

## Declaration

I hereby declare that this research report is my own work and has not been submitted to any institution in fulfilment of any other degree.

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Signature

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Date

## **Acknowledgements**

This research report would not have been possible without the following individuals who guided, motivated and supported me throughout this journey. I would therefore like to acknowledge the following people:

I would like to thank my supervisor, Dr Zaytoon Amod, for your patience with me and remarkable guidance throughout this process.

Ms Nicky Israel, thank you for your statistical insight and guidance. My consultations with you were always helpful and provided great insight which at times eluded me during this taxing process.

I would like to thank The Targeting Talent Programme for the use of your data and for providing the learners (and future leaders) of South Africa with the amazing opportunities offered by this organization.

I would like to thank my fellow classmate, Tiro Sedimo, for his support, motivation and comfort throughout this process. I would also like to thank the Med Psychology class of 2013 for their support, advice and words of encouragement throughout the year.

I would like to thank Ms Camielle Goldstone for your support and encouragement. Thank you for proof reading my drafts and encouraging me to persevere when research became a taxing experience.

I would like to thank Mr Clyde Chitray for your love, support and encouragement. Thank you for your comforting talks and words of encouragement.

I would like to thank my parents for supporting me in whatever I do. Thank you for allowing me the opportunity to pursue my dreams and reach my goals. Furthermore, my family has played a big role in this process. They have been understanding and offered great love and support.

“It always seems impossible until it's done.” Nelson Mandela

“Education is the most powerful weapon which you can use to change the world” Nelson Mandela

## **ABSTRACT**

The current study sought to investigate the utility of the Learning and Study Strategies Inventory-High School (LASSI-HS) as a developmental learner support tool within the context of the Targeting Talent Programme (TTP) at the University of the Witwatersrand. Learners' scores on the LASSI-HS and their levels of academic performance (captured across four measures) were investigated. An understanding was sought regarding the relationships between learners' scores on the LASSI-HS and their performance in English, mathematics, life/natural science and overall academic performance. This study also examined the differences between learners' scores on the LASSI-HS based on parental level of education. A number of non-parametric statistical procedures were applied in the study. The results of these procedures indicated that learners within this sample performed in the above average range (70-80%) across three subjects (English, mathematics and life/natural science). Their scores on the LASSI-HS suggest that they have adequate learning and study strategies in place. There were only a few significant relationships found between the learning strategies/academic skills assessed by the LASSI-HS and academic performance. The subscales that were found to be statistically related to academic performance in certain subjects were the motivation, information processing, test strategies and self-testing subscales. Negative relationships were reported between the information processing subscale and overall academic performance as well as the self-testing subscale and overall academic performance. These results highlight the learning strategies that contributed to the high levels of academic performance within this sample.

**Keywords:** Learning and study strategies, academic performance, Targeting Talent Programme (TTP), Learners from disadvantaged backgrounds, Learning and Study Strategies Inventory-High School (LASSI-HS), tertiary education, pre-university programmes.



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## **Chapter One: Introduction to the study**

### **1.1. Introduction**

An increasing number of international and some local studies have investigated the role that learning and study strategies play in academic attainment (Albaili, 1997; Duckworth, 2005; Griffin, 2013; Haynes, 1987; Nist , 1990; Seabi, 2011; Schutz, 2011). This research has demonstrated the profound impact that such strategies have on academic success. Several of these studies have documented a significant difference in learning strategies employed by high and low achieving learners. Learners who have been classified as high achieving, based on their academic performance, were shown to employ more aspects of strategic learning as assessed by the self-reported learning and study strategies inventory (Albaili, 1997; Duckworth, 2005; Griffin, 2013; Haynes, 1987; Nist, 1990; Seabi, 2011; Schutz, 2011). Thus much emphasis has been placed on educating or equipping learners within this area (Yip, 2005). Furthermore, a number of educational institutions and initiatives have encouraged and provided interventions focused on learning strategies in an attempt to improve academic performance (Campbell, 2005; Haught, 1998).

The current study aimed to explore the use of the Learning and Study Strategies Inventory-High School Version (LASSI-HS), which assesses learning and study strategies as a developmental support tool within the context of a pre-university enrichment programme conducted at the University of the Witwatersrand. There does not appear to be much documented South African research in this area of work and therefore this research aimed to contribute to knowledge of this measure broadly within the South African context and more specifically within the Targeting Talent Programme.

### **1.2. Rationale for the study**

The Targeting Talent Programme (TTP) is a pre-university enrichment programme that is run under the auspices of the Student Equity and Talent Management Unit (hereby referred to as SETMU), at the University of the Witwatersrand. The TTP seeks to build on the existing talents of learners who have been identified as academically talented. These learners are selected from schools within previously disadvantaged communities and are provided with a number of interventions to aid in the successful transition from high school to university. These

interventions are focused on the academic, social and psychological development of learners. To facilitate the academic development of learners, the TTP team administers a battery of assessments in order to identify and further develop learners' academic abilities. One of the instruments utilized by the TTP in this regard is the LASSI-HS.

The LASSI-HS is a self-reported diagnostic and prescriptive measure that assesses both overt and covert thought processes and behaviours that have been found to be associated with successful studying and learning (Weinstein & Palmer, 1990). This instrument was developed in the United States in response to the increasing number of high school learners who were found to be unequipped with the academic tools deemed necessary for success in a tertiary institution or training setting (Weinstein & Palmer, 1990). The LASSI-HS therefore provided educational institutions with an assessment and evaluation measure that allowed them to identify the areas in which learners were struggling, to design appropriate interventions and to evaluate the effectiveness of these interventions. This instrument is currently being used for a number of functions, in a number of different educational settings, to aid in the enhancement of learners' study and learning strategies. The primary use of the LASSI-HS is to prepare learners academically by identifying areas of weakness and strength with regard to the manner in which they acquire, retain and apply information. Interventions and programs are then tailored according to the results of the LASSI-HS.

Academic performance is a key criterion for entry into the TTP. It is thus important to understand how the LASSI-HS links to the academic performance of learners. This information will allow facilitators to establish the learning strategies that learners are utilizing which are contributing to their academic performance. Facilitators could then also identify learning strategies that might need to be developed for a higher level of education. This information will enable the TTP facilitators and programme planners to better assist learners in preparing for university and other high education institutions.

Although previous international and a few local studies have examined the LASSI-HS in its capacity as a developmental learner support tool in the context of schools, universities and various educational initiatives, there has been no research undertaken on the use of the LASSI-HS specifically within the context of the TTP. The TTP is unique as it is an educational initiative focused on learners from disadvantaged communities. This study therefore aimed to explore the utility of the LASSI-HS as a developmental learner support tool within the latter

setting. It is envisaged that through exploring pre-ordinate factors linked to the learning strategies employed by learners, a clearer understanding could be gained of ways in which to intervene and improve learner performance. This will provide insight into the utility of the LASSI-HS within the context of the TTP. The findings of the study will assist in informing the TTP in their planning of future intervention programmes.

In addition, the present study aimed to explore possible trends in the LASSI-HS data based upon learners' parental level of education. The level of parental education has been found to have an impact upon learners' academic performance (Farooq, Chaudhry, Shafiq, & Berhanu, 2011). Through exploring the effect of this variable, the researcher could ascertain whether the LASSI-HS functioned in the same manner for learners from different backgrounds. This would provide an indication of whether the LASSI-HS is biased against certain contextual factors and thus provide further information on its utility within the TTP. The sample explored in this study represents a fairly homogenous population; the level of parental education among learners was therefore examined as there was not much variability among learners with regard to other important contextual characteristics.

Based on the above discussion, the objective of this study was to explore the utility of the LASSI-HS in the context of the TTP. The specific aims of the study were to:

- 1.1 Establish what the levels of the scores on the LASSI-HS subscales among learners were.
- 1.2 Establish the level of academic performance among learners.
- 1.3 Explore the relationships between scores of the LASSI-HS subscales and academic performance in English, mathematics, life/natural science and overall academic performance.
- 1.4 Establish if there is a difference in scores on the LASSI-HS based on parents' level of education.

Chapter Two of the current research report consists of a discussion of the literature applicable to the study. The literature review explores the concepts of high potential, learning strategies as well as academic performance. Chapter Three provides the reader with a detailed discussion of the research methodology employed in the study. The results of the study are presented in Chapter Four. This chapter will provide the reader with the particular statistical procedures utilized in this study as well as an interpretation of the results of these procedures. Thereafter,

the results of the study will be discussed in Chapter Five where the researcher will also outline the limitations of the study and make recommendations for future research.

## **Chapter Two: Literature Review**

The following review of literature aims to provide a frame from which to understand as well as support the research questions that the study sought to address. The literature review will therefore address the concepts of high potential, learning and study strategies as well as academic performance. In addition, it will consider the role that learning strategies play in academic performance and furthermore which learning strategies are most effective for success at a tertiary level of education. In order to contextualize the current study, this chapter begins with a discussion on the impact of the apartheid regime on South African education as well the context of education within South Africa presently.

### **2.1. Contextualizing South African Higher Education and the Targeting Talent/Development programme (TTP)**

During the apartheid era nearly half of all learners enrolled in higher education institutions were identified as Caucasian. Since the new democratic government came into power in 1994, there has been a significant increase in the number of learners from different racial backgrounds that are enrolled in higher education institutions. The South African Higher Education statistics reveal that the number of previously disadvantaged learners gaining admission into and successfully completing degrees or diplomas at higher education institutions has increased significantly, however there are still racial divides in terms of the participation rates of learners in higher education institutions.

Learners from disadvantaged backgrounds are still faced with a number of challenges with regard to equal education in South Africa (Mdepa, 2012). According to Asmal & James (2001) and Spreen & Vally (2006), schools in poorer areas of South Africa are still faced with a lack of educational resources, inadequate school maintenance and under qualified teachers. Rural areas in particular have been neglected in terms of being provided with equal and basic services. The South African government has not managed to reallocate and distribute assets equally among poorer areas in South Africa, as reflected in the state of educational institutions within these areas (Asmal & James, 2001; Spreen & Vally, 2006). Thus, learners from these areas may not be adequately prepared for dealing with the social, academic and psychological pressures encountered in higher education institutions or may not meet the relevant academic requirements needed for admission into higher education institutions.



Within the context of the above challenges faced within the South African education system, the TTP was launched in 2007 at the University of the Witwatersrand. This programme is geared toward addressing the inequalities that were brought about under the apartheid government and thus has a strong focus on disadvantaged populations. In an attempt to restore equality in education, the TTP seeks to ensure diversity in terms of race and gender at the University of the Witwatersrand by building on the existing talents of individuals identified as academically talented.

At present, the TTP is run as a two to three year programme supporting and preparing learners who have been identified as high potential learners from Grade 10/ Grade 11 through to Grade 12 for admission into and successful completion of their tertiary studies. The primary aim of this programme is to build on the talents of these learners and further equip them with the psychological, social and academic skills necessary to be able to gain admission into and obtain a tertiary level of education (Targeting Talent Programme, 2012).

## **2.2. High potential learners**

The concepts of high academic potential, intellectual talent and giftedness have been used interchangeably within the literature. Although there have been a variety of definitions generated over the years, there has been no consensus on a concise definition of academic talent or giftedness (Kokot, 1992; Schroth, 2009). Originally, experts defined academic talent or giftedness in terms of a superior Intelligent Quotient (IQ) level, considering an IQ score of 135 or above as an indicator of giftedness (Dembo & Selbi, 2004; Schroth, 2009). Academically talented learners have also been described as those "...who are endowed by nature with the high intellectual capacity for high potential intellectual attainment and scholastic achievement..." (Zettel, 1979, p. 63). In addition to scores on IQ tests, results on other related intellectual measures as well as academic performance are also commonly examined when identifying intellectual giftedness or high academic potential.

The TTP selects learners who are considered to have high academic potential or who have been identified as academically talented and seeks to build on this existing talent. High potential in the context of the TTP has been operationalized by learners' academic performance. A learner who attains at least 65% in mathematics, science (divided into two components known as physical science and life/natural science; both are considered under the broad heading of science) and English is considered to show high academic potential. English, mathematics and

science are specifically targeted in the TTP as the programme encourages learners to pursue degrees and careers in science, engineering, technology and commerce. This is due to the fact that the South African population is ill-equipped and underdeveloped in the fields of science and mathematics (Seabi, 2011). Under the Bantu Education Act, a majority of South Africans didn't receive training within the areas of maths and science which contributed to the underdevelopment of these fields (Asmal & James, 2001).

Researchers have attested to the many benefits of enrichment programmes (such as the TTP) for high potential learners. These programmes are said to provide learners with various social and academic benefits (Miller & Gentry, 2010). The skills that are developed within these programmes further prepare learners for higher education institutions. Miller & Gentry (2010) mention that learners from low income families or disadvantaged communities are often underrepresented in enrichment and talent development programmes and that they receive fewer opportunities for academic enrichment. Therefore programmes such as the TTP (which target this population) provide an invaluable service for these learners in South Africa.

### **2.3. Factors impacting upon academic performance**

A learner's academic performance is influenced by a number of different factors; among these are parental involvement, parent occupation, intellectual functioning and type and quality of education (Kallaway, 1984). The environment or system within which a child develops has been found to play an essential role in the development of any inherent intellectual capabilities of the child (Kokot, 1992). Within the South African context, the majority of learners are faced with environmental circumstances that are not always conducive to optimal learning. For example, learners from disadvantaged backgrounds are frequently faced with inadequate schooling resources, poverty, a lower level of parental education and less exposure to intellectually stimulating material to mention a few. These factors can be considered risk factors and place learners at a higher risk for low academic performance. Protective factors promote academic performance and may function as a buffer to the risk factors that learners might be exposed to. Possible protective factors could include: parental involvement and support, involvement in extracurricular activities and external support systems (Gutman & Midgley, 2000; Whitney, Renner, & Herrenkohl, 2010). Learners who have high risk factors and low protective factors were found to be significantly more likely to experience low academic performance (Whitney, Renner, & Herrenkohl, 2010). The present study examined

one of the factors found to influence a learner's academic performance (parental level of education) in relation to the LASSI-HS. The parental level of education was considered due to the apparent influence it's had on academic performance in previous studies (Dubow, Boxer, & Huesmann, 2009; Mdanda, 1997).

South Africa's historical background prohibited a majority of learners from obtaining an adequate education to participate in the working world. The level of education obtained by parents as well as parents' socio-economic status is known to be one of the most investigated and controversial factors contributing to academic performance (Farooq, Chaudhry, Shafiq, & Berhanu, 2011). A number of researchers have found parental level of education to be an influential variable in the academic performance of a learner. A parent's occupation or level of education has been linked to the type of learning environment that the child is exposed to at home, better communication with regard to academic activities and better assistance with academic tasks (Fantuzzo & Tighe, 2011; Farooq, et al. 2011; Kellaghan, 1977). The level of education obtained by parents is therefore said to influence the type of interaction between the parent and the child, for example, parents with higher levels of education are more likely to interact in a manner that enhances the intellectual capabilities and vocabulary of the learner (Kellaghan, 1977).

A study conducted in the year 2000, which aimed to examine various factors that had an impact on the academic performance of 10<sup>th</sup> grade learners within the city of Pakistan, reflected that socio-economic status and parents' level of education had a significant effect on learners' overall academic performance and particularly affected performance in mathematics and English (Farooq, et al., 2011). Furthermore, in a South African study examining the various aspects of the home environment on pupils' academic performance (Mdanda, 1997), it was found that pupils whose parents were employed as professionals demonstrated higher levels of academic performance. On the other hand, pupils whose parents held lower occupational positions demonstrated a decreased level of academic performance. Parents' level of education or occupation is further associated with the type and quality of the schooling a learner is exposed to and thus contributes to a learners level of education and academic performance.

## **2.4. The relationship between academic performance and strategies for learning and studying: The theoretical foundation of the LASSI-HS**

One of the key factors found to influence academic performance is the learning and study strategies that learners adopt. There is an increasing amount of evidence to suggest that learning and study strategies play a significant role in determining the level of academic performance achieved by learners (Dembo & Selbi, 2004; Duckworth, 2005; West, 2011). The assessment and promotion of effective learning and studying strategies has thus become a fundamental focus in the study of academic performance.

The LASSI/LASSI-HS is increasingly being utilized in educational institutions as a diagnostic and prescriptive measure in the examination of learning and study strategies. This instrument was based on Weinstein & Palmer's model of strategic learning. According to this model, in order for learners to be successful in their academic pursuits they need to master fundamental learning skills, practice self-regulatory processes and finally have the will and motivation to learn and succeed in academic pursuits (Weinstein, 2000 as cited in Campbell, 2005). This instrument was therefore structured around three elements found to be fundamental for successful learning and academic performance; namely, the will to achieve, strategic learning skills and self regulatory processes. These elements of strategic learning, which are elaborated upon below, are most effective when they function within an interactive system. In other words, a learner will benefit the most from these learning strategies when all elements of the model are applied (Boekaerts, et al., 2005).

### **2.3.1. Will**

The will element of the strategic model of learning assesses learners' motivation toward their educational pursuits, attitude toward learning, value placed on education and the degree of anxiety experienced within learning situations (Gottfried, 1985). This is an important element as it involves the effective aspects which can be considered a driving force in academic performance. There are three subscales in the LASSI-HS that assess the element of will. These include the *attitude*, *anxiety* and *motivation* subscales.

The *attitude* subscale of the LASSI-HS assesses learners' attitudes and interest in school work and education (Weinstein & Palmer, 1990). The attitude scale therefore consists of items such as 'I only study the subjects that I like' and 'I don't care if I finish high school as long as I can get a job'. The relationship between attitude and academic achievement has been investigated by numerous researchers and the majority of these researchers hold that learners' attitudes towards their studies have a significant impact on their academic performance (Alexander, 2009; Li, 2012). Most of the research within this field has illustrated that the more positive the attitude learners adopt with regard to academic pursuits, the higher the possibility of high academic achievement. Recently, Sarwar (2004) conducted a comparative analysis which investigated the study attitudes among low and high achieving learners at a secondary level of education. His study revealed that study attitudes were positively related to academic performance, in other words a higher degree of positive study attitudes amongst learners was associated with a higher level of academic achievement (Sarwar, 2004). Furthermore, his results indicated that study attitudes differed among high and low academic achievers, with high academic achievers displaying more positive attitudes toward studying and their education. Although the research results on the relationship between attitude and academic performance is not entirely conclusive, findings suggest that learner attitude has a strong influence on academic performance.

*Motivation* has been defined as "...an internal drive that activates behaviour and gives it direction." (Singh, 2011, p. 161). This drive is activated either intrinsically (from within an individual) or extrinsically (from outside of the individual). Intrinsic motivation has been found to be associated with higher levels of educational achievement. According to Boekaerts, Rintrich, & Zeidner (2005) learners who are motivated extrinsically employ more surface level study strategies than learners who are intrinsically motivated. Intrinsically motivated learners engage in more meaningful, long term learning. An analysis of three studies on the academic intrinsic motivation in primary and junior high school learners discovered that academic intrinsic motivation was significantly and positively correlated with children's school achievement and perceptions of academic competence (Gottfried, 1985). The importance of motivation in academic performance has been demonstrated by many researchers whose studies have proposed that motivation plays a fundamental role in exceptional academic performance (Askari, et al., 2011; Farmer, 2007; Schick & Phillipson, 2009). It is reported that individuals who are considered to be intellectually gifted have an intrinsic motivation for learning which is integral to their intellectual abilities and need for intellectual stimulation

(Schick & Phillipson, 2009). Motivation and self-discipline are assessed by the motivational subscale of the LASSI-HS. Items in this subscale include: ‘I work hard to get a good grade, even when I don’t like a class’ and ‘When work is difficult I either give up or study only the easy parts’. The *motivation* subscale has been consistently reported as a powerful predictor of academic performance throughout the literature (Albaili, 1997; Haynes, 1987; Sinkavich, 1991)

The *anxiety* subscale of the LASSI-HS was designed to assess the level of anxiety experienced by learners toward their studies and academic activities. The following statements are examples of the type of items in this subscale: ‘I get so nervous and confused when taking a test that I don’t answer questions to the best of my ability’ and ‘While I am taking a test, worrying about doing poorly gets in the way of keeping my mind on the test’. Anxiety related to academic performance has been referred to as ‘test anxiety’ in the literature on academic performance. Test anxiety can be defined as “a group of phenomenological, physical and behavioural reactions to appear with possible negative consequences of failure on an examination or similar evaluative situation” (Yousefi, 2010). There has been extensive research in the area of anxiety and academic achievement which has documented the negative effects of anxiety on academic performance (Akram & Mahmood, 2010; Credé, 2008; Talib & Sansgiry, 2012). Therefore, a negative association has been documented between the two, in other words it has been found that high levels of anxiety are associated with lower academic performance and in turn lower levels of anxiety are associated with increased academic performance (Talib & Sansgiry, 2012). In a recent study done in Iran, it was found that test anxiety decreased learning abilities and restricted academic achievement (Yousefi, 2010). The negative influence of anxiety on academic performance was further confirmed in a study conducted in Pakistan (Talib & Sansgiry, 2012). This study investigated the discriminatory and predictability value of test anxiety on the academic performance of undergraduate and graduate university students. The results of the study confirmed that test anxiety is significantly related to academic performance. Furthermore, test anxiety was found to be among the major discriminators among low and high academic achievers (Talib & Sansgiry, 2012).

### 2.3.2. Learning Skills

The LASSI-HS addresses three skills that are believed to be fundamental to successful learning and academic performance. These include: *information processing, selecting main ideas and*

*test strategies*. These learning skills are essential for strategic learning and they refer to cognitive functions. According to Al-Hebaishi (2012) cognitive strategies involve the mental actions that facilitate and structure information processing. A critical feature of the strategic model of learning is metacognitive awareness which is fostered by knowledge of academic tasks and learning abilities (Boekaerts, R'intrich, & Zeidner, 2005).

The *information processing* subscale assesses learners' use of techniques for the organization and storing of new information; such techniques include: imagery, verbal elaboration and reasoning skills (Griffin, et al., 2013). This subscale therefore includes statements such as, 'I try to think through a topic and decide what I am supposed to learn from it rather than just read it over when doing my school work' and 'I try and change the material I am studying into my own words.' The manner in which information is processed and organized is understood to influence how a learner acquires and is able to recall knowledge learnt. Information processing strategies further assists learners with linking what they already know to the new information that they receive (Weinstein & Palmer, 1990). According to Askari, et al. (2011) information processing can be divided into two categories, surface level processing and deep level processing. Surface level processing occurs when learners engage with material on a superficial level, in other words they engage in strategies such as memorizing and repeating in order to remember the information. Deep level processing on the other hand involves more critical engagement with study material, such as the analysis of material, structuring and relating new knowledge to previously acquired knowledge or experience. Askari, et al. (2011) discusses two additional categories of information processing strategies. According to Askari, et al. (2011) there are learners who are not committed to any one type of information processing strategy and learners who use the two modes of information processing in a complementary fashion. Learners who complement both modes of information processing are known as strategic learners, these learners assess the task at hand and apply the most appropriate information processing strategy.

*Selecting main ideas* is an important strategy for effective learning and studying (Credé, 2008). The selecting main ideas subscale assesses learners' ability to identify and extract important information and disregard irrelevant or redundant information. This is a crucial skill as it allows the learner to hone in on important points and information which can now be allocated further attention. Examples of items related to the ability to select main ideas include: 'Often when

doing school work I seem to get lost in details and can't remember the main ideas' and 'I have a hard time finding the important points in my reading'.

The *test strategies* subscale of the LASSI-HS assesses test-taking and test-preparation strategies. In the LASSI-HS, test-taking strategies are understood to be inclusive of knowledge with regard to the characteristics of the test and the questions as well as how to create a test-taking plan that will ensure the highest results (Weinstein & Palmer, 1990). It is believed that performance on a test or examination depends on how well prepared learners are for the test. The subscale therefore includes items such as 'I do poorly on tests because I find it hard to plan my work within a short period of time' and 'I have difficulty adapting my studying to different types of subjects.' Preparation for a test/examination can have a profound impact on a learner's performance on the test/exam which determines the level of academic performance achieved by a learner. Learners who are well prepared for the test/exam commonly score higher than learners who have not effectively prepared for the test/exam (Scruggs & Mastropiere, 1992).

### 2.3.3 Self-Regulation

Self-regulation is a fundamental aspect of strategic learning. According to Zimmerman (1990), self-regulated learners can be described as being metacognitively, motivationally and behaviourally active participants in their learning process. These learners view the learning process as controllable and thus accept personal responsibility for their academic performance. These learners also engage in self-regulated learning strategies, which have been found by several studies to play an important role in academic performance. In a study which compared structured interviews, investigating self-regulatory strategies, and academic results among high and lower academic achievers, Zimmerman and his colleague found that higher academic achievers reported a significantly greater use of self-regulatory strategies. Weinstein & Palmer (1990) proposed that self-regulatory processes enable learners to engage in decisions that support (as opposed to undermine) their academic goals (Weinstein, 2000 as cited in Campbell, 2005). The LASSI-HS assesses self-regulation processes with a focus on *time management, study aids, self-testing and concentration*.

The *time management* subscale was designed to both assess learners' time management abilities as well as to gather information on learners' ability to negotiate and commit to time allocated for their studies. Items assessing time management therefore include 'When I decide to do homework, I set aside a certain amount of time and stick with it' and 'I only study when there is the pressure of a test.' Time management falls under the broad concept of self-



regulation and has proven to be an important predictor of academic performance (West, 2011). According to Dembo & Selbi (2004), educators have found a positive relationship between time management and academic achievement where students with enhanced time management skills performed higher in tests and examinations.

Self-regulation is also assessed by the use of study aids. The *study aids* subscale assesses the extent to which students utilize or create study aids when studying for a test or examination. An example of items in this subscale include ‘I use special helps, such as italics and heading, that are in my textbook’ and ‘When they are available, I go to study or review sessions.’ The use of study aids is important as they support and increase the acquisition and retention of knowledge (Weinstein & Palmer, 1990).

The *concentration* subscale of the LASSI-HS gathers information on learners’ level of concentration during class and whilst studying, whether or not they are able to concentrate on school related tasks. Thus items within this subscale include statements such as ‘I find that when my teacher is teaching I think of other things and don’t really listen to what is being said’ and ‘I pay attention fully when studying.’

The *self-testing* subscale assesses learners’ awareness of the importance of self-testing as well as the degree to which learners participate in self-testing methods. An example of items assessing self-testing would be ‘When studying for an exam, I think of questions that might be on the test’ and ‘I stop often while reading and think over or review what has been said.’ Self-testing encourages and supports meaningful learning and thus contributes to an increased level of academic performance. An understanding of the material, and not rote learning, is the foundation for effective learning (Margaret, Rutledge, & Davies, 1997).

## **2.5. Learning strategies at a tertiary level of education**

At a tertiary level of education learners are required to engage in more advanced learning strategies. This is due to the critical engagement and more advanced deep-level processing that is required of learners at this level of education (Vermetten, Vermunt, & Lodewijks, 1999). Researchers have found that learners with poor study skills or habits are more likely to either withdraw from university or experience difficulties in the transition from high school to university (Abbott-Chapman, Hughes & Wyld, 1992 cited in McKenzie & Schweitzer, 2010; Pantages & Creedon, 1975).

## 2.6. The LASSI-HS as a learner developmental support tool

Learning and study strategies can be defined as skills or behaviours that are necessary for the effective learning and retention of information (Segal, 1985). Strategies for learning involve the use of cognitive, metacognitive, motivational, affective and behavioural techniques that increase academic performance and higher order cognitive functions (Bembenutty, 2011). According to Weinstein and Palmer (1987), the manner in which a learner learns and studies plays a central role in the learner's academic achievement.

Weinstein & Palmer (1987) developed the original learning and study strategies inventory (LASSI) for college students in 1987. This measure was developed in response to the increasing number of academically unprepared learners entering tertiary institutions. It was intended to assess both covert and overt thought processes and behaviour that are related to learning and study strategies (Weinstein, 1990). This therefore assists learners and educators in identifying areas of strength and weakness in relation to an individual's learning and study strategies. The high school version of the LASSI was later developed in response to the need to identify learning and study strategies at a high school level and further equip learners with the necessary learning strategies found to be required for success in higher education institutions (Weinstein, 1990). In order to develop a high school version of the LASSI, a number of word changes were made to the original items of the LASSI and these word changes were designed to accommodate the intellectual differences between college and high school students. Beside these structural changes, there is little difference between the LASSI and the LASSI-HS (Weinstein, 1990).

Weinstein & Palmer (1987) propose that there is a strong positive relationship between effective learning strategies and academic success (McCabe, 2005). As previously noted, based on their research on learning and study strategies, Weinstein and Palmer (1987) proposed a model of strategic learning that emphasized the elements of will, skill and self-regulation in the process of learning. The LASSI and the LASSI-HS were both based on this model of strategic learning. Thus both instruments consist of ten sub scales which relate to the elements of strategic learning proposed by this model. These subscales include: *anxiety, motivation, time management, attitude, concentration, information processing, selecting main ideas, study aids, self-testing* and *test strategies*. Following these subscales, educators and program facilitators are able to identify areas of strength and weakness for the learner and subsequently provide remedial assistance in identified areas of weakness.

The accumulating evidence of the relationship between academic performance and learning strategies has resulted in an increased emphasis by educational institutions and initiatives on identifying and developing these learning strategies. The LASSI and the LASSI-HS have been used in a vast number of educational institutions both as a diagnostic and evaluative tool aiding educators, researchers and programme facilitators in their efforts to identify and improve learners' approach to learning (Campbell, 2005; Cano, 2006; Essack, 2007). The LASSI-HS has thus been used as a developmental learner support tool as it assists learners and educators in identifying areas of weakness with regard to learning strategies and further tracks learners progress and improvement in these identified areas of weakness.

There have been a number of studies conducted worldwide that have examined the effectiveness of the LASSI-HS as a developmental learner support tool. The findings of these studies suggest that the LASSI-HS has proved invaluable in tailoring interventions to learners' needs and further assisting learners in improving their academic performance (Campbell, 2005; Essack, 2007). Internationally, educational institutions and initiatives utilizing the LASSI-HS have reported significant increases in academic performance (Haught, 1998).

There has been relatively little research conducted on the LASSI and the LASSI-HS within the South African context. The research that has been conducted has found this measure to be useful within the context of this country. These studies have however suggested that further research be conducted in terms of developing the instrument to further accommodate the South African context. In a study done at the Vaal University of Technology, the LASSI was used to gain insight into the learning and study strategies of educationally disadvantaged learners, this study revealed that disadvantaged learners scored below the 50% percentile on all of the LASSI subscales (Hendrich, 2004). Learners scored particularly low on the motivation subscale. The research concluded that motivation was the most significant variable impacting on learners' learning strategies. Following the results of the LASSI, interventions were tailored according to the individual's areas of weakness. Subsequently, an increase in academic performance was seen in this sample of learners. In an earlier South African study done by Agar and Knopfmacher (1995), the LASSI was found to provide learners with insight into their academic strengths and weaknesses and it assisted staff to develop appropriate interventions to address identified areas of weakness.

## **2.7. Previous research investigating the relationship between the LASSI-HS subscales and academic performance**

A majority of the studies conducted on the LASSI and LASSI-HS have investigated the association between the elements of strategic learning and academic performance (Albaili, 1997; Haynes, 1987; Nist, 1990; Schutz, 2011). These studies have reported a positive correlation between scores on the LASSI subscales and academic performance. Although results of these studies differ in terms of which subscale is the best predictor of academic performance, several studies have generally reported the *motivation* subscale of the LASSI and LASSI-HS as a key predictor of academic performance (Albaili, 1997; Haynes, 1987; Haynes, 1988; Sinkavich, 1991). In these studies, correlations between the motivation subscale and academic performance was especially significant when assessing the distinction between low and high academic achievers. Additionally, there are a few studies that have found that the subscales of *motivation*, *information processing* and *selecting main ideas* were significantly correlated with academic performance (Albaili, 1997; Haynes, 1987)

## **2.8. Conclusion**

The learning strategies that a learner adopts play an influential role in their academic performance. The subscales of the LASSI-HS capture three core elements of strategic learning proposed by Weinstein and Palmer (1987). These subscales relate to skill, will and self-regulation. A number of studies have investigated the relationship between these strategies and the academic performance of learners. These researchers have generally found a positive relationship between the proposed learning strategies and academic performance. The research methodology employed in this study will be discussed in Chapter Three that follows.

## **Chapter Three: Research Methodology**

### **3.1. Context of the study**

The Targeting Talent Programme is run under the auspices of the Student Equity and Talent Management Unit (SETMU) at the University of the Witwatersrand. This unit coordinates a number of pre-university and scholarship programmes at the University of the Witwatersrand which are all geared toward addressing the inequalities that were brought about under the apartheid government and thus have a strong focus on women and disadvantaged populations. In an attempt to restore equality in education, SETMU seeks to ensure a higher participation of race and gender at the University of the Witwatersrand by building on the existing talents of individuals identified as academically talented.

The TTP was launched as a pre-university enrichment programme in 2007 at the University of the Witwatersrand. The programme was piloted from 2007 – 2009 with 267 learners from the Gauteng, Limpopo and Mpumalanga Provinces (Targeting talent programme, 2012). At present the TTP is run as a two to three year programme supporting and preparing learners who have been identified as high potential learners from Grade 10 and Grade 11 through to Grade 12 for admission into and successful completion of a tertiary education. The primary aim of this programme is to build on the talents of these learners and further equip them with the psychological, social and academic skills necessary to be able to gain admission into and successfully complete a tertiary education (Targeting Talent Programme, 2012).

In order for a learner to participate in the TTP there are a number of criteria that need to be satisfied. The TTP is provided with a list of schools, primarily from within disadvantaged locations, which have been compiled by various donors who fund the TTP. These schools are then contacted and the principal is requested to nominate five to ten learners from Grade 9 and 10 respectively to be invited to apply for the programme. After the learners are selected they are required to complete a number of questionnaires. Learners interested in the programme are required to complete a contact detail form, a learner motivation form (where the learner is asked to write a motivational essay) and a biographical questionnaire. The learner's parents and educators are also asked to fill in a questionnaire about the personal characteristics and qualities of the learner as well as to provide information regarding the home and school environment of the learner. Once these forms have been submitted, the SETMU panel will deliberate each case and select appropriate learners for the programme. Learners have to meet certain criteria in

order to be selected for the programme which include: the learner must be a South African citizen, the learner must have participated in a science, technology, engineering, mathematics or innovation Olympiad, the learner must have achieved a minimum mark of 65% in the subjects of mathematics, science (physical science and life/natural science) and English (this criterion is flexible as contextual factors are considered) and finally the learner must have a propensity toward a science, engineering, technology or commerce related career or field.

During each year of the programme learners are required to attend compulsory contact sessions held three times a year. The first contact session takes place around April; during this contact session the first mathematics and science enrichment programmes are run. This programme provides learners with additional teaching in areas of mathematics and science that learners are currently completing at school. The second contact session takes place during the June/July holidays; the residential enrichment programme is run over this contact session. This programme takes place at the University of the Witwatersrand. During the residential visit, learners are exposed to University life, receive lectures in mathematics, science (physical science and life/natural science), English, computer science, molecular literacy, engineering, information literacy and social research and attend a number of workshops that are geared toward the learners' psychological and social preparation for university. The third contact session occurs around September, in this session the second mathematics and science enrichment programmes are run.

### **3.2. Research aims and questions**

The primary aim of the study was to explore the utility of the LASSI-HS within the context of the TTP. In order to determine this, an examination of the levels of academic performance among the cohort, levels of scores on the LASSI-HS subscales among the cohort and the relationship between the scores on the LASSI-HS subscales and academic performance was required. Furthermore, this study sought to examine the difference in scores on the subscales of the LASSI-HS based upon learners' parental level of education in order to further establish the utility of the LASSI-HS. Following the above aim, this study sought to answer the following research questions:

1. What are the levels of the LASSI-HS subscales among learners in the cohort?
2. What are the levels of academic performance among learners in the cohort?
3. What are the relationships between scores on the LASSI-HS and academic performance among learners in the cohort?
4. Are there any differences in scores on the LASSI-HS subscales based on learners' parental level of education?

### **3.3. Research Design**

All information required for the study had been collected and thus the researcher analysed archival data that had been collected by the TTP facilitators. According to Jonas (2010), archival data refers to any information amenable for analysis that has been previously collected by another. Working with archival data presents the researcher with a number of advantages and disadvantages. It may be beneficial to work with archival data as it allows the researcher the opportunity to closely inspect the nature of the participants reality at a specific moment in time. Furthermore, data is normally archived for a significant population, therefore working with archival data undertakes research with a particularly noteworthy sample (Jonas, 2010).

However, working with archival data may lead to a number of challenges as well. In terms of ethical considerations, it may prove problematic to access particular archival data. In addition, when working with archival data, one is required to allow the data to direct the research. Therefore, the researcher working with archival data may experience challenges in allowing the research to be directed by the data and abandoning any and all preconceived notions in terms of the direction of the research (Jonas, 2010).

The nature of the archival data that was analysed in this study lends itself to a quantitative design. This study thus employed a non-experimental, correlational design in the analysis of the archival data. The reason for the design is two-fold; firstly the data consisted of raw scores and percentiles of results generated by the LASSI-HS and therefore quantitative techniques are applicable. Secondly, because the researcher sought to explore the relationship between various variables, a correlational design is appropriate. A correlational design seeks to assess the relationship between two or more variables (Stangor, 2010). In addition, the absence of a control group and thus random assignment leads to the suitability of a correlation design. There are limitations to this design, according to Stangor (2010) a correlational design can prove

undesirable as it cannot produce irrefutable information with regard to the causal relationships among variables.

### **3.4. Sample**

As noted earlier in this research report, the data was collected by TTP facilitators in the year 2010. The TTP facilitators employed a purposive sampling strategy in obtaining data. Purposive sampling requires researchers to include subjects on the basis of certain criteria (Neuman, 2005). The TTP only selects a pre-selected number of learners to participate in the TTP; these learners must satisfy a number of criteria. In order for the learner to be selected the learner must be a South African citizen, the learner must have participated in a science, technology, engineering, mathematics or innovation Olympiad, the learner must have achieved a minimum mark of 65% in the subjects of mathematics, science and English (this criterion is flexible as contextual factors are considered) and finally the learner must have a propensity toward a science, engineering, technology or commerce related career or field. Therefore it can be concluded that learners in the TTP can be described as academically talented, interested in pursuing the fields of science, technology, engineering or commerce and are more likely to come from disadvantaged communities.

The participants used in this study consisted of ninety Grade 10 learners (ten participants had to be removed from the sample due to missing LASSI-HS scores) from various provinces in South Africa. The information provided for the sample included learners' gender, race, province, school as well as further information of the parents' level of education and occupation. A majority of the sample consisted of female learners from the province of Kwa-Zulu Natal. Descriptive statistics provides the reader with a description of the data and a clearer indication of the sample (Huck, 2011). The descriptive statistics for this sample are given in tables 3.1 to 3.5:



Table 3.1 Gender of the participants

|               | <b>Frequency</b> | <b>Percent</b> |
|---------------|------------------|----------------|
| <b>Male</b>   | 26               | 29             |
| <b>Female</b> | 64               | 71             |
| Total         | 90               | 100            |

Table 3.2 Racial groupings of the participants

|                 | <b>Frequency</b> | <b>Percent</b> |
|-----------------|------------------|----------------|
| <b>African</b>  | 68               | 76             |
| <b>Coloured</b> | 7                | 8              |
| <b>White</b>    | 7                | 8              |
| <b>Indian</b>   | 8                | 9              |
| Total           | 90               | 100            |

Table 3.1 and Table 3.2 reflect that the majority of participants within the study were female and of African descent. The provincial origin of the sample, school quintile ratings and the level of parental education are presented in tables 3.3, 3.4 and 3.5 respectively.

Table 3.3 Provincial origin of participants

|                      | <b>Frequency</b> | <b>Percent</b> |
|----------------------|------------------|----------------|
| <b>KwaZulu-Natal</b> | 30               | 33             |
| <b>Gauteng</b>       | 19               | 21             |
| <b>North West</b>    | 12               | 13             |
| <b>Limpopo</b>       | 21               | 23             |
| <b>Free State</b>    | 2                | 2              |
| <b>Northern Cape</b> | 6                | 7              |
| Total                | 90               | 100            |

Table 3.3 shows that most of the participants were from the Kwa-Zulu Natal province, with the fewest learners originating from the province of the Free State and the Northern Cape.

Table 3.4 Quintile school ratings of participants

|                                   | <b>Frequency</b> | <b>Percent</b> |
|-----------------------------------|------------------|----------------|
| <b>Schools rated 3rd quintile</b> | 25               | 28             |
| <b>Schools rated 4th quintile</b> | 20               | 22             |
| <b>Schools rated 5th quintile</b> | 24               | 26             |
| Total                             | 90               | 100            |

The quintile system is a funding policy that was implemented in 2007 in an effort to promote more equitable access to better quality education (Hall & Giese, 2009). In accordance with the new quintile system, South African government schools are assigned to one of five quintile categories based on their poverty ranking. The poverty rankings of schools are determined by the catchment area of the school and the income generated by the school. The poorer schools are assigned a lower quintile rating (quintile 1 and 2) whereas wealthier schools are given a higher quintile rating. The quintile rating allows the government to determine the amount of money a school receives from the department of education. Schools that fall within the lower quintile categories (quintile 1 and 2) receive the highest pre-learner funds allocation (Hall & Giese, 2009). The participants within this study attended schools that were rated within the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> quintile rating system.

Table 3.5 Parental level of education relating to participants

|                   | <b>Frequency</b> | <b>Percent</b> |
|-------------------|------------------|----------------|
| <b>Low/Medium</b> | 22               | 24             |
| <b>High</b>       | 51               | 57             |
| Total             | 73               | 81             |

The level of parental education relating to the participants is presented in Table 3.5; levels of education was examined jointly in the present study. That is, if both parents/ caregivers had a tertiary level of education, they were considered to have a high level of education. If one of them had a tertiary level of education and the other a secondary level, the family was classified as having a high level of education. A medium level of education was assigned when

parents/caregivers had obtained at least a matric/Grade 12 level of education. If parents/caregivers had attained any Grade below matric, a low level of education was assigned.

Overall, the level of parental education within the sample was found to be of a high level with 51 (57 %) learners' parents/ caregivers having obtained a matric or tertiary level of education. There were very few learners whose parents had obtained only a medium or low level of education. The low number of learners who had parents with a medium to low level of education led the researcher to combine the low and medium level of education into a variable labelled low/medium level of education. Although learners originated from less fortunate backgrounds, the level of parental education was adequate. This might have served as a strength for these learners and contributed to the high level of academic performance seen within the sample.

### **3.5. Measures**

The measures utilized in this study were the LASSI-HS and learners' end of the year academic results.

#### **3.5.1. The LASSI-HS**

Learning and study strategies were measured by the TTP team using the LASSI-HS in June 2010, during the first year of the programme. Learners were in their Grade 10 year when the data was collected. The LASSI-HS is a self-report measure that requires learners to rate a statement related to learning and study strategies on a five point Likert type scale. Each item is rated from 'not at all like me' to 'very much like me.' Learners are asked to consider the statement and rate it according to how true it is for the learner. The LASSI-HS is a 76 item scale that is divided into ten subscales which include *anxiety*, *motivation*, *concentration*, *attitude*, *information processing*, *selecting main ideas*, *self-testing* and *test strategies*. Each item is related to one of the ten subscales. The number of items within a subscale differs slightly. The *time management* subscale consists of seven items, the *selecting main ideas* subscale on the other hand consists of five items. While the remaining subscales consist of eight items each.

Once the LASSI-HS has been administered, the items of each subscale are considered and a score is calculated for each subscale of the LASSI-HS based on the total number of items in the scale. The LASSI-HS can yield raw scores that can be used in analysis (Weinstein & Palmer, 1990). It can also be converted into a percentile for interpretative purposes. The

percentiles are calculated to provide the learner with a learning and study strategies profile that highlights specific areas of strength and further development. The percentiles can also be used to provide the learner with an indication of how well developed his/her learning strategies are compared to other learners at his/her grade level within their peer group. In order to convert the raw scores into percentiles, the raw score equivalents of percentiles for 10<sup>th</sup> grade learners' norm table was consulted. If the score is above the 75<sup>th</sup> percentile levels, educators or facilitators can consider this an area of strength for the learner. On the other hand, a score situated between the 50<sup>th</sup> and 75<sup>th</sup> percentile is considered an area that the learner can improve upon and any score below the 50<sup>th</sup> percentile is regarded as an area of weakness. Based on information in the test manual, reliability measures of the LASSI-HS range from .68 to .82 (Weinstein & Palmer, 1990).

The LASSI-HS was formed in a midsize city in the South West part of the United States of America. Learners represented a variety of different ethnic backgrounds, socio-economic statuses and academic achievement levels (Weinstein & Palmer, 1990). The LASSI-HS has been utilized within a South African context. Studies that have examined the LASSI-HS within the South African context have found that the LASSI-HS was a valid measure however, it needed to be adapted for the South African context (Agar & Knopfmacher, 1995). The above mentioned study recommended that South African norms for the LASSI-HS should be developed to enhance the applicability of the measure to the South African population, however this has not been done to date.

### **3.5.2. Learners' academic performance**

In this study, academic performance was captured by four measures including: end of the year Grade Nine results in mathematics, English and life/natural science as well as the calculated overall academic performance across these three subjects. Learners' life/natural science marks were utilized as opposed to marks in physical science due to the lack of data in this regard. These results were obtained before entry into the programme and were considered during selection into the programme.

### **3.6. Procedure**

The data that was analysed in this study was collected and captured by members of the TTP team. The TTP were granted permission to collect and archive the data. The researcher was

also granted access to this data (see Appendix E). Thus, the researcher began the research process by familiarizing herself with the archival data which entailed extensive analysis and coding of the data prior to employing statistical techniques. Once the data had been coded, the researcher utilized the Statistical Package for the Social Sciences (SPSS) and conducted the relevant statistical analyses in order to generate answers to the research questions of this study.

### **3.7. Data Analysis**

In order to answer the research questions set out in section 3.2, this study employed a number of statistical procedures. Firstly, the researcher assessed the data and calculated descriptive statistics. The descriptive statistics that were produced included: the mean (average), the median (middle value), the standard deviation, the range (minimum and maximum values) and finally the skewness coefficients. In addition, the data was visually organized by a histogram, frequency tables and bar charts.

These descriptive statistics, particularly the mean values, were analysed as a means of gaining a more in depth account of the data as well as to establish trends within the data (Myers, Well, & Lorch Jr, 2010). This was deemed an appropriate account of the data as both variables (scores on the LASSI-HS subscales and academic performance) were at least interval scaled in nature. Tests for skewness were also conducted in order to determine the distribution of the data (Howell, 2002). These revealed that the data was not normally distributed and thus parametric assumptions were not fully met. In addition, the sample size utilized in the study was relatively small (ninety one participants) which contributed to the decision to employ non-parametric statistical procedures.

In order to establish the relationship between scores of the LASSI-HS subscales and academic performance, correlation was deemed the most appropriate tool of analysis. Correlation is the statistical procedure used to establish the degree of association or the relationship between two variables (Asuero, Sayago, & Gonzalez, 2006). The Spearman's rank correlation coefficient was calculated as parametric assumptions were violated. To determine whether scores on the LASSI-HS differed among learners based on parental level of education, a Mann Whitney U test<sup>1</sup> was conducted. The Mann Whitney U was found to be the most appropriate tool of

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<sup>1</sup> A Mann Whitney U is the non-parametric equivalent of the two independent samples t-test. The Mann Whitney U is therefore used with a between groups design with two levels of the independent variable and further when parametric assumptions have been violated (Morgan, Leech, Gloeckner, & Barret, 2004).

analysis in this regard because the difference between two independent groups was sought and there was a violation of parametric assumptions.

### **3.8. Ethical considerations**

According to Parry (2004), there are a number of stringent codes of practice surrounding archival data that researchers need to adhere to. Respondent anonymity and confidentiality are among these. Parry (2004) highlights the fact that the South African Data Archives require the researcher to ensure that personal information regarding the research participants are kept in the strictest confidence; researchers are to honour the stipulated guarantee of confidentiality and anonymity. Furthermore, researchers are encouraged to confirm that respondents have voluntarily provided their informed consent for the data to be used for research purposes. These principles were adhered to in the current research study as participants voluntarily provided informed consent for all information to be utilized for research purposes. In addition, the TTP team obtained the relevant ethical clearance from the University of the Witwatersrand's Human Research Ethics Committee (non-medical) in order to utilize the data generated by the TTP for purposes of research and development. The ethical clearance certificate is included in Appendix E. The results of the study are discussed in the next chapter.

## **Chapter Four: Results**

### **4.1. Introduction**

This chapter presents the results that were obtained in this study. All of the sub questions were formulated in order to address the main research question which sought to establish the value and utility of the LASSI-HS within the context of the TTP. In order to address the first two sub questions, an examination of the descriptive statistics is provided. This is followed by results of the Spearman correlation coefficients that were generated to establish the relationships between scores on the LASSI-HS subscales and academic performance in English, mathematics, life/natural science as well as overall academic performance. Finally, to determine whether scores on the LASSI-HS differed for learners whose parents had either a low/medium or high level of education the results of a Mann Whitney U were presented.

### **4.2. Learners of the TTP**

In the previous chapter, the sample of the study was outlined and a brief description of the participants in the study was provided. The learners who participated in the research were considered to have high academic potential and showed great interest in their education. They were invested in their education and interested in pursuing the fields of science, technology, engineering or commerce. They represented a homogenous group of learners who shared a number of fundamental characteristics related to their academic pursuits. Therefore there was little variability within the sample.

### **4.3. The utility of the LASSI-HS within the context of the TTP**

#### **4.3.1 The levels of academic performance among learners in the TTP**

The data presented below in Table 4.1 provides the reader with the descriptive statistics of learners' academic performance in English, mathematics and life/natural science. A fourth variable was added to provide the reader with an estimation of the learners' overall academic performance. The overall academic performance thus captures learners' aggregate score across all three subjects (English, mathematics and life/ natural science). It is important to note that these marks were taken from learners' end of the year Grade Nine results which were used to determine their entry into the TTP programme.

Learners' academic performance in mathematics, life/natural science and English were reported to fall between the 70-80% ranges. The mean score of learners' academic performance in English ( $\mu = 76$ ,  $SD = 10.13$ ) was lower than their academic performance in the other subjects. The overall academic performance amongst learners was found to be within the upper 70% range ( $\mu = 77.5$ ,  $SD = 8.10$ ). It can therefore be concluded that learners in this cohort generally performed well academically and that they excelled in the areas of mathematics and life/natural science.

Table 4.1 End of year Grade nine academic results

| Subjects                           | N  | Mean | Median | Std.<br>Deviation |
|------------------------------------|----|------|--------|-------------------|
| Mathematics                        | 83 | 78.3 | 80.0   | 10.39             |
| Life/Natural<br>Science            | 83 | 78.5 | 78.0   | 9.80              |
| English                            | 76 | 76.0 | 79.0   | 10.13             |
| Overall<br>Academic<br>Performance | 83 | 77.5 | 79.3   | 8.10              |

### 4.3.2 The levels of the LASSI-HS subscales among learners in the TTP

#### 4.3.2.1. Frequency analysis of the LASSI-HS subscales

In order to establish levels of the LASSI-HS subscales in the sample, learners were classified according to percentiles and frequency analyses were conducted. The data presented in Tables 4.2, 4.3 and 4.4 below represents the frequency analyses with regard to learners' scores on the LASSI-HS subscales that was administered mid-way through the first year of the TTP programme (in their Grade 10 year). According to the LASSI-HS manual, learners who score below the 50<sup>th</sup> percentile (within the 01-49 percentile range) on a subscale are considered to be poorly equipped with the strategies measured by that particular subscale. Scores between the 50<sup>th</sup> and 75<sup>th</sup> percentile on the other hand reflect an area that can be further developed. If a learner scores above the 75<sup>th</sup> percentile (within the 76-99 percentile range) they are considered to have well-developed capabilities in that particular area. An examination of the frequencies indicates a trend in the data with regard to areas of strength and weakness within this particular cohort of learners.



The *anxiety* subscale is reversed scored, in other words, higher scores on this subscale indicate lower levels of anxiety (Griffin, 2013). Table 4.2 shows that the majority of learners (n= 41) fell below the 50<sup>th</sup> percentile and therefore seem to experience some anxiety in relation to academic tasks. The *attitude* subscale is designed to measure the degree to which one has a positive attitude toward and is interested in academic pursuits. The majority of learners within the sample (n= 39) scored above the 75<sup>th</sup> percentile on this subscale indicating that these learners have a positive attitude toward, and display great interest in their education and academic achievement. Motivation seems to be a strength for most learners within this sample, as learners generally fell within the 50<sup>th</sup>-75<sup>th</sup> percentile (n= 39) and above the 75<sup>th</sup> percentile (n=37). This is closely linked to attitude, thus, alongside a positive attitude toward academic achievement, these learners are diligent, self-disciplined and willing to exert effort in academic tasks. As mentioned in the previous chapter, these subscales are related to the important element of *will* that was included as a key factor in the strategic model of learning proposed by Weinstein and Palmer (1987). This cohort of learners were therefore found to be receptive to learning, highly motivated to succeed in academic pursuits and diligent. They may also experience some anxiety with regard to their academic career.

Table 4.2 Frequency of learners in the subscales related to will

| Subscale   | Range | Number of learners<br>(n) | Total number of<br>learners (N) |
|------------|-------|---------------------------|---------------------------------|
| Anxiety    | 01-49 | 41                        | 90                              |
|            | 50-75 | 26                        |                                 |
|            | 76-99 | 23                        |                                 |
| Motivation | 01-49 | 14                        | 90                              |
|            | 50-75 | 39                        |                                 |
|            | 76-99 | 37                        |                                 |
| Attitude   | 01-49 | 14                        | 90                              |
|            | 50-75 | 37                        |                                 |
|            | 76-99 | 39                        |                                 |

Another important element in the strategic learning model is that of *skill*. This refers to the skills that have been identified as effective in learning and academic achievement (Weinstein & Palmer, 1990). As shown in table 4.3 below, learners in this sample were found to have well

developed information processing strategies, with a majority of the learners scoring above the 75<sup>th</sup> percentile (n=58). Learners' scores on the *selecting main ideas* subscale fell within the 50<sup>th</sup>-75<sup>th</sup> percentile (n=42) and reflect that this is an area that learners can further develop. This might indicate that learners in this sample may at times experience difficulty identifying main ideas and important points relevant to an academic task. Learners' scores on the *test taking* subscale generally fall within the 50<sup>th</sup>-75<sup>th</sup> percentile (n= 44). This indicates that this cohort of learners could improve on methods for preparation of tests and examinations. This cohort of learners have developed some strategies for successful learning and academic performance however this is an area that can be further developed with a particular focus on learners' ability to extract essential information from texts and study material.

Table 4.3 Frequency of learners in the subscales related to skill

| Subscale                  | Range | Number of learners<br>(n) | Total number of<br>learners (N) |
|---------------------------|-------|---------------------------|---------------------------------|
| Information<br>processing | 01-49 | 11                        | 90                              |
|                           | 50-75 | 21                        |                                 |
|                           | 76-99 | 58                        |                                 |
| Selecting main ideas      | 01-49 | 28                        | 90                              |
|                           | 50-75 | 42                        |                                 |
|                           | 76-99 | 20                        |                                 |
| Test strategies           | 01-49 | 19                        | 90                              |
|                           | 50-75 | 44                        |                                 |
|                           | 76-99 | 27                        |                                 |

The final element in the strategic model of learning is *self-regulation*. The subscales related to this element aim to assess the degree to which learners control and self-regulate their learning process. This includes an assessment of whether learners demonstrate appropriate time management, are able to maintain concentration and focus over time, whether they monitor and review what they have learnt and finally whether they make use of study materials. The majority of learners scored above the 75<sup>th</sup> percentile (n=53) on the *concentration* subscale indicating high levels of focus and concentration when engaging in academic tasks. Table 4.4 shows that the majority of learners' scores on the *time management* subscale (n=34) on the other hand fell within the 50<sup>th</sup>-75<sup>th</sup> percentile which suggests that learners could improve their

time management strategies. A majority of learners scored above the 75<sup>th</sup> percentile on the *self-testing* (n=47) and *study aids* (n= 43) subscales, indicating that learners in this cohort are making sufficient use of self-testing measures and strategies.

Table 4.4 Frequency of learners in the subscales related to self-regulation

| Subscale        | Range | Number of learners<br>(n) | Total number of<br>learners (N) |
|-----------------|-------|---------------------------|---------------------------------|
| Concentration   | 01-49 | 11                        | 90                              |
|                 | 50-75 | 26                        |                                 |
|                 | 76-99 | 53                        |                                 |
| Self-testing    | 01-49 | 20                        | 90                              |
|                 | 50-75 | 23                        |                                 |
|                 | 76-99 | 47                        |                                 |
| Study aids      | 01-49 | 20                        | 90                              |
|                 | 50-75 | 27                        |                                 |
|                 | 76-99 | 43                        |                                 |
| Time management | 01-49 | 29                        | 90                              |
|                 | 50-75 | 34                        |                                 |
|                 | 76-99 | 27                        |                                 |

#### 4.3.2.2. Analysis of the descriptive statistics generated for each LASSI-HS subscale

In addition to the frequency analyses of the percentile scores, the raw scores for each subscale were analysed and the raw data was further utilized when conducting the inferential statistics as this maximized the variance (Howell, 2002). An analysis of the descriptive statistics presented in Table 4.5 below, required the researcher to consider whether the data allowed for the use of parametric statistics. In order for a parametric test to be conducted and to yield statistically accurate results, it is important that the data satisfy a number of parametric assumptions. These assumptions are important because they allow for the validity of the test (Myers, Well, & Lorch Jr, 2010). The following parametric assumptions need to be satisfied: the dependent variable needs to be normally distributed, equality of variance must be ensured and the dependent variable must be at least interval scaled (Stangor, 2010).

One of the most important assumptions to be satisfied is the normal distribution of data. When data is normally distributed, the mean and the median take on similar values (Gavin, 2008) and therefore the mean can be utilized as the measure of central tendency for statistical procedures. According to Gavin (2008), skewness disrupts the normal distribution of data. The concept of skewness refers to the measure of symmetry of a distribution; in most instances the comparison is made to a normal distribution (Hair et al., 2006). Schepers (undated) emphasises those variables with a skewness higher than 2 should be avoided. Ideally, skewness co-efficients should be between -0.5 and 0.5, however if the values are between -1 and 1, a normal distribution of data is accepted. If the skewness co-efficient is larger than the aforementioned values, the normality of the data is questionable. In this research study, there were a number of subscales with a skewness co-efficient greater than 1 or -1, with the highest skewness co-efficient being (-1.82). Therefore, even though the subscales were parametric, there were many subscales that had a skewness co-efficient greater than 1/-1. An analysis of the histograms also indicated a non-normal distribution. When parametric assumptions have not been met, non-parametric tests are found to yield more accurate results. Due to the fact that parametric assumptions were not fully met, a more cautious route was taken and non-parametric statistical procedures were applied to address the research questions in this research study.

Table 4.5 Descriptive Statistics for the scores on the LASSI-HS subscales

| LASSI-HS Subscales     | N  | Mean  | Median | Std.<br>Deviation | Skewness     |
|------------------------|----|-------|--------|-------------------|--------------|
| Attitude               | 90 | 34.09 | 35.00  | 4.62              | <b>-1.82</b> |
| Motivation             | 90 | 33.14 | 34.00  | 4.88              | <b>-1.42</b> |
| Time Management        | 90 | 23.46 | 24.00  | 5.82              | <b>-0.44</b> |
| Anxiety                | 90 | 25.54 | 25.50  | 6.36              | <b>-0.18</b> |
| Concentration          | 90 | 30.76 | 31.50  | 6.25              | <b>-1.05</b> |
| Information Processing | 90 | 31.50 | 32.00  | 5.12              | <b>-0.58</b> |
| Selecting Main Ideas   | 90 | 18.96 | 19.00  | 3.63              | <b>-0.46</b> |
| Study Aids             | 90 | 26.92 | 27.00  | 5.41              | <b>-0.20</b> |
| Self-testing           | 90 | 30.09 | 31.00  | 5.44              | <b>-0.52</b> |
| Test Strategies        | 90 | 30.49 | 31.00  | 5.43              | <b>-1.00</b> |

\*Skewness data is represented in bold italics

#### **4.3.3. The relationships between the scores on the LASSI-HS subscales and academic performance among learners in the TTP**

The utility of the LASSI-HS was further examined by investigating the relationships between learners' scores on the LASSI-HS subscales and their academic performance in English, mathematics, life/natural science and overall academic performance. The Spearman's Rank Correlation Co-efficient was used to explore the relationships between these variables. The following tables, table 4.3, 4.4 and 4.5, provide the correlation coefficients obtained from the analysis of the data.

##### **i. Academic performance and subscales related to *will***

Table 4.6 presented below, provides the correlation coefficients obtained for the sample. It shows the relationships between academic performance (which were captured by the four aforementioned academic results) and scores on the LASSI-HS subscales related to *will*. There were no significant relationships found between anxiety, attitude and the four measures of academic performance. The relationship between the Motivation subscale and academic performance in life/natural science was found to be statistically significant, although the relationship was weak ( $r = 0.216$ ,  $p < 0.049$ ). This indicates that high levels of motivation are associated with high academic results in life/natural science. However, the relationship between motivation and academic performance in mathematics, English and overall academic performance was found to be non-significant.

Table 4.6 Correlations between academic performance and the subscales related to will

| LASSI-HS<br>Subscales |                | Mathematics<br>Results | Life/Natural<br>Science<br>Results | English<br>Results | Overall<br>Academic<br>Performance |
|-----------------------|----------------|------------------------|------------------------------------|--------------------|------------------------------------|
| Attitude              | Correlation    | 0.010                  | -0.038                             | 0.076              | 0.016                              |
|                       | Coefficient    | 0.926                  | 0.736                              | 0.513              | 0.882                              |
|                       | Sig.(2-tailed) | 83                     | 83                                 | 76                 | 83                                 |
| Anxiety               | Correlation    | -0.063                 | 0.158                              | 0.079              | 0.089                              |
|                       | Coefficient    | 0.574                  | 0.154                              | 0.496              | 0.426                              |
|                       | Sig.(2-tailed) | 83                     | 83                                 | 76                 | 83                                 |
| Motivation            | Correlation    | -0.029                 | 0.216                              | 0.096              | 0.139                              |
|                       | Coefficient    | 0.795                  | <b>0.049*</b>                      | 0.409              | 0.212                              |
|                       | Sig.(2-tailed) | 83                     | 83                                 | 76                 | 83                                 |

\*Correlations are significant at a 0.05 level (2-tailed)

ii. Academic performance and subscales related to *learning skills*

Table 4.7 presented below, provides the correlation coefficients showing the relationships between academic performance (captured by four measures) and scores on the LASSI-HS subscales related to *learning skills*. The results of the correlations indicate that there are significant relationships between the information processing subscale and overall academic performance ( $r = -0.220$ ,  $p < 0.045$ ) as well as the test strategies subscale with both life/natural science ( $r = 0.316$ ,  $p < 0.004$ ) and overall academic performance ( $r = 0.223$ ,  $p < 0.043$ ). The relationship between information processing and the three remaining measures of academic performance (academic performance in mathematics, English and life/natural science) was found to be non-significant as well as the relationships between test strategies and the two remaining measures of academic performance (academic performance in mathematics and English). There were no significant relationships found between selecting main ideas and all four of the measures of academic performance.

The relationship between the test strategies subscale and life/natural science as well as overall academic performance was found to be positive. These results thus indicate that a high number of test strategies applied by learners are associated with a high performance rate in life/natural science and overall academic performance.

The relationship between the information processing subscale and overall academic performance was found to be negative. These results suggest that the higher the degree to which learners utilize information processing techniques such as imagery, verbal elaboration and reasoning skills, the lower the academic performance obtained by learners. Also, a lower degree of information processing skills employed is associated with higher academic performance. A deep level of information processing is not contributing to these learners' high academic performance. Therefore, the level of academic performance found within this sample could be attributed to more surface level processing strategies such as rote learning, memorization and repetition.

Table 4.7 Correlations between academic performance and the subscales related to learning skill

| LASSI-HS<br>Subscales     |                | Mathematics<br>Results | Life/Natural<br>Science<br>Results | English<br>Results | Overall Academic<br>Performance |
|---------------------------|----------------|------------------------|------------------------------------|--------------------|---------------------------------|
| Information<br>Processing | Correlation    | -0.144                 | -0.154                             | -0.162             | -0.220                          |
|                           | Coefficient    | 0.195                  | 0.164                              | 0.162              | <b>0.045*</b>                   |
|                           | Sig.(2-tailed) | 83                     | 83                                 | 76                 | 83                              |
| Selecting<br>Main Ideas   | Correlation    | -0.015                 | 0.128                              | 0.128              | 0.112                           |
|                           | Coefficient    | 0.894                  | 0.250                              | 0.269              | 0.313                           |
|                           | Sig.(2-tailed) | 83                     | 83                                 | 76                 | 83                              |
| Test Strategies           | Correlation    | 0.041                  | 0.316                              | 0.200              | 0.223                           |
|                           | Coefficient    | 0.716                  | <b>0.004**</b>                     | 0.084              | <b>0.043*</b>                   |
|                           | Sig.(2-tailed) | 83                     | 83                                 | 76                 | 83                              |

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

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

iii. Academic performance and subscales related to *self-regulation*

Table 4.8 presented below, provides the correlation coefficients showing the relationships between academic performance (captured by four measures) and scores on the LASSI-HS subscales related to *self-regulation*. There were no significant relationships found between time management, concentration and study aids and the four measures of academic performance. A significant relationship between self-testing and overall academic performance was however found ( $r = -0.247$ ,  $p < 0.025$ ). The results indicate a negative relationship between these variables and therefore suggest that the more learners employ self-testing strategies, the lower their academic performance and further that a decrease in self-testing strategies is associated with increased academic performance. This unexpected finding suggests that self-testing, which assesses how important learners perceive self-testing to be and the degree to which they make use of such strategies, doesn't contribute to these learners high academic performance. Self-testing is closely related to deep level information processing strategies in that both require learners to engage with the study material in a meaningful manner and demonstrate understanding of information. Self-testing could also be understood as a manner of deep level processing as it entails reviewing one's level of understanding of the study material (Weinstein & Palmer, 1990). Therefore, as mentioned above, the level of academic performance found within this sample could be attributed to more surface level processing strategies such as rote learning, memorization and repetition.



Table 4.8 Correlations between academic performance and the subscales related to self-regulation

| LASSI-HS<br>Subscales |                    | Mathematics<br>Results | Life/Natural<br>Science<br>Results | English<br>Results | Academic<br>performance |
|-----------------------|--------------------|------------------------|------------------------------------|--------------------|-------------------------|
| Time<br>Management    | Correlation        | -0.213                 | -0.160                             | -0.075             | -0.203                  |
|                       | Coefficient        | 0.053                  | 0.149                              | 0.519              | 0.066                   |
|                       | Sig.(2-<br>tailed) | 83                     | 83                                 | 76                 | 83                      |
|                       | N                  |                        |                                    |                    |                         |
| Concentration         | Correlation        | -0.048                 | -0.067                             | 0.020              | -0.064                  |
|                       | Coefficient        | 0.644                  | 0.548                              | 0.863              | 0.565                   |
|                       | Sig.(2-<br>tailed) | 83                     | 83                                 | 76                 | 83                      |
|                       | N                  |                        |                                    |                    |                         |
| Study Aids            | Correlation        | -0.069                 | 0.015                              | 0.003              | -0.059                  |
|                       | Coefficient        | 0.538                  | 0.891                              | 0.982              | 0.598                   |
|                       | Sig.(2-<br>tailed) | 83                     | 83                                 | 76                 | 83                      |
|                       | N                  |                        |                                    |                    |                         |
| Self-testing          | Correlation        | -0.213                 | -0.212                             | -0.108             | -0.247                  |
|                       | Coefficient        | 0.053                  | 0.054                              | 0.353              | <b>0.025*</b>           |
|                       | Sig.(2-<br>tailed) | 83                     | 83                                 | 76                 | 83                      |
|                       | N                  |                        |                                    |                    |                         |

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

#### 4.3.4. Differences in scores on the LASSI-HS subscales based on parents' level of education

Further insight into the utility of the LASSI-HS was gained by an investigation into whether or not learners' scores on the LASSI-HS subscales differed based on their parents'/caregivers' level of education. This provided some information about the discriminatory nature of the LASSI-HS within the TTP. The non-parametric equivalent of a two independent samples t-test, the Mann-Whitney U, was conducted due to a violation of parametric assumptions that were discussed earlier. The scores on the LASSI-HS subscales were compared according to two groups, the low/medium level of education group and the high level of education group. The variable parental level of education was examined jointly as noted earlier in the research report: If both parents/caregivers had a tertiary level of education then they were considered to

have a high level of education. If one parent/caregiver had a tertiary level of education and the other a secondary level, the family was classified as having a high level of education. A medium level of education was assigned when parents/caregivers had obtained at least a matric/ Grade 12 level of education. If parents/caregivers had attained any Grade below matric, a low level of education was assigned.

As reflected in Table 4.9, the overall level of parental education within the sample was found to be high with 51 learners' parents/caregivers having obtained a matric or tertiary level of education. There were very few learners whose parents had obtained only a medium or low level of education. The low number of learners who had parents with a medium to low level of education led the researcher to combine the low and medium level of education into one variable labelled low/medium level of education. Table 3.5 provides the reader with the descriptive statistics of the two groups investigated in the analysis.

Table 4.9 Mann Whitney U test for differences of LASSI-HS scores across parental level of education

| LASSI-HS Subscales     | Level of parental education | N  | Mean | Std. Deviation | Sig. |
|------------------------|-----------------------------|----|------|----------------|------|
| Attitude               | Low/Medium                  | 22 | 33.1 | 6.53           | 0.49 |
|                        | High                        | 51 | 34.9 | 3.39           |      |
| Motivation             | Low/Medium                  | 22 | 33.0 | 6.02           | 0.69 |
|                        | High                        | 51 | 33.1 | 4.87           |      |
| Time Management        | Low/Medium                  | 22 | 22.5 | 7.06           | 0.37 |
|                        | High                        | 51 | 24.2 | 5.83           |      |
| Anxiety                | Low/Medium                  | 22 | 26.0 | 5.73           | 0.89 |
|                        | High                        | 51 | 26.2 | 6.49           |      |
| Concentration          | Low/Medium                  | 22 | 30.2 | 7.86           | 0.81 |
|                        | High                        | 51 | 31.7 | 4.69           |      |
| Information Processing | Low/Medium                  | 22 | 31.5 | 6.49           | 0.93 |
|                        | High                        | 51 | 32.1 | 4.62           |      |
| Selecting Main Ideas   | Low/Medium                  | 22 | 18.4 | 4.07           | 0.59 |
|                        | High                        | 51 | 19.3 | 3.57           |      |
| Study Aids             | Low/Medium                  | 22 | 26.1 | 4.58           | 0.18 |
|                        | High                        | 51 | 27.7 | 6.01           |      |
| Self-testing           | Low/Medium                  | 22 | 29.1 | 6.78           | 0.52 |
|                        | High                        | 51 | 30.9 | 4.89           |      |
| Test Strategies        | Low/Medium                  | 22 | 29.5 | 6.41           | 0.44 |
|                        | High                        | 51 | 31.1 | 5.24           |      |

As illustrated in table 4.9, the results of the Mann-Whitney U revealed no significant difference between learners whose parents had a high level of education as opposed to a low/medium level of education. An examination of the descriptive statistics further indicates no significant differences between the groups. The results of the LASSI-HS were not influenced by parental level of education; the LASSI-HS is therefore considered to be a relatively unbiased measure in the context of the TTP.

#### **4.4. Conclusion**

The results of the study provided information with regard to the levels of academic performance within the sample as well as the learning and study strategies that learners within the sample employ. Through an examination of the relationships between the scores of the LASSI-HS subscales and academic performance, it was revealed that there are specific learning strategies that are contributing to the high level of academic performance within the sample. Learning strategies that promote a deep level of understanding do not seem to contribute to the high level of academic performance within this sample. On the other hand, the level of motivation and test strategies were found to contribute more to learners' academic performance. The next chapter will provide further discussion of these results and the implications thereof.

## **Chapter Five: Discussion of results**

This chapter includes a discussion of the findings of the current study as well as the implications of these findings. Limitations of the study and recommendations for future research will also be focused upon. The present study sought to determine the utility of the LASSI-HS within the context of the TTP. In order to establish this, the following factors were examined: the levels of academic performance within the sample, the levels of scores on the LASSI-HS within the sample, the relationships between scores on the LASSI-HS subscales and academic performance and finally the differences in scores on the LASSI-HS based on parental level of education. In order to address the research questions and investigate the utility of the LASSI-HS within the TTP, archival data was examined and a number of statistical procedures were conducted.

The study showed that learners within the sample were performing at a high academic level in mathematics, life/natural science and English. Learners also achieved above average scores on the LASSI-HS subscales and therefore were understood to have effective learning and study strategies in place. The relationship between these learning strategies and academic performance revealed that there are specific learning strategies aiding these learners in their academic performance. Interestingly, there were very few significant relationships found between these two variables and the relationships that were found to be statistically significant were also found to be very weak. The results further revealed that there was no difference in the performance on the LASSI-HS subscales based on a learner's parental level of education. The utility of the LASSI-HS was determined by examining several research questions, which will be discussed further.

### **5.1 The levels of academic performance among the sample**

The levels of academic performance among the sample were found to be within the upper 70-80% range. The high level of academic performance was expected due to the fact that the participants were derived from a pre-selected group. The TTP invests in learners who are considered to be high functioning; learners are identified for the programme on account of their scholastic performance, teacher questionnaire, parent/caregiver questionnaire, participation in extra educational activities such as the Olympiad and a motivational letter written by the learner. High potential learners from disadvantaged communities or low income families are often underrepresented in enrichment and development programmes. Programmes such as the

TTP are therefore fundamental in reaching these learners and facilitating change in the South African education system.

## **5.2. The levels of scores on the LASSI-HS among the sample**

The scores for the sample on the LASSI-HS subscales revealed that learners generally employed positive learning strategies. They appear to largely have the learning and study strategies, which are assessed by the LASSI-HS, in place. The learning strategies that learners utilize have been researched extensively (Al-Hebaishi, 2012; Campbell, 2005; Haught, 1998). It has been found that learning strategies are an important determinant of academic performance. Positive learning strategies facilitate learning and thus lead to improved academic performance (Al-Hebaishi, 2012).

The LASSI-HS provided valuable information with regard to the type of learning strategies utilized by this sample of learners. Learners within this sample were found to score high on the *attitude* and *motivation* subscale. The drive to succeed and positive attitudes toward their academic pursuits has a strong influence on their high academic performance. The data suggests that learners in this sample seem to struggle with regard to selecting important material from large bodies of information for in-depth attention and analysis. The ability to effectively identify the key points from a text/ study material is essential as it allows the learner to hone in on what is relevant. This would then lead to more effective time management.

The scores on the LASSI-HS subscales led the researcher to conclude that this sample of learners is generally highly motivated with positive attitudes toward their education and academic tasks. Their learning skills could however be developed further as well as their use of self-regulatory processes. This information provides the TTP with further information into the academic skills that may be contributing to the academic success of learners in this cohort. A more in-depth understanding of the learners enrolled in the TTP will further assist programme facilitators in their task of preparing learners for tertiary education.

### **5.3. The relationships between scores on the LASSI-HS and academic performance among the sample.**

Learning strategies, based on the strategic model of learning and their relationship to academic performance was also determined. Academic performance was captured across four measures: performance in English, mathematics, life/natural science and overall academic performance. Through an investigation into these relationships, an understanding of which learning strategies are associated with the high level of academic performance within this sample could be gained. The results of the study showed very few statistically significant relationships between the learning and study strategies measured by the LASSI-HS and the academic performance of learners captured across the above four measures of academic performance. Statistically, significant negative relationships were found between the *information processing* and *self-testing* subscales and a measure of overall academic performance. Self-testing strategies and a deep level of information processing does not seem to be contributing to the academic success of learners within this sample. These two important processes encourage long term knowledge, retention and reflective learning; both of which are required for a tertiary level of education. Instead, significant positive relationships were found between measures of academic performance and the *test strategies* and *motivation* subscale. Test taking strategies and a positive will were more strongly related to academic achievement within this sample. An in depth discussion on the three elements of the strategic model of learning and their relation to academic performance follows.

#### **5.3.1. Will**

There were no significant relationships between anxiety, attitude and the four measures of academic performance outlined in the previous section of the research report. The only significant relationship reported was between motivation and academic performance in life/natural science. Although there was a statistically significant relationship, the relationship was found to be weak. This relationship indicates that high levels of academic performance in life/natural science found in the sample are associated with high levels of motivation.

A majority of studies conducted, both locally and internationally (Albaili, 1997; Haynes, 1987; Haynes, 1988; Sinkavich, 1991), investigating the relationship between the LASSI/LASSI-HS subscales and academic performance have identified the motivation subscale as a key predictor of academic performance.

According to Dembo and Selbi (2004), a central factor differentiating high academic achievers from learners who are not excelling academically is the ability to motivate themselves. The LASSI/LASSI-HS examines the intrinsic motivation of learners. It is proposed that intrinsic motivation leads learners to accept more responsibility for tasks that are related to academic success (for example preparing for class, finishing academic tasks on time and reading the assigned textbooks). The positive attitudes and high value that the learners in this sample placed on their education may have contributed to the high level of motivation that they demonstrated towards their studies. The motivation and dedication toward their education can further be seen in the extra academic activities that these learners are involved in (for example their participation in the Olympiad).

### 5.3.2. Learning skills

With regard to the subscales related to learning skills, significant relationships were noted between the *information processing* subscale and overall academic performance, the *test strategies* subscale and overall academic performance as well as the *test strategies* subscale and life/natural science.

A positive relationship was found between test strategies and life/natural science as well as between test strategies and overall academic performance. Therefore, a high number of test strategies applied by learners are associated with a high performance rate in life/natural science and overall academic performance. The importance of actively preparing for tests/examinations has been highlighted in studies of academic performance; the results of this study attest to the importance of this preparation and strategy. The high degree of test taking strategies employed by learners in the sample is considered to be contributing to the high level of academic performance among these learners. Test taking strategies allow learners to maximize their performance on an assessment; they are prepared for the type of questions and methods of assessment and can thus apply their knowledge more effectively. Learners who do not employ such strategies might perform lower, even though they are equipped with the knowledge needed to address the question (Scruggs & Mastropiere, 1992). An international study examined the relationship between test preparation and academic performance on a state-wide high school exit examination, this study concluded that there were significant relationships between test preparation and academic performance in the various subjects included in the study. The extent of these relationships ranged however with the strongest relationship being between test preparation and mathematics (Norton & Park, 1996).

A negative relationship was reported between information processing and overall academic performance. These results indicate that the higher the degree to which a learner utilizes information processing techniques, the lower the academic performance obtained by learners. Also, a lower degree of information processing skills employed by learners is associated with higher academic performance. These findings were unexpected and suggest that learners within this sample may not be employing a deep level of information processing strategies that promote critical engagement and understanding of the study material. Learners may therefore find it difficult to integrate new information in such a manner that will ensure effective retrieval and acquisition (Weinstein & Palmer, 1990). Learners within this sample could be understood to process information predominately on a surface level, engaging in more rote learning, memorization and repetition (Dinsmore & Alexander, 2012). This might lead to information not being retained in learners' long-term memory. This might become problematic on a tertiary level of education as more critical and meaningful engagement with study material is required.

According to Askari, et al. (2011) there are four different types of information processing strategies that could generally be identified among learners namely: learners who predominately engage in surface level processing strategies, learners who predominately engage in deep level processing strategies, learners who are not committed to any one type of information processing strategy and finally learners who use the two modes of information processing in a complementary fashion. Learners who complement both modes of information processing are known as strategic learners (Askari, et al., 2011). These learners are able to easily adapt their learning strategy to meet the demands of a particular task (Entwistle, Koseki & Politt, 1987 as cited in Askari, et al., 2011). According to Dinsmore & Alexander (2012), there is great controversy within the literature with regard to information processing and academic performance. Generally, deep levels of information processing have been associated with better learning outcomes where a surface level of processing has been associated with poorer learning outcomes. Given the mixed findings within the literature with regard to the relation between academic performance and levels of information processing, Dinsmore & Alexander (2012) suggests that the most effective approach would be to examine the demands of the particular task and apply the appropriate level of information processing strategies where necessary; thus applying a complementary strategy.



The *selecting main ideas* subscale is closely related to the information processing subscale in that the ability to extract the relevant points from a large body of text is closely aligned with the ability to process information in a meaningful manner. According to the results of the LASSI-HS, on average, learners in this sample struggled with identifying the important points from the study material. If learners are not equipped with this skill, the learner could face a number of challenges. An inability to select critical information will complicate the learning task and increase the amount of time taken for a learner to acquire the relevant knowledge. If learners were to engage in more deep processing strategies then they would acquire more meaning and understanding from the study material. This will in turn assist learners in identifying critical points in the learning process.

### 5.3.3 Self-regulation

With regard to the self-regulation subscales, a statistically significant negative relationship was noted between the *self-testing* subscale and overall academic performance. Therefore, the results suggest that the more learners employ self-testing strategies, the lower their academic performance and furthermore, a decrease in self-testing strategies is associated with increased academic performance. Learners within this sample do not seem to engage in critical self-testing and reflective skills. This was an unexpected finding as self-regulatory processes such as self-testing have been found to be positively correlated to academic performance. It was also surprising that the *self-testing* subscale was the only self-regulating subscale found to be significantly related to academic performance.

According to Zimmerman (1990) self-regulating learning requires learners to be metacognitively, motivationally and behaviourally active participants in their own learning processes. It is believed that when learners are active participants in the learning process, they take more responsibility for their academic performance. This sense of responsibility and control has been found to play an important role in academic performance. Self-testing in particular provides learners with the opportunity to review material and gain a deeper understanding of concepts; it also assists learners in preparation of tests/exams and thus improves performance.

This study found that the LASSI-HS provided useful information on the learning strategies utilized by these learners as well as information with regard to the learning strategies that are contributing to the high level of academic performance found within the sample. The high motivation and positive attitudes among learners seem to be the driving force for learners' high academic performance.

The LASSI-HS provides the Targeting Talent Programme (TTP) facilitators with information on the learning strategies utilized by learners participating in their programme. It also provides facilitators with information regarding which strategies are contributing to the academic success of these learners and in turn which strategies should be emphasised or enhanced through programme interventions in preparation for tertiary education. Learning strategies have been defined as controllable methods employed by learners in order to achieve their learning goals (Al-Hebaishi, 2012). They are therefore more viable for change over time. By targeting learning strategies the TTP could provide learners with the necessary tools for successfully completing their schooling and preparing for a tertiary level of education.

#### **5.4. The LASSI-HS subscales and the level of parental education**

There have been many studies that have attested to the impact that the level of parental education has on a learner's academic performance (Kellaghan, 1977; Sarwar, 2004). Higher levels of parental education have been found to be associated with more positive academic outcomes (Sarwar, 2002; Sarwar, 2004). Although learners within this sample were considered to have come from more disadvantaged communities, the level of parental education was found to be high. This could have contributed to the high academic performance of learners within the TTP. As noted in a previous chapter, higher levels of parental education has been linked to exposure to a high quality learning environment for the child and better communication with regard to academic activities. The level of parental education could also influence learners' attitude to their studies and influence parental assistance with learners' academic tasks (Fantuzzo & Tighe, 2011; Farooq, et al. 2011; Kellaghan, 1977). A high level of parental education could also positively influence the value placed on education. This was seen among learners in the sample who expressed positive attitudes in relation to their studies and based on their enrolment in the programme can be said to be greatly invested in their education and future.

Although there is evidence to suggest that the level of parental education could affect learners' academic performance (Dubow, Boxer, & Huesmann, 2009) the current study revealed that scores on the LASSI-HS didn't differ based on learners' parental level of education. This may suggest that the LASSI-HS can be utilized as an unbiased measure within the context of its use within the TTP. This adds value to the utility of this instrument within this particular context.

### **5.5 Implications of the study and recommendations for the TTP**

The results of the current study provided information on the learning strategies that learners within this sample employed as well as the learning strategies that contributed to their academic performance. These findings have implications for the TTP facilitators in their attempt to further develop and improve their programme.

According to Weinstein & Palmer (1990) meaningful learning is facilitated by a deep level of understanding of the study material and an evaluation of that understanding. These are essential components of effective learning. This research study revealed that these strategies (assessed by the *information processing* and *self-testing* subscales) are not contributing to learners' academic performance in English, mathematics and life/natural science. Thus, academic performance among this sample might be attributed to more surface level processing strategies such as memorization, repetition and rote learning. Furthermore, preparation strategies for tests and examinations were found to contribute to academic performance. Therefore it can be concluded that academic performance in this sample could be attributed to surface level information processing strategies and effective test/examination preparation strategies. These strategies may not lead to high levels of academic performance on a tertiary level of education since a tertiary level of education requires learners to engage with the study material in a critical and self-reflective manner (Vermetten, Vermunt, & Lodewijks, 1999). The TTP could therefore include workshops to enhance and further develop these strategies in an effort to better prepare learners for the demands of tertiary education. If learners are not equipped with these necessary strategies they might encounter challenges in the learning process at a tertiary level of education.

An examination of the scores on the LASSI-HS subscales indicates that learners would benefit from interventions that are focused on reducing learners' anxiety around academic performance. A meta-analysis, of fifty six studies, explored the results of various test reduction programmes and found that the most effective treatment programmes employed skills focused approaches

with behavioural or cognitive approaches (Ergene, 2003). TTP facilitators can incorporate some of these techniques into workshops focused on reducing anxiety related to academic performance. Scores on the LASSI-HS further reveal that learners could benefit from workshops on how to improve their test-taking strategies and preparation for tests and exams. Improved test taking strategies could also allow learners more time for the test as they are prepared for the type of questions and how to address them (Scruggs & Mastropiere, 1992). They could also benefit from workshops around developing their ability to effectively select main ideas and improve their time management skills.

Although the TTP targets learners from previously disadvantaged communities, learners within this sample that are enrolled in the TTP have been found to come from families with a high level of parental education. They also attend schools that have been rated within the 4<sup>th</sup> and 5<sup>th</sup> quintile by the department of education. This indicates that these learners are exposed to a number of protective factors that could be contributing to their high level of academic performance. These protective factors could include: level of parental education and quality of schooling for example. Programmes such as the TTP could reach out to learners in more rural and underdeveloped communities, who might not be exposed to many protective factors. Programmes such as the TTP are highly valuable within the South African context. These programmes are essential as they address the need for improved access to tertiary institutions, especially within previously marginalized communities. Furthermore, they provide academic support to learners thus ensuring successful completion of their schooling and facilitating their transition to tertiary education. Some studies, both locally and internationally, have found that secondary school learners are not prepared for tertiary education (Agar & Knopfmacher, 1995; Bettinger & Long, 2009). Therefore, secondary school learners could benefit significantly from this programme. Furthermore, the TTP could have a significant impact on learners within more rural and underdeveloped communities.

The results of the study suggest that the LASSI-HS is a valuable measure within the context of the TTP. The information generated by the LASSI-HS as a screening measure can assist TTP facilitators in identifying which learning and study strategies learners have been utilizing for their academic success. This information is essential as it allows the TTP to understand the academic skills related to the learners' performance and further target these skills. However, it is advised that the LASSI-HS be used in conjunction with other supplementary tools in order to further the information that TTP facilitators generate to plan programmes for learners. The Survey of Study Habits and Attitudes (hereby referred to as the SSHA) could be utilized

together with the LASSI-HS to ascertain a more holistic view of learners' study strategies and approach to academic tasks. The SSHA is a questionnaire that helps identify learners with ineffective study habits and attitudes. The SSHA subscales include: delayed avoidance, work methods, study habits, teacher approval, education acceptance, study attitudes and study orientation. The information gathered from the SSHA can also be used to provide guidance in areas identified as in need of further development. Although similar to the LASSI-HS, the SSHA provides more in-depth information concerning a learner's approach to academic tasks, for example whether a learner procrastinates and struggles to start academic tasks. The results of the SSHA could be correlated with results of the LASSI-HS, thereby providing a more extensive account of a learner.

### **5.6. Limitations of the study**

Ideally, a large sample size is preferred when conducting quantitative procedures as this provides a greater account of generalizability for the sample (Walliman, 2001). This study was limited in this regard as it had a sample size of ninety learners. Although this sample size is acceptable, a bigger sample might have yielded more accurate results.

The LASSI-HS subscales differed slightly in that the number of items within each subscale differed. The *time management* subscale consists of seven items, the *selecting main ideas* subscale on the other hand consists of five items and the remaining subscales consists of eight items each. These differences in the items of the LASSI-HS subscales could have affected the results slightly and therefore results had to be interpreted with caution. Furthermore, the LASSI-HS is a self-report measure that assesses learners' perceptions of various aspects contributing to learning and academic performance. The self-report nature of the LASSI-HS could have proven disadvantageous, for example, scores can be manipulated by learners at their own will and learners might not be completely honest (Roark & Harrington, 1969).

The participants in this study were carefully pre-selected and represented a homogenous group. Thus there was little variability between participants. The findings of this study cannot therefore be generalized to the general populations with regards to the use of the LASSI-HS within pre-university programmes. A more heterogeneous group might have been more beneficial in this regard.

The current research study made use of archival data and although there were some advantages to this method of analysis, the researcher also experienced some challenges in this regard. The use of archival data meant that the researcher was unable to observe learners during the assessment and therefore could not comment on any behavioural observations during the assessment. Behavioural observations provide valuable information about an individual. In addition to the quantitative results, behavioural observations would have added some qualitative insight in relation to learners' performance.

The researcher received information with regard to learners' academic performance (captured from learners' end of the year Grade nine results) and scores on the LASSI-HS captured in June of the learners' Grade 10 year. The time between the two results could have proven disadvantageous in the study. In terms of internal validity, time is considered a factor. The concept of maturity is applicable in this sense, the duration of time between the end of year results that were used as a measure of academic performance and the administration of the LASSI-HS might be considered a threat to the internal validity (Moerdyk , 2009).

### **5.7. Recommendations for future research**

This research study was a pioneering study and therefore further research is necessary on the utility of the LASSI-HS in pre-university programmes. The following are some suggestions for future research.

A more longitudinal study might be beneficial in understanding the role that the LASSI-HS plays within the context of the study. Future research could examine the scores of the LASSI-HS over the full course of the programme and determine whether there have been any changes over the course of the programme. Follow up investigations can be made into the learning strategies utilized once learners have completed the programme and are within a tertiary educational institution. This could be an effective method in which to track the progress of the TTP learners.

There were a number of recommendations made based on the results of the LASSI-HS for a particular cohort of TTP learners. An area for future research could be to examine the effectiveness of these suggested interventions. The LASSI-HS could be administered before the intervention and then again after the intervention has been implemented. The before and after LASSI-HS scores could be analysed, using a control group, and the researcher could gain an understanding of the effectiveness of the inventions.

It would be beneficial to uncover the predictive capacity of the instrument. In order to establish the predictive nature of the LASSI-HS it would be useful to correlate the scores of the LASSI-HS with academic results before and after administration of the instrument. This will provide insight into the relationships between these two variables and whether the scores on the LASSI-HS provided an accurate indication of a learner's academic performance.

## **5.8. Conclusion**

This research study sought to determine the utility of the LASSI-HS within the context of the TTP. The TTP is a pre-university enrichment programme that seeks to build on the talents of learners from disadvantaged backgrounds in an attempt to increase the chances of access to tertiary education within South Africa. The LASSI-HS is utilized within the programme to ascertain the areas of strength and further development with regard to learners' study strategies. The study found that the LASSI-HS provided useful information with regard to the learning strategies that contribute to learners' academic performance and this can be used for future program planning and intervention within the TTP.

Most assessment measures, designed to identify learning potential and learning strategies, used within South Africa have been developed within westernized countries. South African educators and practitioners thus face the challenge of identifying and developing culture and context appropriate measures to optimally assess learner functioning and potential. Agar & Knopfmacher (1995) suggest that instruments such as the LASSI-HS be tailored slightly to the South African context.

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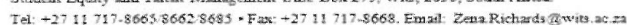
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Please complete this application form for each learner that is nominated. This application form must be completed by the Principal and/or Educator(s) at the school that has nominated the learner. Note that only learners who meet the specified academic criteria may be nominated. Please do not provide the same recommendation for each learner and ensure that each recommendation is sincere, honest and a true reflection of the learner. Please answer all the questions in this form.

[illegible]

Please insert the **learner's details** in this section.

[illegible][illegible]

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| Male   | 1 |
| Female | 2 |

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|----------|---|
| African  | 1 |
| White    | 2 |
| Coloured | 3 |

Other (specify): .....

Please insert the **nominator's** details in this section.

[illegible][illegible]

|        |   |
|--------|---|
| Male   | 1 |
| Female | 2 |

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| African  | 1 |
| White    | 2 |
| Coloured | 3 |

Other (specify): .....

5. What is your highest level of education? .....

6. Your cell phone number: 

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9. Please tell us what the physical address and postal address of your school is:

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City: .....  
Province:.....  
Postal code: .....

10. I have known the learner for \_\_\_\_\_ year(s) and \_\_\_\_\_ month(s).

11. I have known the learner in the capacity of:

|                      |   |
|----------------------|---|
| Principal            | 1 |
| Educator             | 2 |
| Head of Department   | 3 |
| Advisor/mentor       | 4 |
| Other (specify)..... | 5 |

### Section C: Evaluation of Learner Characteristics

1. Please rate the learner using the following criteria:

SD = Seldom or never observe this characteristic;  
O = Occasionally observe this characteristic;  
N = Neutral/uncertain  
F = Frequently observe this characteristic;  
AA = Almost always observe this characteristic.

| 1. Learning Characteristics           | SD | O | N | F | AA |
|---------------------------------------|----|---|---|---|----|
| A. Understands new ideas easily       | 1  | 2 | 3 | 4 | 5  |
| B. Is attentive at school             | 1  | 2 | 3 | 4 | 5  |
| C. Is alert at school                 | 1  | 2 | 3 | 4 | 5  |
| D. Remembers school work easily       | 1  | 2 | 3 | 4 | 5  |
| E. Is eager to learn new ideas        | 1  | 2 | 3 | 4 | 5  |
| F. Has a good general knowledge       | 1  | 2 | 3 | 4 | 5  |
| G. Easily grasps new topics at school | 1  | 2 | 3 | 4 | 5  |
| H. Is able to plan school work well   | 1  | 2 | 3 | 4 | 5  |



|                                                       |   |   |   |   |   |
|-------------------------------------------------------|---|---|---|---|---|
| I. Is able to find solutions for challenges at school | 1 | 2 | 3 | 4 | 5 |
| J. Understands cause and effect relationships         | 1 | 2 | 3 | 4 | 5 |
| K. Can make decisions when confronted with a problem  | 1 | 2 | 3 | 4 | 5 |
| L. Shows an interest in reading                       | 1 | 2 | 3 | 4 | 5 |
| M. Has good English vocabulary                        | 1 | 2 | 3 | 4 | 5 |
| N. Shows the ability to think critically about issues | 1 | 2 | 3 | 4 | 5 |
| O. Has awareness of social issues in South Africa     | 1 | 2 | 3 | 4 | 5 |

| 2. Creativity characteristics                         | SD | O | N | F | AA |
|-------------------------------------------------------|----|---|---|---|----|
| A. Is curious about many different topics             | 1  | 2 | 3 | 4 | 5  |
| B. Has a good imagination                             | 1  | 2 | 3 | 4 | 5  |
| C. Can come up with original ideas to solve problems  | 1  | 2 | 3 | 4 | 5  |
| D. Can see more than one solution to a problem        | 1  | 2 | 3 | 4 | 5  |
| E. Can combine different solutions to solve a problem | 1  | 2 | 3 | 4 | 5  |
| F. Understands the consequences of his/her decisions  | 1  | 2 | 3 | 4 | 5  |
| G. Understands the consequences of his/her actions    | 1  | 2 | 3 | 4 | 5  |
| H. Willing to try new methods of problem solving      | 1  | 2 | 3 | 4 | 5  |
| I. Can manage disagreements when solving problems     | 1  | 2 | 3 | 4 | 5  |
| J. Is able to find solutions to difficult problems    | 1  | 2 | 3 | 4 | 5  |
| K. Solves problems in his/her own way                 | 1  | 2 | 3 | 4 | 5  |

| 3. Motivation Characteristics                                         | SD | O | N | F | AA |
|-----------------------------------------------------------------------|----|---|---|---|----|
| A. Can set his/her own goals                                          | 1  | 2 | 3 | 4 | 5  |
| B. Is committed to completing a given task                            | 1  | 2 | 3 | 4 | 5  |
| C. Is enthusiastic about school activities                            | 1  | 2 | 3 | 4 | 5  |
| D. Able to self-motivate when pursuing a task                         | 1  | 2 | 3 | 4 | 5  |
| E. Is persistent in tasks                                             | 1  | 2 | 3 | 4 | 5  |
| F. Completes projects on time                                         | 1  | 2 | 3 | 4 | 5  |
| G. Eager for new challenges                                           | 1  | 2 | 3 | 4 | 5  |
| H. Takes responsibility for tasks                                     | 1  | 2 | 3 | 4 | 5  |
| I. Is independent                                                     | 1  | 2 | 3 | 4 | 5  |
| J. Can self-reflect                                                   | 1  | 2 | 3 | 4 | 5  |
| K. Believes that he/she has the ability to influence his/her own life | 1  | 2 | 3 | 4 | 5  |
| L. Blames other people for his/her mistakes if he/she makes one       | 1  | 2 | 3 | 4 | 5  |

| 4. Leadership Characteristics                            | SD | O | N | F | AA |
|----------------------------------------------------------|----|---|---|---|----|
| A. Is seen as a leader by peers                          | 1  | 2 | 3 | 4 | 5  |
| B. Others turn to him/her for help when making decisions | 1  | 2 | 3 | 4 | 5  |
| C. Is seen as someone who offers good advice             | 1  | 2 | 3 | 4 | 5  |
| D. Is popular with peers                                 | 1  | 2 | 3 | 4 | 5  |
| E. Interacts well with his/her peers                     | 1  | 2 | 3 | 4 | 5  |
| F. Interacts well with adults                            | 1  | 2 | 3 | 4 | 5  |
| G. Can encourage other people to work toward goals       | 1  | 2 | 3 | 4 | 5  |
| H. Can adapt to different situations                     | 1  | 2 | 3 | 4 | 5  |
| I. Has a sense of justice                                | 1  | 2 | 3 | 4 | 5  |

2. How would you rate the learner's academic performance in their grade? Are they in the:

|         |   |
|---------|---|
| Top 5%  | 1 |
| Top 10% | 2 |
| Top 15% | 3 |
| Top 20% | 4 |

3. Please rate the learner in terms of the following characteristics:

| Characteristic                                                | Yes | No | Uncertain |
|---------------------------------------------------------------|-----|----|-----------|
| A. Motivated to attend Higher Education after matric          | 1   | 2  | 3         |
| B. Is involved in extracurricular academic activities         | 1   | 2  | 3         |
| C. Is involved in community projects                          | 1   | 2  | 3         |
| D. Demonstrates an interest in the News                       | 1   | 2  | 3         |
| E. Demonstrates leadership potential                          | 1   | 2  | 3         |
| F. Takes extra subjects over and above the necessary subjects | 1   | 2  | 3         |
| G. Is interested in many different topics                     | 1   | 2  | 3         |
| H. Can communicate proficiently in English                    | 1   | 2  | 3         |
| I. Can write proficiently in English                          | 1   | 2  | 3         |

#### Section D: Motivation for Learner Characteristics

1. Please describe the learner's academic performance (for example, learning areas, awards, academic success):

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2. Please describe the learner's personal qualities (for example, character, integrity, personality):

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3. Please describe the learner's involvement in leadership activities:

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4. Please describe the learners ability to express him- or her-self in English:

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5. Please describe what makes this learner unique compared to his or her peers:

.....

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.....

.....

6. What other factors do you feel should be taken into account when we consider this learner's application:

.....

.....

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.....

.....

## Appendix B



### TARGETING TALENT PROGRAMME

Funded by the South African National Roads Agency Ltd (SANRAL)

Student Equity and Talent Management Unit, Box 273, Wits, 2050, South Africa.

Tel: +27 11 717-8665-8662-8685 • Fax: +27 11 717-8668. Email: Zena.Richards@wits.ac.za



### 2013 Biographical Questionnaire (Form B)

The Biographical Questionnaire must be completed by each nominated learner. It covers a range of aspects that will assist the Selection Committee to understand the learner's personal circumstances and experiences.

1. Surname:

2. First name:

3. Second name:

4. Preferred name:

5. Gender

|        |   |
|--------|---|
| Male   | 1 |
| Female | 2 |

6. Population group:

|              |   |
|--------------|---|
| African      | 1 |
| White        | 2 |
| Coloured     | 3 |
| Indian       | 4 |
| Chinese      | 5 |
| Other: ..... | 6 |

7. High school:

### Section A: School Achievements

Please answer the questions below that relate to your academic achievements at school, in your home and in your community.

#### 1. What primary school(s) did you go to?

| Name of School | Grade | Town and Province | Year |
|----------------|-------|-------------------|------|
| A1.            | A2.   | A3.               | A4.  |
| B1.            | B2.   | B3.               | B4.  |
| C1.            | C2.   | C3.               | C4.  |
| D1.            | D2.   | D3.               | D4.  |
| E1.            | E2.   | E3.               | E4.  |

2. What high school(s) have you attended?

| Name of School | Grade | Town and Province | Year |
|----------------|-------|-------------------|------|
| A1.            | A2.   | A3.               | A4.  |
| B1.            | B2.   | B3.               | B4.  |
| C1.            | C2.   | C3.               | C4.  |
| D1.            | D2.   | D3.               | D4.  |
| E1.            | E2.   | E3.               | E4.  |

3. Where is your high school (the one you are currently attending) situated – please mark with an X:

|                  |   |
|------------------|---|
| Suburb           | 1 |
| Township         | 2 |
| Rural            | 3 |
| Other (specify): | 4 |
| Unknown:         | 5 |

4. Which of the following facilities do you have access to in your high school – please mark with an X. You may choose more than one option:

|                            |   |
|----------------------------|---|
| Computer                   | 1 |
| Electricity                | 2 |
| Science laboratory         | 3 |
| Library                    | 4 |
| Playing and/or sport field | 5 |

5. Describe any challenges that you have experienced at school: .....

.....

.....

.....

6. Describe how you have dealt with these challenges: .....

.....

.....

.....

7. Please list your Grade 9 subjects and your results (mark or percentage) for them:

| Subject | Mark/Percentage |
|---------|-----------------|
| A1.     | A2.             |
| B1.     | B2.             |
| C1.     | C2.             |
| D1.     | D2.             |
| E1.     | E2.             |
| F1.     | F2.             |
| G1.     | G2.             |
| H1.     | H2.             |

|     |     |
|-----|-----|
| I1. | I2. |
| J1. | J2. |

8. Please list your Grade 10 subjects (if you are in Grade 10 and have them) and your results (mark or percentage) for them:

| Subject | Mark/Percentage |
|---------|-----------------|
| A1.     | A2.             |
| B1.     | B2.             |
| C1.     | C2.             |
| D1.     | D2.             |
| E1.     | E2.             |
| F1.     | F2.             |
| G1.     | G2.             |
| H1.     | H2.             |
| I1.     | I2.             |
| J1.     | J2.             |

9. Which subject(s) did you enjoy the most in Grade 9 and Grade 10 (if you are in Grade 10) and why did you enjoy it/them?

| Subject | Reason |
|---------|--------|
| A1.     | A2.    |
| B1.     | B2.    |
| C1.     | C2.    |
| D1.     | D2.    |
| E1.     | E2.    |

10. Which subjects do you do well in and why do you think you do well?

| Subject | Reason |
|---------|--------|
| A1.     | A2.    |
| B1.     | B2.    |
| C1.     | C2.    |
| D1.     | D2.    |

|     |     |
|-----|-----|
|     |     |
| E1. | E2. |
|     |     |

11. In what year did you begin Grade 1:

12. Have you repeated any grade: 

|     |   |
|-----|---|
| Yes | 1 |
| No  | 2 |

13. List any awards, prizes or recognition you have received (at school) for academic achievement:

.....

.....

.....

.....

.....

14. List any extra-curricular activities in which you have participated and any position of leadership or leadership role you have played in these activities :

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.....

15. Describe any other personal achievements of which you are proud:

.....

.....

.....

.....

.....

16. Have you participated in any Olympiad: 

|     |   |
|-----|---|
| Yes | 1 |
| No  | 2 |

17. If yes, please indicate what Olympiads you have participated in:

| Name of Olympiad                                         | Participation Date | Result |
|----------------------------------------------------------|--------------------|--------|
| A. Eskom Expo for Young Scientists                       | A1.                | A2.    |
| B. Mathematics Olympiad                                  | B1.                | B2.    |
| C. Natural Science Olympiad (and Life Sciences Olympiad) | C1.                | C2.    |
| D. Computer Olympiad                                     | D1.                | D2.    |

|                                  |     |     |
|----------------------------------|-----|-----|
| E. Technology Olympiad           | E1. | E2. |
| F. Other (please specify): ..... | F1. | F2. |
| G. Other (please specify): ..... | G1. | G2. |
| H. Other (please specify): ..... | H1. | H2. |
| I. Other (please specify): ..... | I1. | I2. |
| J. Other (please specify): ..... | J1. | J2. |

**18. Describe the impact that participating in the Olympiad(s) has had on you:**

.....

.....

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### Section B: Interests and Future Plans

**1. Please tell us about a person who has had a positive impact on you (for example, a role model or personal hero):**

.....

.....

.....

.....

.....

**2. Do you read:**

|     |   |
|-----|---|
| Yes | 1 |
| No  | 2 |

**3. If yes, what magazines, newspapers and/or books do you read:**

.....

.....

.....

.....

.....

**4. Is there a News item that has recently attracted your attention?**

|     |   |
|-----|---|
| Yes | 1 |
| No  | 2 |

**5. If yes, please describe what the News item was and why it attracted your attention:**

.....

.....

.....

.....



.....

.....

6. List some of your favorite books, magazines and/or newspapers:

| Name |
|------|
|      |
|      |
|      |
|      |
|      |
|      |
|      |
|      |
|      |
|      |
|      |
|      |
|      |
|      |

7. If you listed a book(s)/magazine(s) and/or newspaper(s), please describe what you liked about this it:

.....

.....

.....

.....

.....

8. Do you watch TV programmes?

|     |   |
|-----|---|
| Yes | 1 |
| No  | 2 |

9. If yes, please describe what TV programmes you watch and why you like to watch them:

.....

.....

.....

.....

.....

10. What are your plans after you complete school (for example, study, work, etc):

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.....

11. What career (s) or job (s) are you interested in and why are you interested in it (them):

.....

.....

.....

.....

12. Write down three statements that describe your personality or character:

.....

.....

.....

.....

### Section C: Your Family and Community

1. Who do you live with? (tick all that are applicable):

|                               |    |
|-------------------------------|----|
| Father                        | 1  |
| Mother                        | 2  |
| Sister                        | 3  |
| Brother                       | 4  |
| Grandmother                   | 5  |
| Grandfather                   | 6  |
| Aunt                          | 7  |
| Uncle                         | 8  |
| Boarding school               | 9  |
| Other (please specify): ..... | 10 |

2. How many people live in your household (including yourself)?

3. Please indicate the occupations and level of education of your family members

| Family member          | Occupation/employer | Highest level of education attained |
|------------------------|---------------------|-------------------------------------|
| A. Father/Guardian     | A2.                 | A3.                                 |
| B. Mother/Guardian     | B2.                 | B3.                                 |
| C. Other(e.g. sisters) | C2.                 | C3.                                 |
| D.                     | D2.                 | D3.                                 |
| E.                     | E2.                 | E3.                                 |
| F.                     | F2.                 | F3.                                 |
| G.                     | G2.                 | G3.                                 |

4. Has there been a death or serious illness in your family in the past five years?

|     |   |
|-----|---|
| Yes | 1 |
| No  | 2 |

5. If yes, please provide some details:

.....

.....

.....

.....

.....

6. Please describe any member of your community who you consider to be successful and tell us why you think that they are successful:

.....

.....

.....

.....

.....

7. List three tips that you would give to a friend to help them succeed in a programme like the TTP:

.....

.....

.....

.....

.....

8. What challenges would you expect to face staying in a large city like Johannesburg?

.....

.....

.....

.....

.....

9. How would you deal with these challenges?

.....

.....

.....

.....

.....

## Appendix C



## TARGETING TALENT PROGRAMME

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## 2013 Learner Motivation Essay (Form C)

The learner motivation must be completed by the learner. It consists of one essay question that the learner must complete in his or her own handwriting.

1. Write an original essay of 300 - 500 words that discusses the two topics below:

- Describe your community and what influence it has on you.
- Why did you apply to this programme, and how do you think that being selected to participate in this programme would add value to your life?

[illegible]

## Appendix D

### Participant Information Sheet: Invitation to Participate in Research Nominator Information Sheet

Dear Nominator

We (Student Equity and Talent Management Unit) are inviting you as a principal/educator of a learner who has applied for the Targeting Talent Programme (TTP) to allow us to use the information on the Nomination Form for research. By doing this you will provide us with important information that will help us to improve our service to other learners and improve our programme.

#### Purpose of the research

SETMU engages in research for programme monitoring and evaluation. The information is used to help us monitor and evaluate TTP. We also use the information to help us answer important questions about talented learners. The data that we collect might be used by students or staff at the University of the Witwatersrand for their research (such as a master's or doctoral study).

#### What you are required to do if you agree to be part of the research

As part of the nomination process we ask you to fill in a Nomination Form. This information is used by the SETMU Selection Committee to choose successful learners. This information is also useful for us to use for research. If you allow us to use this information for research please tell us on the consent sheet that you allow it.

#### Research agreement

SETMU promises you that:

- Allowing us to use the information for research purposes is voluntary. You may choose for us to not use the information for any research;
- There are no negative consequences for you, your school, or any learner if you do not want us to use the information for our research. The nominated learner and your school will not lose any benefits from the programme if you choose not to let us use your information. Under no circumstance will a learner that you nominate be given any less consideration because you have chosen to not allow us to use the information for research. Please do not feel compelled or forced to allow us to use the information. Every application, regardless of permission for research, is given equal consideration in the selection;
- Each Nomination Form will have a consent sheet. We require written informed consent before we use any information for research;
- We do not use your name in any of the reports we write or research we do, so your responses will always be anonymous;
- All the data that we collect is kept safely locked in our offices and all databases have passwords on so that only the researchers can have access to the information.

If you have any concerns about the research you are welcome to contact Zena Richards. You may have access to the research results. These results can be obtained by contacting Zena Richards. Her contact details are as follows:

#### Zena Richards

Director: Student Equity and Talent Management Unit

Tel: 011 717 8665

Fax: 011 717 8668

Zena.Richards@wits.ac.za

University of the Witwatersrand

## Appendix E



Research Office

### HUMAN RESEARCH ETHICS COMMITTEE (NON MEDICAL)

H110919 Richards

#### CLEARANCE CERTIFICATE

#### PROTOCOL NUMBER H110919

#### PROJECT TITLE

Talent Development Programme: Application Forms

#### INVESTIGATOR(S)

Ms Z Richards

#### SCHOOL/DEPARTMENT

Human and Community Development

#### DATE CONSIDERED

16 September 2011

#### DECISION OF THE COMMITTEE

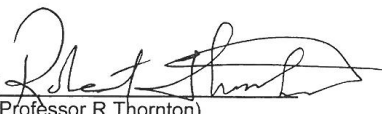
Approved Unconditionally

#### EXPIRY DATE

30 September 2013

DATE 24 September 2011

CHAIRPERSON

  
(Professor R Thornton)

#### DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

  
Signature

16 / 11 / 2011  
Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

