-year for Black African students.

8.1.4 Research question four.

The fourth research question for the current research study was stated as follows: *Do student's engagement expectations and high school engagement accurately predict academic performance and persistence at the end of the first-year of study, after controlling for past academic performance and selected demographic variables?*

The predictive ability of the engagement variables was examined by both an OLS regression (with percentage of credits passed as the outcome variable) and logistic regression (with persistence to the second year of study as the outcome variable) in both the 2008 and 2009 samples. By examining this research question, the current study makes a unique contribution to the understanding of this in that no other studies (in the US or SA) have directly investigated the relationship between BUSSE responses and academic outcomes. The results of these analyses highlighted the methodological and conceptual complexities associated with predicting success and are discussed below.

8.1.4.1 Multiple regression analysis.

In both samples a number of the assumptions for OLS regression were violated. The low correlation between percentage of credits passed and the explanatory variables suggests that alternative conceptualisations of academic performance should be considered in future studies investigating the relationship between academic performance and the engagement variables measured by the BUSSE.

In both samples, the first step of the model (gender, race and academic performance at high school) explains a significant amount of the variance in the percentage of credits passed at the end of the first-year. In the 2008 sample the engagement variables explain a significant percentage of additional variance, whilst this is not the case in the 2009 data. Furthermore, in the 2008 data set all of the variables aside from HSE are significant predictors, whilst in the 2009 data set only academic performance at high school and EUE scores are significant predictors. The significant contribution of EUE scores in both samples is encouraging because expectations are one of the variables institutions have the ability to influence by actively and intentionally designing the first-year educational environment to facilitate the formation of high (yet still realistic) expectations.

One unexpected finding in the 2008 data is that higher levels of academic performance at high school are negatively associated with the percentage of credits passed. As stated earlier, the linear relationship between high school academic performance and the percentage of credits passed is not as strong as would be expected and there are a number of factors which could be confounding this relationship. Firstly, the current metric (i.e. percentage of credits passed) does not take into consideration the number of credits the student has enrolled for. The implication of this is that a student who enrolled for 120 credits and passed 60 has a value of 50% for number of credits passed, whilst a student who enrolls for 60 and passes 60 has a value of 100%. Despite these students having passed the same number of credits the one student has a value of 50% for the variable whilst the other has a value of 100%. In order to limit the impact of this in future studies, researchers should consider incorporating the DHET recommendation of 120 credits into the calculation of academic performance as a type of yardstick and controlling variable.

Other potentially confounding factors include the fact that the OLS regression did not take into account the difficulty of the modules that were passed, and does not differentiate between levels of performance (such as the number of distinctions obtained, or average grade obtained for the classes passed). It is recommended that future research investigating the relationship between engagement and academic performance consider investigating the usefulness of a more nuanced measure of academic success (e.g. actual grades). Furthermore, it is also recommended that faculty enrolment be included as a controlling variable as this may be able to account for some of the variance in module difficulty which the current measurement is not able to do.

8.1.4.2 Logistic Regression.

The logistic regression was conducted in both the 2008 and 2009 samples. In both cases, the overall model significantly predicted the retention outcome variable with high school academic

performance as a significant predictor (and gender as a significant predictor in the 2008 sample). Adding the engagement variables in the second step of the model did not significantly improve the model in either sample.

The inability of the engagement data to improve retention prediction is a disappointing finding of the study. However, this finding must be interpreted by taking into account various potentially confounding variables. In the first instance, the study defined persistence as whether or not the student returned to the institution immediately after the completion of their first year. In order to understand the impact of engagement on persistence in a more comprehensive manner, it may be necessary (and is recommended) for future studies track student persistence over a longer period of time. Additional to this, it is recommended that a distinction be made between stopouts and dropouts in the data analysis in order to determine whether the factor influencing persistence for these two groups differ (Porter, 2003). This may be particularly important in the SA context where some studies have already found evidence of this (Letseka & Maile, 2008).

Finally, when the limitations associated with the OLS regression and the logistic regression are considered, the researcher concurs with Porter (2003) who recommended that alternative data analysis methods should be explored for analysing the data related to persistence and academic performance. Data related to student persistence is becoming increasingly complex, and therefore increasingly sophisticated methods of analysis (such as survival time analyses and historical event analyses) are becoming necessary in order to more fully understand trends and patterns. Some examples of survival time analysis to study persistence are already emerging at universities in the South African context (Hanslo & Visser, 2005). Path analysis or structural equation modelling may also prove useful in understanding the inter-relationships between the set of engagement

variables and student success indicators given the relatively poor fit of the models used in this study.

8.2 Limitations

This section will examine the primary limitations of the current research study under the following headings: survey methodology, sample related limitations, single institution studies and selected quantitative indicators.

8.2.1 Survey methodology.

The limitations of collecting data by means of self-report surveys have been extensively discussed in Section 6.1.1. In light of these it is recommended that additional research studies be conducted to more extensively examine the reliability and validity of student responses to the BUSSE, particularly in the context of the large number of students studying in their second language. Various studies have investigated how survey participants respond to questions in an attempt to improve the accuracy of self-reported behavioural frequency (Burton & Blair, 1991; Conrad, Brown, & Cashman, 1998) and some practical suggestions have emerged. For example, time-use diaries and open ended questions have been shown to yield more reliable data than coded response categories (Bradburn et al., 1987). Other studies (Krosnick & Berent, 1990) highlight the importance of labelling all points on a scale and not just the most extreme points, as well as the influence of labelling on responses (e.g. differences in responses to 0 = *Not satisfied at all* vs. -5 = *Not satisfied at all*) (Schwarz et al., 1991). Carefully designed experimental studies could explore the extent to which time-use diaries, open response formats and coding categories differ from responses obtained by the current BUSSE item formulations. Findings from studies such as this could then be used to argue for or against the need to adjust the current response categories in the survey.

Furthermore, in light of the fact that no focus groups have to date been conducted as part of an extensive validity study related to the BUSSE it is recommended these are conducted among diverse groups of students in order to explore at an in-depth level how diverse students are interpreting the survey. Well-constructed focus groups with adequate representation from subgroups of interest (race, gender, first-generation and commuter students etc.) may prove particularly useful in assessing if any systematic biases exist in terms of how different groups of students are interpreting and responding to items on the survey, and what if any revisions should be made to the current survey in order to improve its usefulness.

8.2.2 Sample related limitations.

Well-planned and representative samples are a critical element in ensuring valid research results. The small number of students that could be matched in the 2008 data for the purposes of comparing BUSSE and SASSE scores highlights the importance of purposively designed sampling strategies in longitudinal studies.

Researchers involved with future administrations of the BUSSE should explore ways in which they can be more purposive in sampling the students who will participate in the study in order to maximise the number of cases that can be matched with SASSE responses. One manner in which to overcome the problem of low numbers of matched cases is to require entering students to complete the BUSSE at the time of registration or orientation as part of a systematic institutional assessment endorsed by institutional management structures. Not only will this allow for a more comprehensive and accurate understanding of an entering cohort on an annual basis, but it will also ensure adequate sample sizes when data is matched at a later point in time.

A second limitation related to the sample, is that the relatively small number of students from Coloured, Indian, Asian and other ethnic groups who participated did not allow these groups

to be included in the statistical analysis. Future studies should consider a more purposive approach to oversampling these groups in order to be able to include their responses in the statistical analyses conducted. Again, this limitation could be overcome if the survey formed part of an institutional research strategy that required students to complete the survey soon after their arrival on campus.

Thirdly, it was not possible to examine the high school engagement and expectations of first-generation students in this study due to the large amount of missing data on the items used to classify students as first-generation/not first-generation. Given the large number of first-generation students who are currently enrolled in South African institutions and the research suggesting that these students represent an at-risk group who need additional support (see discussion in Chapter 3) it would be meaningful for South African institutions to improve their understanding of this subpopulation of students. In order to do so however, it will be necessary to find more reliable manners of identifying these students.

Finally, both of the samples selected for this study, as well as the literature reviewed have focussed almost exclusively on the experiences of degree seeking, first-time entering undergraduate students and emphasised the factors known to be associated with success for traditional students. However, as has been evidenced in the literature, it can no longer be assumed that students in HE today fit into this category. It will thus become increasingly important for studies which focus on understanding student success to include multiple perspectives – including the perspective of mature age, part-time and distance students, especially given the fact that almost a third of the students in SA are enrolled in distance education where levels of academic performance and degree attainment are even more problematic than at campus based institutions.

8.2.3 Single institution studies.

Due to the fact that the study was conducted at a single institution, the extent to which these results can be generalised to the entire population of first-time entering students in all HE institutions in South Africa is limited. Comparative projects of a similar nature are necessary at other South African institutions to determine to what extent similar and/or divergent patterns in engagement and expectations emerge. After similar studies have been conducted on multiple sites it will become possible to identify which patterns of engagement and expectation transcend contextual influence and which are unique within single institutions.

8.2.4 Quantitative indicators and analysis methods.

The limitations associated with the quantitative indicators of student success used for the data analysis which have been highlighted both in the literature review and the discussion of the results are highlighted briefly hereunder.

One of the main limitations of the selected conceptualisation of student success is that only traditional quantitative measures of academic performance were used. Whilst both retention and passing credits are important to the individual and the institution, the mission of higher education extends beyond these two quantitative outcomes and includes the development of the individual on multiple levels. It is therefore recommended that future studies take a broader approach to evaluating student success and consider including outcomes, for example the SAQA critical cross-field outcomes, as indicators of student learning that can be measured at the end of the first year. This will enable researchers to assess the impact of engagement on the achievement of a broader range of HE goals.

With regards to the OLS regression analysis, the proxy selected for academic performance (number of credits passed) is limited in various ways. First, only looking at the percentage of

credits a student has passed (as opposed to looking at an aggregate score) may promote the perception that passing credits is of greater importance than academic excellence (as measured by higher grades for the credits passed). Whilst passing credits is a necessary condition for degree attainment, it is not sufficient proof that high quality learning and academic excellence have been achieved. Furthermore, using the percentage of credits passed as the proxy for academic performance assumes that “all credits are created equal”, and does not account for the level difficulty of the modules students are passing to obtain the credits, or the workload associated with modules in different faculties and programmes.

It is possible that some (or all) of these limitations discussed above contributed to violation of the assumption of a linear relationship between the percentage of credits passed and engagement.

With regards to the logistic regression, it was not possible to distinguish between students who drop out and those who stop out given the time frame in which the study was conducted, as well as the lack of a comprehensive student tracking system at the institution. It is possible that this limitation contributed to the limited predictive ability of the engagement variables.

In light of the above discussion and the results of the OLS regression and the logistic regression, it is clear that there need to investigate alternative measures of academic performance in order to more accurately and comprehensively understand the relationship between engagement and success.

The limitations associated with student tracking and measuring outcomes within this study also speak to the lack of adequate student tracking and outcomes measurement in the South African HE system overall. If the student success problem is ever going to be comprehensively understood it will require a comprehensive national tracking system in South African HE that will

monitor students as they move between and within institutions (Adelman, 2006). This type of tracking on a systemic level will provide information on the extent to which (if at all) double-dipping and swirling are upcoming trends in the South African HE system and will also reveal whether or not graduation rates are being underestimated due to transfer rates between institutions (trends which have been observed in the US and Australia (Adelman, 2006; Choy, 2004; Long, Ferrier, & Heagney, 2006).

Additional to this there is a need to more clearly define and communicate key terms related to student success to the HE research community so that there is uniformity in the yardsticks used to assess the achievement of student success across institutions and within the sector overall. Only once there is a common language in which researchers, administrators and practitioners can speak about student success will the quest to significantly improve student success outcomes become an obtainable goal.

8.3 Conclusion

Improving student success in the South African higher education sector is imperative to the success of individuals, HE institutions and the broader society (Branson et al., 2009; HESA, 2010; Scott, 2004). As the HE sector in SA continues to grow in number and diversity (DHET, 2011; Scott et al., 2007) institutions will becoming increasingly pressurised to take responsibility for creating the conditions conducive to student success. The paradigm shift from an exclusive focus on access, to a focus on access with success has emerged both nationally and internationally (Altbach et al., 2009; HESA, 2010), but to date has remained an elusive ideal (Bowen et al., 2009; Scott et al., 2007). In particular, the first year of study has been identified as a high risk transition period, and in South Africa the majority of students drop out during this year (Scott, 2009b). In order to curb this trend and contribute to the understanding of undergraduate student success it is

necessary to systematically research and understand the pathways to success in the first year – especially in the South African context where comparatively little research on student success has been conducted (Le Grange, 2009; OECD, 2008b).

After 30 years of research on student success and persistence in the US, researchers acknowledge that there is no single path or silver bullet in student success. Rather it is the result of multiple efforts in multiple settings supported by adequate funding and favourable policies (Hossler et al., 2009; Pascarella & Terenzini, 2005; Terenzini, 2006). The multifaceted nature of the student success problem has thus required researchers to move away from a focus on single factors to a broader, more encompassing approach to researching success. Furthermore, it is important for research to identify those factors that are within the institutions sphere of influence in order to move towards improved student success outcomes (Reason, 2009a).

Student engagement is based on the premise that what students do during their time at the institution is more important than who they are when they arrive (Kuh et al., 2005c). As a field of study, the strength of the student engagement research is that it examines a broad range of factors associated with student success – all of which are within the institutions sphere of influence – and thus results from studies related to engagement can be applied meaningfully by institutions seeking to improve student outcomes.

Within the context summarised above the current study examined how pre-university levels of student engagement could be measured and applied in the South African HE context. The study makes a unique multidisciplinary contribution to the understanding of student success in the SA context by being the first examination of the BUSSE survey in the South African context, and by being the first international application of the parent survey, the BCSSE. The study also makes a valuable contribution to understanding the relationship between high school engagement and

expectations, as well as the relationship between expectations and actual behaviours further – two areas where relatively little research has been conducted, even internationally. No other studies in SA were found that examined the relationship between quantitative student outcomes and student engagement in the first year of study, and the current research project thus makes a contribution in this regard.

The study examined four research questions, which have been discussed at some length in this chapter. Based on these findings it is concluded that the BUSSE is a meaningful and useful instrument for understanding student success in the first year of study in the South African context, and continued longitudinal research (both qualitative and quantitative) should be conducted in order to continually improve the instrument and enhance its value in the context of understanding student success in South Africa. The value of a focus on student engagement during the first year of study is particularly important given that it examines those factors that are within the institutions sphere of influence.

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