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ABSTRACT Using Astin's model of student development, the present study attempted to decipher the link between students' input, output, environment and challenges at tertiary level of education. A sample of first year undergraduate students (n = 122), as administered with a structured questionnaire. The findings revealed that there is a significant relationship between university environmental challenges and social demographic factors. The results further showed that students' educational input and the university environmental adaptation challenges determined students' output. These findings were in consonance with the results and conclusions of many past studies. On the basis of these results, it was recommended that the environment of any tertiary institution should be managed in a manner that improves and enables the new comers to adapt and settle easily to the university environment. Furthermore,

on the basis of the finding that students from more rural high schools exhibited greater problems of adaptation to the university environment, it was proposed that high school teachers in the rural areas be given more training in order to school and equip these leaners for tougher competition at the tertiary level.

INTRODUCTION

Many high school students frequently find it difficult to adjust to higher education because of inadequate preparation for the tasks ahead in the university. Such tasks include increased time slots, assignments, the complex patterns of assessment and more rigorous examinations. Consequently, poor student performance in first year examinations represents a challenge to the university. There are variables impacting on the successes and failures of students at university. The need to transform educational features is changing drastically in South Africa. Its basic principles are exemplified by the work of Tinto (1987) who argues that both students' academic and social experiences are critical determinants of educational outcomes. More recently, this orientation has been developed further by Dietsche (2001) who argue that, since the way in which higher education institutions organise themselves is an important determinant of learning, educators should attend to both the non-cognitive and the cognitive characteristics of students. As a result, South African higher institutions are forced to ask questions such as: how does the preparation of students at high school affect students' adaptation to higher education environments.

High School Preparation and Tertiary education outcomes

At the higher education level, academics often complain about inadequacies in the backgrounds of school-leavers and their lack of commitment to their courses (Power et al 1987). There are serious academic problems among the younger and academically less motivated and less prepared students. The most serious problems identified relate to the low course commitment and lack of preparation of younger students in non-professional courses. High schools have the role of preparing students academically and the type of education provided in some high schools can leave students poorly prepared to adjust to the new demands of higher education (Power et al. 1987: 2). Power et al. (1987) are not alone in expressing such views. In a survey of academics from universities across Australia, McInnis et al. (1995) reported that these same sentiments are not only still being echoed by academics but that dissatisfaction with the academic quality of students more than doubled between

1978 and 1993. In fact, less than a third of academics in 1993 were satisfied with the academic quality of students (McInnis et al. 1995: 5). In today's mass education environment, it is not productive to pursue this line of argument that has at its foundation the view that high schools exist primarily as preparatory agents for an elite group of students to gain university entry. The shift to a mass education tertiary landscape has created greater diversity, in terms of ability, motivation, interest, commitment, maturity, and the social skills of the student population. This necessitates a re-evaluation of academics' expectations of first-year students, a re-conceptualization of first-year students and the qualities they bring to the university, and a reconstructed understanding of the needs students have which the university should meet. Some progress has already occurred. Universities have acknowledged the need for counseling, provision of infrastructural facilities for the disabled, the need for language and learning services, etc. and the establishment of these resources within higher education institutions. Such measures have, however, been limited in dealing with the issues that affect students because they are removed from students' most common point of contact.

There has been increasing incidences of the South African school system producing students who find it difficult to succeed in higher education. Attitudes, expectations and perceptions could have an influence on the approach to ensure students' success. Bitzer & Troskie-De Bruin (2004) stated that the smooth transition of students from school to higher education is still regarded as a challenge to both sectors. What is particularly disturbing is the fact that students with low performance levels at school are more confident of success than students at higher levels of school academic performance. It is therefore important to expand physical facilities, to have effective planning and to develop new curricula, increase funding, provide democratic structures and efficient administration. There is little sense in the innovation and application of measures to enhance student development if the end results cannot be compared to the initial situation at the point of entry, as well as to how they were engaged in the learning process (Kuh 2001). In order to ensure a smooth transition from high school to tertiary education, first-year curricula have to be aligned as closely as possible with those at high school level. This underscores the need for the development of a diagnostic instrument for the assessment of preparedness for tertiary institution.

Scott, Yeld and Hendry (2007) reported on a study by the Department of Education in which the graduation rates at South African tertiary education institutions was as low as 30% of first-time students graduating after five years of study; 56% changed to other institutions. Furthermore, 14% remained in the system. An institution must understand and know its

students when they arrive at the university (Kuh et al. 2007) because when student enroll, they bring with them personal attributes, social cultural characteristic and academic abilities (Tinto, 1993). Other studies have shown that quite often, students are underprepared for higher education (Foxcroft & Stumpf 2005; Kivilu 2006). These studies showed that the highest drop-out rate from tertiary education occurs in the first academic year (Thomas & Quinn 2007). Analysing the performance of students possibly will reveal factors responsible for the insistence of first-year students and the retention rates in higher education. Tinto (1993) argued that reasons for students' withdrawal varies from social support, family responsibilities, integration, motivation, isolation and work responsibilities. Although many high school students appear to have the necessary capacities to recover information, however they often lack the analytical assessment skills needed to succeed at the tertiary level. Recognizing that to thrive in today's economy requires more than just a high school diploma, policy-makers at the local state and national level, along with their community partners, have turned their attention to equipping students with the skills and knowledge needed to enroll and succeed without remediation in a postsecondary program that leads to a degree (Conley 2007).The focus on student learning methods and outcomes over the past decades has significantly enhanced academic achievement and persistence rates for university students. Conley (2007) suggests that one of the major reasons students are not successful in tertiary level is that the tertiary course workload is fundamentally different to the demands of high school classes. Developing the necessary information literacy skills among high school students to support a successful transition to the university is therefore a unique undertaking for any institution. A growing body of recent research linking students' high school experiences to post-secondary enrolment and performance indicates that students are most likely to be successful in the university if they have experienced rigorous academic preparation (Adelman 2006). Researchers and policymakers contend that the main problem is a fundamental misalignment between high school graduation standards and tertiary academic expectancies. Early intervention can be crucial in keeping students on a ready trajectory, especially for students who struggle academically or socially (Allensworth & Easton 2005). School district leaders and high school administrators not only face the challenge of providing students with additional instruction focused on improving reading skills, but they also must at the same time help students master the necessary subject area content for which they are held accountable, and intervene and integrate students within the high school curriculum to help struggling adolescent readers acquire the strategies necessary to read at proficient levels.

Two constructs that have not often been considered but may potentially contribute to better adjustment by students during their first year are a sense of university belonging (Hoffman et al. 2002) and the quality of the friendships developed at the university. Schools are recognized as important developmental contexts for academic development. Higher education level students tend to consider themselves ill-prepared for higher education in terms of coping with both teaching styles, such as, the formal lecture, and study skills including private reading, note taking, time management, asking questions in large groups, team work and ICT competence. Conley (2007: 13) noted that being ready for tertiary education means having the '*information, formal and informal, stated and unstated, necessary for gaining admission to, and navigating within, the postsecondary system*'. Changing trends in applications and offers for various undergraduate university courses show that demand and supply fluctuate for different fields of education. This highlights the importance of examining trends in Grade 12 participation to ensure that students are leaving secondary education with a solid grounding in the appropriate learning areas. Schlinsog (2010) indicated that first-generation students were less well prepared in terms of high school grade, typically earned a lower first-year grade and fewer credits, and were less likely to persist and to graduate as compared to continuing-generation students. Those that did graduate, however, did so with similar grades to continuing-generation students. The significant predictors of academic achievement at the end of the first year were high school grades.

According to Peter (2005), high school graduates also say they are not adequately prepared. In a recent poll, approximately 40% of graduates reported key gaps in their preparation. An overwhelming majority noted that if they could do high school over again, they would work harder and take more challenging courses. Numerous social and academic factors influence the 'preparedness' of students for higher education. The 'Education for All' initiative attached explicit schooling goals. Precisely, it stresses the goal that all nations ensure universal primary education by 2015, identifying school excellence as a related issue, and has highlighted getting all students through the early stages of schooling. The expectation of university against what actually happens is important in establishing whether a student completes or abandons the course and university. The personal circumstances of students leaving High School and transferring to a degree course at University featured highly in their decision to enter Higher Education. Other factors include the necessary commitment to work towards a degree, to fund the chosen pathway, to find accommodation, to organize travel to

and from the university and to create an appropriate learning environment.

Concerns such as teacher preparation, professional development, academic performance, school retention, administrative needs, and educational changes have also been addressed. According to Belward et al (2007), the increasing enrolment has raised an issue of the quality and readiness of the incoming students. Those students who are interested in taking engineering do not possess the basic mathematics and science background from their High School studies. Van Voorhis (2003), for example, reported that students achieved at higher levels at school when parents offered assistance with their school homework. For Kurlaender (2005), career options for these learners can be limited given increased demand for highly skilled labour with postsecondary education credentials. Most sub-Saharan African countries are increasing their efforts to improve access to and the quality of tertiary education. Student outcomes do not match the government and tertiary level requirement and parental investment making the nation and stakeholders to be alarmed about the poor results of their graduates which the system produces. It has been argued by Iyamu (1998) that education involves the input-output equation. The amounts of input devoted to the academics will hence yield abilities and skills considered necessary for industrious academia. Scott & Katty (2012) believe that it is imperative that teachers reframe their work in the context of the secondary through postsecondary continuum. The challenge is to articulate and support high expectations, to involve students in their learning, and to provide assessment and feedback. Dweck, Walton & Cohen (2011), however, propose that motivational or non-cognitive factors can be important determinants of success in tertiary level. These issues include maintaining a positive attitude toward learning and being able to persist when the going gets tough. Students ideally should become self-regulated learners. This connotes that they can specify learning goals and formulates plans for achieving them, track progress toward their goals, and implement different strategies when the original ones are not successful. Graesser (2011) however argued that often students do not possess the metacognitive knowledge to come up with their own plans in reaching their academic goals. According to Adelman (1999), a high quality and rigorous high school curriculum and good test scores are the most important determinant of the likelihood of a student completing a bachelor's degree. Support services from high schools help guarantee students achievement, and partnerships between high schools and universities; this can help facilitate perfect transitions between high school and university. Akindele (1999: 62) averred that it is important to uncover what lowered the value of our standard of educational system it once had, in that this will enable us to reassess

a way forward in enhancing the quality of the learning system. In fact, this problem seems to emanate from the inability of the students to make the necessary academic, social and personal adjustments to life at university in general which inhibit them from making commitments to their course and institution. In practice, many incoming students adopt a 'wait and see' attitude to their forthcoming university experience (Astin 1975). When universities do not help incoming students form realistic expectations of themselves and of their institution, the demands of the new environment can be overwhelming (Levitz & Noel 1989). The manner in which pupils are prepared in school obviously contributes to students' expectations of higher education. Thus schools are recognized as important developmental contexts for academic and socio-emotional development of younger students (Eccles & Roeser 2003).

The problem of a lack of preparation for higher education provided by previous educational backgrounds is compounded by a lack of understanding on the part of the academic staff as well. This means that if institutional goals match those of a student to a greater extent, the student is more likely to perform better. Scott et al. (2007) reported that high first-year departure rates and low performance rates indicate systemic problems in the institutions, including articulation failure. Academic and support services should thus be concentrated most heavily in the early part of the first year, with intrusive, proactive strategies being used to reach new students before they have an opportunity to experience feelings of fear, failure, disappointment and confusion (Upcraft & Gardner 1989).

Success is also dependent on the individual attributes of new students. Age has been shown to have a bearing on the nature of problems experienced, resulting in the preponderance of students who are neither mature nor ready for university education (Power et al. 1987; Yorke 1998). Getting by or coping becomes challenging for such learners and this might not empower them to hugely gain knowledge from available prospects. The tertiary system has neglected the selection principles that made it a certainty that high educational excellence will be achieved in the earlier years. In general, older students tend to make better choices and are more focused than younger students, although they are more likely to be adversely affected by domestic issues. School leavers have been found to be less diligent in their study habits and less academically orientated than older students (Power et al. 1987). Many students enter a higher education environment with little preparation, having little idea of what to expect and little understanding of how the university environment can affect their lives (Upcraft & Gardner 1989). When students fail to make a satisfactory transition to the

new academic and social demands of university life, the results are manifested in dropout and under-achievement. Those who are found to be well qualified for higher education are always allowed to move to the next stage while unqualified ones were usually left with no choice but to repeat their classes. At present, students who move ahead to university are mostly those whose parents are affluent to bear the burden of the cost of such education. Hence the admission conditions are controlled by poor or little requirements.

Scott and Katty (2012) proposed that lecturers should challenge faculty to embrace opportunities for professional development and to cultivate synergies, through faculty communities, of practice that result in innovations. Lecturers must engage in rigorous assessment and evidence-based decision making to identify which innovations are most impactful for cultivating competencies in their students that will ensure their success. This means that high school students who are unprepared for their tertiary studies will likely be a burden on the resources of universities, which will have to supply bridging and remedial courses (Falkiner 2012). Students choose to embark on a course at University for a number of reasons. The choice of a university course or the choice of a career also depends on available finances, the range of course options at particular universities, the course requirements and personal circumstances. Tinto (1993) pointed out that studying at the university is somehow a job, given that it requires purpose, commitment and adjustment to student life. Subject content stresses the expansion of knowledge, reading and responding, understanding and skills such as listening and responding, written language, adapting spoken and understanding grammar. When students lack these necessary skills, they tend to struggle with their academic work in a very intense manner.

High school graduates' adaptation to the academic environment at tertiary institutions

It has been argued that the first semester is generally regarded as a period of transition when students have to adjust to the new institutional environment as well as manage increased levels of stress (Tinto 1993; Bean and Eaton 2000; Upcraft, Gardner & Barefoot 2005). Mokoena (1997) indicated that first year students' learning behaviour is characterized by disorganized study methods, a negative attitude to learning tasks. In addition, first-year students tended to lack foresight in their learning and hence their approach to learning is ineffective. First year students need to adapt to a new learning environment and an unfamiliar new education. In the South African context, first year has to be a platform for developing students' academic potential in new modes of learning, and consequently carries unique

opportunities and attendant responsibility to the individuals involved and to the country as a whole. Adjustment could be a psychological behaviour that permits people to meet the demands of the environment. New environments tend to generates emotional and physical responses among individuals and the university atmosphere is part of the challenge owing to the fact that first year students encounter fear and uncertainty at first. According to Piaget's theory, adaptation is the process of building a schema through direct interaction with the environment. It consists of two complementary activities, which are assimilation and accommodation. Turner (2001) states that adapting to the university needs students to develop some characteristics such as assertiveness and independence as these are of assistance in the process of adjusting to the university environment. Students from dysfunctional families should distance themselves from problematic situations in order to ensure that they achieve a sense of independence.

Environmental Adaptation

Adjustment to the university environment is critical for academic success. Poor adjustment is associated with poor academic performance and low graduation rates which impacts negatively on future success. However, Petersen et al. (2009) found that adjustment did not function as a pure mediator on academic performance as the dependent variable but these scholars indicated that psychological factors explained students' adjustment than academic performance. A study at University of the Western Cape by Moleli (2005) concluded that students' environments are not providing enough external assets for students to develop strong internal assets focusing on providing an environment rich in external assets especially meaningful participation which will be crucial for a long-term positive behavior which encompass attitudinal change and a high level of academic performance. For Schlossberg et al (1995), students are more able to adapt to the university environment if they are able to strengthen their resources. These scholars further indicated that there are three types of transitions, which include anticipated transitions, unanticipated transitions and non-event transitions. The severity of the experience and the consequent adaptation vary according to a number of factors reflecting situational and personal characteristics. In addition, perceived lack of support for minority students led to lack of motivation and adequate engagement in academic tasks. Adaptation in a new environment is how one assumes responsibility and thrives to endure and continue in any situation that is very challenging. Bitzer and Troskie-de Bruin (2004) mentioned that having expectations of university programmes at the entering level are determined by the perceptions of learners towards their academic ability based on

their high school scores, believing that these outcomes are suitable to display their future academic success. It is a known fact that coming to the university environment for the first time can be frightening, and this experience comes with a mixture of reactions for most of the first-year learners. Indeed, first-year students' reaction to this new environment generally impacts on their academic and social adaptation at these institutions. Attending lectures constantly could be an important factor for success, given that students understand why they should be there and lecturers doing their very best at what their role is.

Models of Students Development and Attrition

James and Wilson (2012) adopted Vroom's theory of expectancy (1964) as their theoretical framework to predict higher education readiness. However, the model does not encompass variables such as economic status, levels of education and the core family. Vroom's model describes expectancy motivation as part of a larger, dynamic process, which includes past experience, motivation, effort, performance, reward, and need satisfaction. The model however has significant implications for the design, marketing, and delivery of adult education and training, and for improving the transfer of performance from the classroom or training session to the learner's practical situation. Similarly, MadeÂ le Tait et al. (2002) utilized a theoretical model that involves three independent variables, which include perceived obstacles to study, learner preparation and presentation of lectures. In their study (MadeÂ le Tait et al. 2002), the dependent variable was the perceptions of university studies and learning process. Perceived obstacles to study relates to influences which the students perceive as obstructions to their learning activity and their view of the learning process. Learner preparation in their study is an attempt to determine the factors that the students perceive as important for success in their university studies. The variable 'presentation of lectures' tries to determine the perceptions of the students concerning the role that lecturers play in their university progress. The model suggests that the dependent variable, which is 'perception of university studies', influenced the independent variables, which are perceived obstacles to study, learner preparation and presentation of lectures in a significant way.

Another model that has been widely utilised is Kuh's (2009) theory of student engagement which is centered on the constructivist assumption that learning is advanced by the way an individual partakes in academic focused actions. Although learning depends on institutions and staff offering environments, opportunities and expectations to the students are also important. However, individual students are ultimately the agents in debates of engagement. For Kuh, student engagement is connected positively to the required learning outcomes in

terms of analytical ideas including grades. Kuh et al. (2006) found that teachers who provided deep learning experiences promoted student engagement. The notion of student engagement is supported by an extensive research literature which shows that the time and energy students devote to educationally purposeful activities is the single best predictor of their learning and personal development (Kuh et al. 2005). Students are more likely to persist in higher education if they are involved in cultural connectedness through social groups which may be formed organically and informally, who share similar cultural origins and such opportunities to connect can be created by the tertiary institution. Bitzer and Troskie De-Bruin (2004) employed Kuh's model of student engagement as a key theoretical concept in the study of the effects of factors related to prior schooling on student persistence in higher education. Similar other widely used models include that of Conley (2008) who tried to understand the gap between university suitability and readiness to succeed at university. Conley (2007) argued that those students who feel isolated and develop the intention to withdraw are those who find it difficult to adjust to the values, rules and the university expectations. Wilson and Strydom (2009) and Lemmens et al. (2011) adopted Conley's model.

Also widely adopted within the literature has been Tinto's (1987) model which proposes that students' social and academic experiences are critical determinants of educational outcomes. According Tinto (1993), students would remain enrolled if they separated themselves from their family and high school friends, engage in processes by which they are identified with, took on the values of other students and faculty, and commit themselves to pursuing those values and behaviours. Tinto's theory has been criticized by many scholars for disregarding the role of finance on student retention and its failure to incorporate the important differences in educational career paths for students of different races, gender, and social background. Furthermore, Tinto has been criticised for not separating between causes leading students to transfer rather than dropout. He has also been criticized for not giving adequate attention to factors external to the institutional environment (Cabrera et al. 1992). Other studies have shown that social integration may be a more robust predictor of student outcomes. Al-Dossary's (2008) study of the factors affecting student retention at King Saud University, Saudi Arabia, was guided by Tinto's (1975) student integration theory and found that Tinto's model was not useful in predicting the Saudi freshman student retention process.

Although the above mentioned models have been adopted in many past studies, their limitations have inhibited their usability in the present study. This has been the basis for the adoption of Astin's (1984) as the conceptual model for the present study

Astin's (1984) Student Involvement Theory simply states that students learn by becoming involved. Astin's (1984) theory proposed that involvement is the investment of physical and psychological effort which students present to the academic experience. Involvement is when students devote distinctive amounts of energy in different purposes at different times. In addition, involvement is the hours a student spends on their studies and the amount of things they learn during that study time. Furthermore, involvement is the value of any educational practice related to its ability to increase student learning. Those that devote extensive effort in their study, interact with other students, are actively involved in student organizations and also communicate with administrative members are the students who are fully involved in their academics. For Astin (1996), the greater the interaction with peers, the more favourable the outcome; thus peer-to-peer interaction both inside and outside the classroom working together on classroom material in small groups and acting as teachers for one another is the most powerful roles both for learning and persistence. The essence of Astin's theory is that the greater the students' involvement in the higher education environment, the greater the amount of student learning and personal development will be. Thus there are many post-enrolment factors that influence student success, such as the peer group, financial support, religion or affiliation with a church (Astin 1993). Loots (2009) employed Astin's involvement model and indicated that there are at least three identifiable issues that hinder involvement, which are; lack of support from significant others, feelings of being academically unprepared and feelings of isolation. Furthermore, Loots also indicated that student performance is enhanced by peer support, fostering both academic and social integration.

Astin (1993) advanced the I-O-E model, which stands for Input, Outcome and the Environment. This led him to develop a background from which a human behaviour can be observed. Astin firmly believed that the educational assessment project could not be thoroughly evaluated without it being made up of files on student inputs, the education environment and also the student outcomes. This I-O-E model was developed to evaluate activities in higher education using three basic factors. The (I) Input (O) Outcome (E) Environment are therefore the three components of Astin's model. The primary idea of this

model is that the evaluation of education has to involve knowledge of the student input, the environment and their outcome in order for the assessment to be all-inclusive. The combination of these three variables makes it possible to eliminate bias and also precisely predict students' performance in their leaning environment instead of looking at only one variable. The Input-Environment-Outcome model offers selected comprehension of causative influences concerning the preparation for and outcomes of education. The outcome of students may have been due to inputs, which are their earlier talents and knowledge of course content, rather than environment. These include the curricula, teaching methods, assessment methods as well as academic support services. Outcomes refer to academic achievements and skills development. The I-E-O model helps provide statistical control for input characteristics. Using the model to design research studies can enhance assessment activities to describe student outcomes. This model could virtually be applied in all social and behavioural science fields which analyse human beings and the influence of their environments on their development.

On the basis of Asitn's (1993) model therefore, students' academic development in the University is said to be affected by inputs (relationship A), the environment (relationship B) and thirdly, that students output can be affected directly by the input (relationship C). The present study therefore investigates the implications of relationships A, B and C with the aid of different hypothesis, in the research settings, on the basis of Astin's (1993) model. The inputs in this study is students' high school experiences, the environment is the academic and institutional support available to new students at the university while the output is the performance in tests and examinations. Although Astin (1993) included withdrawal behaviour in his model, in the present study, this is operationalized as withdrawal intention as the sample is of students who are presently in the university and not those who may have withdrawn already. Astin and Sax (1998) assessed the effect of participating in service programs on undergraduate students' development. The determined variables were clustered into three general groupings incorporating educational attainment and life skills. Other variables included race, gender, test scores, types of the school, and service participation information. The study concluded that participating in service activities impacted on students' academic life and improved awareness of civic responsibility which were the outcomes. Astin and Sax identified that notwithstanding the extra time required for volunteer service, the students also spent added time in academic study than students who did not participate in

volunteer activities and for those who partook in service programs, their academic performance was better. Determining the effects of academic performance and early social integration helped to understand long-term persistence. House (1999) argued that students' satisfaction was positively influenced by high school grade, satisfaction with course instruction and work on group projects. The type of learners who enroll in the institution affects the environments. Input can affect output either directly or by the interaction with environmental variables. Therefore all these three variables have effects on each other.

According to Astin, the right learning merit is in the institute's capacity to influence its learners and staff positively and to boost their knowledge and intellectual growth and also to create a progressive transformation in their lives. Good institutions add value in students' experience, abilities, manners and individual maturity. In terms of quality assessment it is thus necessary to determine the changes or improvements in student bodies over time. For Astin therefore, aptitude improvement coupled with brilliance can be conditioned by the quality and quantity of student learning and development.

The Present Study

The question as to what factors motivate student attrition, retention or success in tertiary education has been of great interest to scholars and policy makers. The high attrition rate of undergraduates especially at first year has thus been of serious concern. Scholars have therefore debated the importance of pre–tertiary preparation as an important factor in determining success or failure in tertiary education performance. There have also been arguments relating to the relevance of the challenges posed by the University environment as a factor inhibiting students' success as well as the quality of students' input. The present study attempts to decipher the combined effects of students' pre-tertiary education experiences as well as their academic input on their success at the university. The propositions are hypothesized within Astin's (1997) model of student attrition which has been successfully utilised by past studies in determining student outcomes.

Past studies however examined only a few variables; thus fundamental factors such as types of high school, parental income, sources of funding, class or social status were not really explored as the factors contributing to these problems, especially in South Africa and sub-Saharan Africa. The present study therefore expands the scope of research into tertiary education preparedness by incorporating the examination of sundry factors hitherto neglected in studies in sub-Saharan Africa, and especially in South Africa.

The purpose of this study is to investigate the effects of high school preparation on the academic performance of first year undergraduate students. It was therefore hypothesized as follows:

i. Experience of university environment correlates with social demographic factors.
ii. Students' academic input correlates with social demographic factors.
iii. Students' academic output correlates with social demographic factors.
iv. University environmental challenges correlates with social demographic factors.
v. There is a relationship between university environment and students' academic input.
vi. There is a relationship between the university environment and students' academic output.

RESEARCH METHOD

First year undergraduate students at the Alice campus of the University of Fort Hare were sampled. The total number of first year students at the campus is 973. Using *Raosoft* sample size calculator (@ http://www.raosoft.com/samplesize.html) with a 5% error margin, 95% confidence interval and 10% response distribution, a sample size of 122 respondents was derived. The sample sizes were based on the proportion of total students in each faculty. Data was collected using a self-administered structured questionnaire with Likert scale question styles. Data was analysed using IBM SPSS. Apart from social-demographic factors, other variable in this study were determined using more than one questionnaire item. Consequently, as a first step in data analysis, the Principal Components Analysis (PCA) was adopted to reduce multiple questionnaire items into scales. The following four scales were constructed:

i. Environmental Challenges (ENVCHAL)
ii. Students' Input (STUDINP)
iii. Student Output (STUDOUT)
iv. University Environment (UNENV)

The results of PCA for all four variables are presented in the result section, showing descriptive statistics, Kaiser Meyer Olkin (KMO) test of sample size adequacy and Bartlett's test of Sphericity (BTS). Cronbach alpha scores showing scale reliability are also reported.

RESULTS

According to Scott (2006), universities are committed to developing students academically for higher education. The South African schooling system unfortunately, does not produce enough matriculants who meet the entrance requirements for tertiary institutions and the degree to which high school performance can affect tertiary success is further influenced by the disconnect between the preparation provided at high schools and the expectations placed on students by tertiary institutions. In order to determine the factor that contributes to first year student performance and output, four different subscales were constructed in line with Astin's (1986) model. The subscales include the Environmental Challenges (ENVCHAL), Students' Input (STUDINP), Student Output (STUDOUT) and University Environment (UNENV). The results derived from factor analysis are presented below.

Environmental Challenges (ENVCHAL)

The ENVCHAL subscale was constructed using 11 questionnaire items relating to the university environment challenges. Responses (n=122) were measured on a Likert scale of 1 to 5, where 1= Strongly Disagree and 5= Strongly Agree. The highest possible score was 55 and the lowest was 11. Higher scores indicate higher perception that the university challenges are totally different from those of high school.

Table 1: KMO, BTS, Extracted Variance and Cronbach Alpha scores for all Scales

	KMO	**BTS**	**DF**	**Cronbach's Alpha**	**Total Variance Explained (%)**	**Sig.**
ENVCHAL	.520	67.080	55	0.80	59.617	.000
STUDINP	.512	393.759	55	0.68	76.517	.000
STUDOUT	.505	387.347	36	0.66	79.714	.000
UNENV	.739	1110.200	66	0.80	82.077	.000

Source: A printout of a table derived from the data and findings of this study.

A principal Component Analysis (PCA) was computed and one factor, Environment challenges (ENVCHAL), was extracted electronically, with a KMO of 0.520, BTS, X^2 = 67.080, (df = 55), $p < 0.05$ (see table 1) indicating that the sample was adequate for factor reduction. Scale reliability statistics show a 'good' Cronbach's alpha of 0.80, with scale mean = 38.36, SD = 1.99. ENVCHAL was saved and utilised in further bivariate analyses. As table

1 shows, ENVCHAL accounts for 14.870% of variance in the factor. Other possible factors become relatively insignificant after ENVCHAL was extracted thus diminishing the need to create additional sub-dimensions.

Students' Input (STUDINP)

The STUDINP subscale was constructed using 11 questionnaire items relating to the students' input. Responses (n=122) were measured on a Likert scale of 1 to 5, where 1= Strongly Disagree and 5= Strongly Agree. The highest possible score was 55 and the lowest was 11. Higher scores indicate higher students' perception of their own academic input. Principal Component Analysis (PCA) was computed and one factor, Students' input (STUDINP) was extracted electronically, with a KMO of .512. BTS, X^2= 393.759, (df = 55), p< 0.05 (see table 1) indicating that the sample was adequate for factor reduction. Scale reliability statistics show a 'good' Cronbach's alpha of 0.68, with scale mean = 41.8.93, SD = 3.16. STUDINP was subsequently saved and utilised in further bivariate analyses and tests of the hypotheses. As table 1 shows, STUDINP accounts for 76.517% of variance in the factor. Other possible factors become relatively insignificant after STUDINP was extracted thus diminishing the need to create additional sub-dimensions.

Student Output (STUDOUT)

The variable STUDOUT was designed to conceptualise the outcome of students' engagement in campus activities. Outcomes usually include test results and processes that lead to graduation. The STUDOUT subscale was constructed using 9 questionnaire items relating to the students' output. Responses (n=122) were measured on a Likert scale of 1 to 5, where 1= Strongly Disagree and 5= Strongly Agree. The highest possible score was 45 and the lowest was 9. Higher scores indicate the higher perception of the students' output in their studies. Principal Component Analysis (PCA) was computed and one factor, Student Output (STUDOUT**),** was extracted electronically, with a KMO of .505, BTS, X^2 = 387.347, (df = 36), p< 0.05 (See table 1) indicating that the sample was adequate for factor reduction. Scale reliability statistics show a 'good' Cronbach's alpha of 0.66, with scale mean = 34.70, SD = 1.65. STUDOUT was subsequently saved and utilised in further bivariate analyses and tests of the hypotheses. As table 1 shows, STUDOUT accounts for 79.714% of variance in the factor. Other factors become relatively insignificant after STUDOUT was extracted thus diminishing the need to extract any additional sub-dimensions.

University Environment (UNENV)

The variable UNENV centers on the tertiary education environment. UNENV deciphers the effects of the inadequacies in the preparedness of tertiary institutions to adequately support learners in their quest for academic success. The UNENV subscale was constructed using 12 questionnaire items relating to the students' environment. Responses (n=122) were measured on a Likert scale of 1 to 5, where 1= Strongly Disagree and 5= Strongly Agree. The highest possible score was 60 and the lowest was 12. Higher scores indicate higher perception of the students' environmental challenges in their studies. Principal Component Analysis (PCA) was computed and one factor, Environment (UNENV), was extracted electronically, with a KMO of .739, BTS, $X^2 = 1110.200$, (df = 66), $p<0.05$ (See table 1) indicating that the sample was adequate for factor reduction. Scale reliability statistics show a 'good' Cronbach's alpha of 0.82, with scale mean = 42.39, SD = 3.20. UNENV was subsequently saved and utilised in further bivariate analyses

ENVCHAL Correlates

Berger and Braxton (1998: 10) stated that 'social integration positively predicts subsequent institutional commitment, which in turn positively predicts students' intent to return'. Thus, students' social integration through student organizations and with friends at their institution comprises a substantial part of their summative social integration, which then predicts institutional commitment. Consequently, social integration predicts students' intent to remain in school and the encouragement to perform better. However, there are different variables determining the level of integration and adaptation of new students to the tertiary environment. Thus the variable environmental challenges (ENVCHAL) is analyzed according to the respondents' demographic characteristics. The variable ENVCHAL was saved in the SPSS programme after PCA. In order to determine how ENVCHAL correlated with other variables, bivariate correlations were conducted to determine how respondents differed in their levels of ENVCHAL by socio-demographic factors.

Table 2: Zero-order correlations for ENVCHAL and demographics

	1	2	3	4	5	6	7	8	9	10	11
(1)Gender											

(2)Age										
(3)Origin										
(4)P. income										
(5)Fin Suf										
(6)Sch. type										
(7) Plac sch										
(8) Language										
(9)Grade										
(10) Sch. size										
(11)ENVCHAL	.479**	-.236**	.300**	-.476**	.568**	.575**	-.578**	.278**	.575**	.578**

**. $p < 0.01$ (2-tailed), *. $p < 0.05$ (2-tailed)

Source: A printout of a table derived from the data and findings of this study.

Results of zero-order correlations (see table 2) shows that there is a correlation between ENVCHAL and gender, r = .479 (2- tailed), p< 0.05; origin, r = .300 (2- tailed), p< 0.05; parents income, r = -.476 (2- tailed), p< 0.05; finance sufficiency, r = .568 (2- tailed), p< 0.05; school type, r = .575 (2- tailed), p< 0.05; place of high school, r = .578 (2- tailed), p< 0.05; language taught, r = .278 (2- tailed), p< 0.05; school grade r = .575 (2- tailed), p< 0.05; size of school, r = .578 (2- tailed), p< 0.05 and age, r = .236 (2- tailed), p< 0.05. Apart from these eleven variables the relationship between ENVCHAL and other socio-demographic factors fall into insignificance. The results presented in table 2 showed that students origin, gender, parent's monthly income, financial sufficiency, high school type, place of high school, school grade, language taught, high school size and age have a significant relationship with University environmental challenges. Therefore University environmental challenges correlates with the socio-demographic factors of the students. This finding is in concurrence with the mainstream of the student development and student attrition literatue (Strydom et al. 2010; Conley 2007:10-12; Enochs and Renk 2006; Mudhovozi 2012:258; Lemmens et al. 2011). Therefore, there is a relationship between socio-demographic factors and environmental challenges.

STUDINP Correlates

Berger and Milem (1999) used Astin's theory of involvement (1984) to explain Tinto's (1993) model of institutional departure. They showed that whilst Tinto's fourteen markers are important, students involvement is key to persistence. Thus students must do more than locate activities, faculty-staff interactions or peer group interactions; they must take steps to become involved if this medium is to be useful in student retention. Research about influences on students can also include how students' goals, aspirations, external influences, and social and academic interactions play out. The results of the variable student input (STUDINP) are analysed according to respondents' demographic characteristics. To link this to the central theme of the study, statistical analysis is presented to test hypothesis 2 of the study.

Table 3: Zero-order correlations for STUDINP and demographics

	1	2	3	4	5	6	7	8	9	10	11
(1)Gender											
(2)Age											
(3)Origin											
(4)P. income											
(5)Fin Suf											
(6)Sch. type											
(7) Plac sch											
(8) Language											
(9)Grade											
(10) Sch. size											
(11)STUDINP	-.436**	-.308**	-.183*	.532**	-.378**	-.480**	.426**	-.146	.579**	.218	-

**. p < 0.01 (2-tailed), *. p < 0.05 (2-tailed)

Source: A printout of a table derived from the data and findings of this study.

Bivariate correlations were conducted to determine how respondents differed in their levels of STUDINP by social demographic factors. Results (see table 3) shows that STUDINP is correlated with gender, r = -.436 (2- tailed), p< 0.05; age, r = -.308 (2- tailed), p< 0.05; parent income, r = .532 (2- tailed). p< 0.05; financial sufficiency, r = -.378 (2- tailed), p< 0.05; type

of high school, r = -.480 (2- tailed), p< 0.05; school grade, r = .579 (2- tailed), p< 0.05. However, the relationship between STUDINP and place of school, r = .426 (2- tailed) p = .868; origin, r = .183 (1- tailed), P = .044 are insignificant. Apart from these eight variables there is no other significant relationship between STUDINP and other variables. The results in Table 4.14 showed that students' demographic variables such as gender, age , parents monthly income, high school type, financial sufficiency and high school grade positively correlate with student input. Students Inputs are those special qualities that accompany students to the university at the entry period (Astin 1993:18).

These results are concur with views of Geiser and Santelices (2007) and Häkkinen (2004) that learners who previously performed very well in high school also performed much better in tertiary institutions and that the role of parents stimulate academic performance. Furthermore, the results concur with conclusions arrived at by previous studies (see Felder et al. 1994; Considine and Zappala 2002; Kolcic 2006; Laura et al. 2008; McNeely at al. 2002; Jones et al. 2008). Other factors confirmed by past studies include; place of high school (Pintrinch et al. 1986), school grade (Mudhovozi 2012:258), gender (Tinto & Pusser 2006; Lloyd et al. 2011; Schlossberg et al. 1995), financial sufficiency (Tinto 1975), faculty interaction (Nel et al. 2009; Al-Dossary 2008:267), family income, family background and other socio-demographics which are interrelated with students input.

STUDOUT Correlates

Kuh at al (2005) conceptualised students' success in tertiary education as student engagement. As Astin proposed, involvement requires physical and psychological energy. Similarly, Pascarella and Terenzini (2005: 53) argued that involvement requires the investment of psychological and physical energy. In addition, learning styles and personality types have been identified as significant predictors of academic performance. Individualistic life can be experienced in the university, which provides students with such opportunity. As Niven (2005) showed, students who eventually enter higher education will represent less than 2% of their original school year group. The results of the variable student output (STUDOUT) are analysed according to respondents' demographic characteristics. The variable STUDOUT was saved in SPSS after PCA to determine how STUDOUT correlated with social demographics and other variables. Consequently, zero-order bivariate correlations were conducted to determine how respondents differed in their levels of STUDOUT by social demographic factors.

Table 4: Zero-order correlations for STUDOUT and demographics

	1	2	3	4	5	6	7	8	9	10	11
(1)Gender											
(2)Age											
(3)Origin											
(4)P. income											
(5)Fin Suf											
(6)Sch. type											
(7) Plac sch											
(8) Language											
(9)Grade											
(10) Sch. size											
(11)STUDOUT	-.143	-.491**	-.291**	-.065	-.076**	.192	-.236*	.191*	.103	.218*	-

**. p < 0.01 (2-tailed), *. p < 0.05 (2-tailed)

Source: A printout of a table derived from the data and findings of this study.

Results (see table 4) show that STUDOUT is correlated with age, r = -.491(2- tailed), p< 0.05; origin, r = -.291(2- tailed), p< 0.05; financial sufficiency, r = -.076 (2-tailed), p< 0.05; language taught, r = .191 (1- tailed), p< 0.05. However the relationships between STUDOUT and place of high school, r = -.236 (1- tailed). P = 009; size of school, r = .218 (1- tailed). P= .016 are insignificant. Apart from the six variables therefore, the relationships between STUDOUT and all other social demographic factors are insignificance. This result is supported by the findings of Eamon (2005) and Jeynes (2002) that low social economic status negatively affects university success since low socio-economic status blocks the possibility of getting resources that are important and this generates more stress at home. Graetz (1995) is also of the view that social-economic background remains, among others, the main causes of scholastic disparity in that learning success by any student actually depends on the parents' socio-economic status.

UNENV Correlates

Astin's (1984) theory is widely endorsed as a model in many areas of student affairs, and has been used to support new thinking regarding student environment. Astin's model has been

adopted in gauging the level of involvement in a particular experience and how the experience is dependent upon environmental conditions. The results of the variable university environment (UNENV) are analysed according to the respondents' demographic characteristics.

The variable UNENV was saved in SPSS after PCA to determine how UNENV correlated with other variables. Bivariate correlations were conducted to determine how respondents differed in their levels of UNENV by social demographic factors.

Table 5: Zero-order correlations for UNENV and demographics

	1	2	3	4	5	6	7	8	9	10	11
(1)Gender											
(2)Age											
(3)Origin											
(4)P. income											
(5)Fin Suf											
(6)Sch. type											
(7) Plac sch											
(8) Language											
(9)Grade											
(10) Sch. size											
11)ENVCHAL	.210*	.795**	-.136	.430**	-.289**	-.397**	-.196	.027	.131*	.205*	-

**. p < 0.01 (2-tailed), *. p < 0.05 (2-tailed)

Source: A printout of a table derived from the data and findings of this study.

The results (see table 5) show that UNENV is correlated with age, r = .795 (2- tailed), p< 0.05; parent income, r = .430 (2- tailed), p< 0.05; finance sufficiency, r = -.289 (2- tailed), p< 0.05; school type, r = -.397 (2- tailed), p< 0.05. However, the relationships between UNENV and gender, r = .210 (1- tailed), p= .020; school grade, r = .131(1- tailed), p =.451; size of school, r = .205(1- tailed), p =.023 are insignificant. Other than these four variables, the relationship between UNENV and all other social demographic factors are insignificance.

Eamon (2005) argued that students from poor socio-economic backgrounds produce poor examination grades than students from rich socio-economic backgrounds. Hence Parents income influence hugely on the students' academic outcome, input and other academic opportunities. Likewise, Escarce (2003) contended that social class determines the type of school a child attends and the outcome of his or her examination scores. Learners from low income families possess lower retention rates and low levels of literacy bring about negative attitudes towards schooling and problematic school behaviour. In addition, this makes affected students to struggle with their school work (Considine & Zappala 2002).

The Input-Output-Environment Determinants of Students' Performance

According to Terenzini et al. (1994), making a successful academic and psychological transition from high school to Higher education remains one of the key processes a student must pass through on their journey to graduation. Research shows that for mature entry students and young school leavers, the impacts of adjustment to university are varied during the university years. In addition, increased pressure from government on broader access implies that institutions must ensure that they recruit and attract students from different ethnic backgrounds. It has been proposed that for successful university adjustment, high levels of resilience are needed. 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).

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. Using Asitn's (1993) model therefore, students' academic development in the University is hypothesized to be affected by inputs (relationship A) and the environment (relationship B). It was also hypothesized that students' output can be affected directly by the input (relationship C). The inputs in this study is students' high school experiences, the environment is the academic institution and institutional support available to new students at the university while the output is the performance in tests and examinations. The analysis culminated in determining the correlations between environment, input, output and challenges.

Table 6: Zero order Correlations for Environment, Input, Output and Challenges

		Student Output	University Environment	Challenges	Students Input
Student Output	Pearson Correlation	1	-.501**	.040	.219*
	Sig. (2-tailed)		.000	.664	.004
University Environment	Pearson Correlation	-.501**	1	-.177	-.230*
	Sig. (2-tailed)	.000		.052	.004
Challenges	Pearson Correlation	.040	-.177	1	-.418**
	Sig. (2-tailed)	.664	.052		.000
Students Input	Pearson Correlation	.219*	-.230*	-.418**	1
	Sig. (2-tailed)	.004	.004	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: A printout of a table derived from the data and findings of this study.

Zero order bivariate correlations were obtained for the relationships between environment (UNENV), input (STUDINP) and output (STUDOUT). The results of the correlation are depicted in table 4.17. The bivariate correlations deciphered the relationship between the environment and the students' academic output, to test hypothesis 5 of the study. The results of the correlation are shown in table 6. The results showed that UNENV is positively correlated to STUDOUT, $r = .501$ (2-tailed), $p < 0.01$. The implication of this result is that the university environment predicts the quality of the academic output of the students. Thus it can be concluded that the better the student adjust to the university environment, the better the academic output would be. There is therefore a relationship between the environment and the students' academic output. Feldman, Smart and Ethington (2004:528) argued that what students learn and how they learn is influenced by appropriate university environments. Similarly, Conley (2007) noted that conditions of learning that are satisfactory make it possible for students to accomplish their educational goals and targets. Lack of preparedness and low expectations affect learners' learning approach in addition to their adaptation to the wider environment at higher education institutions (Byrne & Flood 2005). According to Levitz & Noel (1989), a new environment can be so overpowering and also demanding for incoming learners to formulate realisable opportunities for themselves and for their institution. The universities therefore need to lend a helping hand to new students in terms of their adaptation to the new environment they are about to face. As Astin (1984) indicated, the

best institutions add values to students' experience, abilities, manners and individual maturity. The assumption made by Astin's model that the outcome of student development was enriched by attending a high-quality institution (environment) is therefore confirmed by the findings of the present study.

In the same way, Knight (1994), in his investigation of student enrolment and length of time required for degree completion, concluded that institutional policy changes (environment) could impact on the time for degree completion (output).In other words, environmental influences determine whether students obtained desired educational outcomes as well as the time it took to obtain the desired output. Furthermore, Wilson & Strydom (2009) called attention to the vital need for an institution-wide commitment to setting high, but realistic, expectations for students. Learners at higher levels at school attained better results when there is assistance by their parents with their school homework (Voorhis 2003). Prebble et al (2004: 65) proposed that university administrators make it their priority to provide services that will adapt, integrate and equally support new students in order to enhance excellent learners' academic outcomes.

Results of other bivariate correlations further showed that UNENV is positively correlated to STUDINP, $r = .230$ (1- tailed), $p < 0.05$. Consequently, there is a relationship between the environment and the students' academic input. This finding is related to the argument of Power et al. (1987) that prior academic environments have responsibility to preparing young learners intellectually and adjusting them (input) to the new demands of the university. The type of education offered in most institutions can leave students poorly prepared. Scholars (for example, Kuh et al. 2007 and Tinto 1993) argued that administrators of tertiary education must understand students' academic abilities, personal attributes and socio-cultural characteristic on their arrival and enrolment at the institutions. In addition, Astin (1993:398) argued that the student interaction with friends hugely impact on progress and improvement during the undergraduate years. Corrin et al. (2008) emphasised that lack of sufficient input is a key predictor of academic disengagement and, ultimately, dropping out. Dweck-Walton & Cohen (2011) concluded that dedication, motivational or non-cognitive factors are related to success in tertiary level. Saenz et al. (1999:204) noted that involvement in campus performances, school organization's participation and study groups enable learners to build social networks and improve effective communication. Therefore students should become self-regulated learners. This implies that they can specify learning goals and

formulate a plan for achieving them. Furthermore, university experience, social interaction and non-academic activities positively improved academic performance and enhance learners' skill as a whole (McInnis, James and McNaught 1995:47). Non-cognitive and the cognitive characteristics of learners should be well tackled by the university institution and environment (Dietsche 2001).

Bivariate correlations also examined the relationship between students' input (STUDINP) and students' academic output (STDOUT). The result in table 6 showed that STUDINP is positively correlated to STUDOUT, $r = .219$ (1-tailed), $p < 0.05$. On the basis of this result it is inferred that students' input predicts students' output. Hence it can be established that the better the input of the student the better the students' output. There is therefore a relationship between students' academic input and students' academic output. Loots (2009:211) showed that the support from friends, academic encouragement and a combination of in and out of class interaction and extracurricular activities definitely enhances school performance. Past studies (Kuh et al. 2005) showed that the amount of strength, time and energy students invest in their educational related activities determines their personal development and knowledge. Kuh (2006) established that student engagement which is their input to learning positively correlates with learning output. In addition, deep learning experiences provided through lectures promote student engagement. Hence, there is an important connection between student engagement and student desired university output. Lemmens et al. (2011:615) argued that the number of courses of study in first year, motivation, the ability to learn, gender, and the high school location are directly linked to academic performance. There is therefore corroboration between the present findings and past studies that academic engagement and the educational dedication of learners positively determine outcome (Pascarella & Terenzini 2005: 417).

DISCUSSION

Academic performance and attrition among first year undergraduates has been reduced to a variety of factors by many studies. For example, Cook & Leckey (1999) argued that student study habits formed in secondary school persist in the university life. Researchers have therefore been in agreement that the high school experience ultimately influences higher education achievement (see, for instance, Pintrinch et al. 1986; Haase and Caffrey 1983). The aspects of high school preparation and experiences have been construed to further encompass

the quality and experience of teachers, quality of the learning environment and gender effect among other factors (see Laura et al. 2008; McNeely et al. 2002). The variables of interest in these studies can be summarized to include types of high school, parental income, sources of funding and class or social status. These variables have however not been sufficiently explored as the factors contributing to performance and attrition in South Africa and sub-Saharan Africa. Theoretical explanation of student development, attrition and performance has however been dominated by the use of Astin's model of student development which proposes that the educational assessment project is made up of student inputs, the education environment and also the student outcomes. Astin's prognosis has been termed the I-O-E model. In this model, Astin (1970) proposed that the evaluation of education has to involve knowledge of the student input, the environment and their outcome in order for the assessment to be all-encompassing. Furthermore, the combination of these three variables makes it possible to eliminate bias and also precisely predict students' performance in their leaning environment in a holistic manner. Consequently, the Input-Environment-Outcome Model of educational assessments would enhance an understanding of causative influences on educational outcomes.

Hypothesizing within the I-O-E model, the result of the present study confirmed that students' university environmental challenges have a relationship with demographic factors. A large body of knowledge supports the assertion that UNENV lays the foundation for learners' academic achievement. Studies such as that of Bean and Metzner (1985, cited by Al-Dossary 2008:259) emphasized that a greater number of learners who had admission advising before and after their enrolment continued into the second year as compared to those who had no advising and that finances impact on academic performance. Similarly, Considine and Zappala (2002) and Kolcic (2006) indicated that learners coming from rural areas and remote backgrounds are more likely to have lower academic performance and to drop out than students coming from urban areas. Felder et al. (1994) confirm that students from the urban areas performed much better compared to students from rural area in each educational examination. Likewise Jones et al (2008) predicted that in terms of performance, schools in predominantly rural areas perform very low and such schools are commonly found in African areas. Thus students' performance was lower in rural schools than urban schools. However, according to the findings of this study, gender, age, place of origin, faculty, parents' income, finance, finance sufficiency, school grade and size of high school are not related to university environment.

The study hypothesized that student input correlates with social demographic factors. The findings indicate that the STUDINP has a positive relationship with students' financial sufficiency and type of high school with a significance or p-value less than alpha = 0.05 (see Table 3), although Haase and Caffrey (1983) reported that high school grades did not predict academic success in the University. The present study is in agreement with Pintrinch et al (1986) that high school grade is related to performance at tertiary institution. James and Wilson (2012) also indicated that high school grades are a better predictor of performance in higher education. A higher percentage of learners solely depend on student loan to acquire a degree and hence a significant amount of students cannot be able to see themselves through tertiary education if the student loan is to be removed. Malan (2007) argued that financial support is one of the solid factors that act as a cause to diminish the large group of students who strive for tertiary education. This is because many South African university learners battle with financial problems as they live below the poverty line (Lloyd et al. 2011). James and Wilson (2012) also indicated that high school grades are a better predictor of performance in higher education. The results of the study further show that student output correlates with social demographic factors**.** This corroborates Lemmens et al's (2011) findings that gender and the place of high school impact on students' academic success. It was further revealed by the results that University environmental challenges correlates with social demographic factors. Results show that ENVCHAL is correlated with gender, parent income and finance sufficiency. This finding is also in harmony with Enochs and Renk's (2006) conclusion that female learners depend more on social support than male learners and thus exhibit lower adjustment to the university activities than males. Similarly, Mudhovozi (2012:258) concluded that females experience challenges in social and academic adjustment compared to males. However, the study revealed that male learners encounter financial difficulties than females. Conley (2007:10-12) argue that students from low income background mostly depend on the educational institutions to prepare them properly to face difficulties that they might encounter in their academics. Strydom et al. (2010) concluded that when students interrelate with academics inside and outside the classroom, they absorb the manner in which professionals reason and their ways of resolving problems.

Students' challenges in thriving in higher education is related to university workload which is totally unlike the demands of high school classes (Conley 2007). According to Pascarella and Terenzini (1991, cited in Mudhovozi 2012:256) new learners need to have their main

objectives straightened, re-organize their study methods and meet up with academic challenges through focusing and investing quality time in their education. In addition, when students have sufficient financial protection, this will not only energise and motivate them to stay in school but also to study hard knowing that the huge obstacle between their studies and their success is being well tackled. Schlossberg et al (1995) pointed out that learners adapt better to the university environment when their financial resources are well strengthened. Furthermore, Nel, Troskie-de Bruin and Bitzer (2009) concluded that various determinants such as social, financial, cultural, academic and emotional factors influence high school transition and the end results of learners. Similarly, Al-Dossary's (2008:267) found that learners' initial goal, family background and commitment to university clearly predict their later goal and levels of academic integration although prior school experience had no relationship with the learners initial goal and commitment to their academics.

The results from the present study showed that UNENV is positively correlated to STUDINP. This implies that the better the university environment, the more the students will put in efforts into their academic work. These results are similar to those of a study by Considine and Zappala (2002) who showed that the university environment influences learning, student attainment and the academic performance of students. The findings based on this study also showed that UNENV is positively correlated to STUDOUT. This is an indication that the university environment also predicts the quality of the academic output of the students. These results are in harmony with findings of Loots' (2009) study which stated that friendly support, administration of the institution, safe environment, attitude of teachers, student adjusting to the university and encouragement from family enhance learners' capability to manage stressful school work and improve their self-reliance. Sandberg (1990, cited in Kirkham & Ringelstein 2008:43) stresses that learning in a group builds up self-esteem and inspiration that makes education a worthy experience and grows academic performance. Social and physical support programmes give value to the social and physical inspiration of the students. Tinto (1975:107) confirmed that students relating with their peer group, participating in extramural events and student-faculty-administrators interaction are means of academic and social integration. The results from this study also revealed that student academic inputs (STUDINP) are positively correlated to student academic output (STUDOUT). It corroborates Geiser and Santelice's (2007) assertion that prior academic experience consistently affects present educational performance. In addition, Bitzer and Troskie-de Bruin (2004) averred that entrance into and expectations of university

programmes are still determined by students' perceptions of their academic competence based on their Grade 12 results, with the assumption that these results are adequate indicators of academic success. These scholars are in agreement that personal student input is the strongest contributor of overall academic outcome. According to Pascarella and Terenzini (2005:396) first year academic results of university learners best predict the persistence of these newcomers to the second year. Gauss (2002, cited in Vawda 2005:6) reported that the educational lawmakers' target to establish the learner-centered and outcome-based system in South Africa's educational practice and to eliminate the old trainer-centered, content-based practice of education further indicates that the method of teaching and students effective learning method influence and also add to the academic performance of learners.

CONCLUSION

The study was guided by Astin's Input-Environment-Outcomes (I-E-O) model. Astin's model has been used by many studies to determine the reasons for student attrition or the reasons why students drop out of tertiary education. Astin's model is a dynamic and customizable framework that takes into consideration the significant variables and the interconnectivities among personal, institutional and outcome factors. The Input-Environment-Outcome (I-E-O) model developed by Astin is premised on the idea that educational assessments are not complete unless the evaluation includes information on student inputs, the educational environment and student outcomes. The model therefore control for input differences, resulting in a more accurate estimate of how environmental variables affect student outcomes. The data for the present study was collected and analysed in line with Astin's model. Thus the variables environment, input and output were computed as scales for further analysis.

The results of this study are in line with Astin's theory of student development which proposes that students invest various amounts of time in an activity and that student involvement can be measured using both qualitative and quantitative measures. This shows that the quality of the input of the students which is associated with their academic and family background hugely impact on their academic outcomes negatively or positively. Those students who are not covered by student finance would probably struggle with their finances given the fact that most of their parents earn monthly incomes that are insufficient to see them through tertiary education. Given the fact that our different environments (social word)

influences behaviour, the school administration and management thus not only affect the students output but will be unable to equip these young learners to function effectively in stressful situations they might find themselves given the fact that the world is diverse, with constant and unexpected changes. Students encounter pressure, stress, uncertainties, difficulties, and unsure preparation in most educational settings. Although these new learners struggle to cope and overcome or manage these challenges, some find the struggle and the challenges impossible to bear and are overwhelmed by the rigid experience.

The study therefore concluded that high school and university authorities and students themselves should devise a preparation strategy around the performance variables in order to make the first year students more prepared and adjusted to perform excellently in institutions of higher learning. The input, output, challenges and the environment cannot act independently but interrelate as a whole to function and collaborate for maximum results. The combination of these three variables makes it possible to predict students' performance in their learning environment instead of looking at only one variable just as proposed by Astin's model of student development.

RECOMMENDATIONS

Although this study has provided relevant insight into the effect of preparation and performance of new learners at university, it is crucial to identify the limitations of the study. The study was conducted at one campus among the three campuses at the University of Fort Hare. Therefore, the findings of this study may be generalized to other campuses of the university with caution. In addition, this study concentrated only on student preparation and performance in their first year of university study. Consequently, learners' preparation and performance in the following years were not assessed. The quantitative methodology has limitation in that it lacks the potential to provide in-depth explanations. As the study utilised the quantitative design, this limitation therefore applies to the study.

The challenges that first year students face have the potential of negatively affecting their educational outcomes. It is therefore imperative for tertiary institutions to strategically manage new student. An issue for consideration by themanagement of universities will be the issue of staff relationship with the students in relation to investing more time in catering to first year students. Prior studies such as those of Pascarella and Terenzini (2005) and Tinto (1993) highlighted the influence of academic support and advising as well as student-faculty

communication, on student retention and university performance. The environment of any tertiary institution should be managed in a manner that it enables new comers to adapt and settle easily. Furthermore, high school teachers in rural areas should be given more training in order to enable them to better equip learners for tougher competition. University lecturers may make extra efforts in preparing audio or video recordings for slow learners which they can play and listen to at their convenience. Finally, it is suggested that future studies should identify factors that cause withdrawal or student attrition, which have not been dealt with in this study.

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