

**ADOLESCENT SELF-REGULATED LEARNING  
DEVELOPMENT IN SCHOOL: A PSYCHO-EDUCATIONAL  
PERSPECTIVE**

by

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# DECLARATION

Student number: 08012547

I declare that **ADOLESCENT SELF-REGULATED LEARNING DEVELOPMENT IN SCHOOL: A PSYCHO-EDUCATIONAL PERSPECTIVE** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



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(Mrs.) M.M. Moseki

29 November 2013

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DATE

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## SUMMARY

High school students need to be equipped with the competencies that may enable them to adapt to the increasing demands of learning in the school and beyond. To this end, the main research question of this study was, namely *How can the self-regulated learning of adolescents be developed at high school?* The aim of the study was to design, implement and evaluate a study skills programme for high school students. The social-cognitive theory, in particular the self-regulated Learning (SRL) theory, was used as the conceptual framework on which this study was based.

An explanatory, sequential, mixed-methods research design was implemented. Purposeful sampling was used to select the participants in the three phases of the research project. Two classes of Grade 10-students (an experimental and a comparison group) from one school participated in the study, as follows: (i) in the first quantitative phase both classes wrote a pre-test, using the Learning and Strategies Inventory - High School Version (LASSI-HS); (ii) this was followed by a qualitative phase over 10 weeks. During this time a programme was implemented with the experimental group, once per week for 30 minutes (during school hours), and a 30 minute session in the afternoons. Individual work was also done with eight students, who were purposefully sampled. Between one and four sessions were held with each of the eight students. During the 10 weeks data were collected continuously by means of individual interviews with the eight students, as well as from their journals. In addition, the researcher collected data by means of field-notes. (iii) After the 10 weeks, the final quantitative phase involved both the experimental and the comparison groups in the writing of a post-test.

The results indicated that the programme to enhance the students' *goal-setting*, *self-monitoring* and *self-evaluation* strategies was successful. The students also indicated an improvement in their *attitudes*, *motivation*, *information-processing*, and *in selecting the main ideas* in their study material. However, shortcomings were noted in certain areas. Based on the literature and the empirical findings of the study, an improved programme for the development of the adolescents' SRL in

high school was designed. The programme recommended the early commencement of the programme, and that the two problem areas that were identified, namely *time-management* and *motivational strategies* be emphasised.

### **KEY WORDS**

- self-regulated learning
- high school
- mixed-methods research
- learning and study strategies
- adolescents
- the social-cognitive theory
- Life Orientation

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# CHAPTER 1

## INTRODUCTION AND OVERVIEW

### 1.1 INTRODUCTION

Research shows that many of the first year students in South Africa are academically unprepared to cope with the demands of a Higher Education Institution (HEI) due to their poor competency in English, Mathematics and Science, as well as their inadequate reading and study skills (Brüssou, 2007:23; Seabi, 2011:239). Year after year district officials of provincial departments of education implement various intervention measures to help the schools improve the students' achievement, especially in the Grade 12 national examinations (Van Zuydam & Mokwena, 2012:2). These interventions not only help to improve the students' chances of gaining access to HEIs, but also indirectly ensure that they are prepared for globalization, and for the 21<sup>st</sup> century. However, the researcher believes that preparation for learning at HEIs should begin well before Grade 12 in order to enable the students to refine and adjust the study skills that do not work satisfactorily.

The different subjects offered at school are in many ways also geared towards preparing the students for higher education, and for coping with the 21<sup>st</sup> century's technological advancement. However, Turnbull (2009:6) states that students need to be adequately prepared, not only in terms of domain-specific content knowledge, but also with regard to the appropriate life skills. Currently, being able to study efficiently is regarded as a skill that enables one to remain globally and economically competitive (Richardson, Robnolt & Rhodes, 2010:115). Therefore, to a large extent, life-skills education, particularly education in study skills, appears to directly contribute to preparing the students for survival in the 21<sup>st</sup> century, and beyond.

In this chapter the researcher provides a background to the study, as well as the preliminary literature review, in order to justify why the study focuses on the self-

regulated learning of Grade 10-students. The main research problem is also stated, and the specific research questions listed.

## 1.2 BACKGROUND TO THE STUDY

In the past, students in some secondary schools received life-skills education through a compulsory subject named 'school guidance', although initially under the segregated South African education system. The subject *school guidance*, as well as the way in which life-skills were taught within that subject, became defunct in the new education system. *Life-skills* became a specific subject that is offered from Grade R-6, while the name *Life Orientation* was adopted for the life-skills that are being taught from Grades 7 to 12 (Department of Basic Education [DoBE], 2011b:6). Therefore, the themes in the area of life-skills became part of the learning area called *Life Orientation* for adolescents (Department of Education [DoE], 2003:9).

According to the Policy Documents of the DoE, Life Orientation promotes holistic development and self-motivation by teaching the students to apply goal-setting and decision-making skills (DoBE, 2011b:6). As stated in the adapted National Curriculum Statement (NCS), which was replaced by the Curriculum and Assessment Policy Statement (CAPS), the Life Orientation which is offered in Grades 10 to 12 includes study skills. Furthermore, it is stated that Life Orientation should progressively prepare the students to be life-long learners (DoE, 2003:5), and to survive in the 21<sup>st</sup> century, and thereafter.

The inclusion of study-skills in the CAPS documents has several implications for the current study. Firstly, it shows that being effective in study-skills is regarded as one of the variables that will influence the students' chances of successfully completing their high school education. Secondly, the document indicates that another aim of study-skills is to promote self-motivation. It is implicit that promoting self-motivation bears resemblance to developing self-regulation because, according to Boekaerts and Cascallar (2006:201), research shows that self-regulated learners use motivational strategies. Furthermore, research indicates that there is a strong link between SRL and higher academic achievement

(Boekaerts & Cascallar, 2006:199; Duckworth, Ackerman, McGregor, Salter & Vorhaus, 2009:17)

Although implicitly stated, the points mentioned in the preceding paragraph indicate that self-regulation is a highly regarded attribute. However, it remains to be seen whether the students are being well-prepared during the Life Orientation classes, especially with regards to SRL strategies, to face the challenges of learning in the 21<sup>st</sup> century.

Research has shown that the teachers of Life Orientation have little or no confidence in their knowledge of the content of the subject (Tlhabane, 2004:95). Another research finding indicated that teachers do not implement the NCS appropriately to enable the students to acquire the relevant life-skills (Skosana, 2010:160). These findings are based on studies which were undertaken a few years after the implementation of the NCS. The findings suggest that high school students are not adequately prepared through Life Orientation. Very little can, however, be said about CAPS at this stage, since it has just been implemented in the high schools.

Universities offer various support and development programmes, such as counseling and training in life-skills, to empower the unprepared and underperforming students (Brüssou, 2007:9). In some cases the unprepared students are placed in extended curriculum programmes to enable them to bridge the gap between university and high school education. However, during her five years spent in the Directorate of Student Development and Support at the Tshwane University of Technology, the researcher became aware of the fact that the course workload and the tight lecture time-schedules in programmes such as Engineering and Health Sciences can be so demanding that it becomes difficult or even impossible for the students to participate optimally in the intervention programmes. Therefore, it may be very difficult for the majority of the students to access the support and development services which they desperately require, particularly when the resources are not adequate to address their needs. Given the challenges mentioned above, it is desirable that the students have the opportunity to acquire good study-skills while they are still at high school.

In this study the focus will be on Grade 10-students. Students in Grade 10 are at the adolescent stage, and are faced with transitional as well as developmental challenges that are linked to changes in their physical, cognitive, emotional and social domains (Bowers, Gestsdottir, Geldhof, Nikitin, Von Eye & Lerner, 2011:1194; Lerner, 2005:3). In addition, the adolescents are being confronted with issues of identity-formation and decision-making in respect of their careers. These challenges are related to questions such as, “Who am I?” and, “What can I become?” (Gouws, Kruger & Burger, 2008:109). Increasing emotional turmoil may cause confusion and conflict with their significant others and with the law, especially if the adolescent is unable to regulate these emotions (Steinberg, 2005:72). All these changes that the adolescents experience in different domains may influence their ability for self-regulation, and for studying.

Other major changes occur with regard to the students’ cognitive and physical development, and are characterized by an increased need to regulate their emotions and behaviour in accordance with the consequences of their behavior, and of long-term goals that are set (Lerner, 2005:7; Steinberg, 2005:69). Social development may also facilitate emotional upheaval during adolescence, thereby indicating the interdependence of the different domains of development (Gouws, et. al, 2008:40).

Cognitive development in particular entails changes in how the adolescent acquires, processes and interprets knowledge of the world through the senses, and he or she subsequently uses this information to direct his/her behaviour (Louw & Kail, 2007:7). The changes that occur during adolescence with regard to cognitive development include the ability to think abstractly, improvement in expertise, and the capacity and efficiency for processing information and reasoning, which are all linked to brain growth, particularly in the prefrontal cortex (Collins & Steinberg, 2006:1008; Gouws, et al., 2008:75; Hughes, 2002:454, Scarborough, Lewis & Kulkarni, 2010:277). Furthermore, the adolescent phase is associated with the formal-operational stage of cognitive development as identified by Piaget, as well as with an improvement in self-regulation (Collins &

Steinberg, 2006:1008; Cooney, 2008:17). This is of specific significance to this study.

Physical development has to do with physiological changes linked to the maturation of the body (change in size, weight and shape), the brain, and the limbic system (Gouws, et al., 2008:12; Collins & Steinberg, 2006:1008). With regard to brain development, the adolescent stage marks a second period of brain plasticity which prepares him/her to learn to adapt, and to become independent (Office of Population Affairs, US Department of Health and Human Affairs, undated). This development also has implications for this study, in respect of the fact that it focuses on the development of SRL.

An *emotion* is described as a state that includes affective, cognitive, physiological and behavioural reactions that are experienced due to changes in the person's circumstances (Gouws, et al., 2008:116; Perkrun, 2009:577; Salovey, 2004:32). For example, an adolescent may experience nervousness during anxiety. Worry-thoughts during states of anxiety explain the cognitive state of the individual. At the same time, the vocal and facial expressions of emotions represent behavioural reactions to anxiety.

According to research, difficulties in emotional regulation that are experienced during adolescence are linked to a decrease in the levels of serotonin and dopamine (Office of Population Affairs, US Department of Health and Human Affairs, undated). Therefore, emotional development during adolescence includes increased emotionality, emotional independence from parents, a search for self-identity, and an increased tendency to display depressive moods (Bandura, 2006a:20; Collins & Steinberg, 2006:1035; Gouws, et al., 2008:117; Hughes, 2002:500; Stang & Story, 2005:5). It has also been found that low impulse-control as displayed during adolescence, occurs because of a dys-regulation of amygdala, and to some extent, an immature prefrontal cortex which is responsible for impulse-control (Casey, Jones & Hare, 2008:113). According to Perkrun (2009:586), test-anxiety is one of the emotions that have been studied in particular. It was found to be low at the beginning of elementary school, but

remained high throughout high school and college. This finding also has special significance for this study.

The social development of an adolescent relates to how he or she interacts with, and is influenced by other people, like family members, peers, teachers, and the society in general (Louw & Kail, 2007:8). Various theoretical perspectives explain the social development of the adolescent, although Erikson's psycho-social theory is the one that is most commonly researched (Gouws, et al., 2008:78). These theories explain the socialisation process and how adolescents confront their developmental tasks, including the search for identity and for independence (Gouws, et al., 2008:87). This is also significant in the desire for self-regulation.

One of the social changes that takes place during adolescence is the tendency to experiment with a variety of identities, and the increasing role of the peers in this regard (Gouws, et al., 2008:90-931). Adolescents tend to form cliques, and to seek support from their friends rather than from their parents, and to start dating. Furthermore, the societal expectations of the adolescents increase. The changes in societal roles with increasing societal expectations challenge the adolescents to cope with both their own developmental tasks, and with the demands of society. For example, it has been suggested that achievement-related expectancies in the adolescents' social environments could play a significant role in the development of negative emotions, such as test-anxiety (Perkrun, 2009:584). The issue of test-anxiety will be looked at in this study.

Certain social roles are associated with the stage of adolescence. For instance, in some cultures, adolescent girls are regarded as ready for marriage, while according to the Christian religion, adolescence is regarded as the appropriate stage for confirmation and to receive the Holy Communion. Furthermore, the transition towards adolescence goes with some privileges, rights and responsibilities, such as being eligible to vote, to obtain a driver's license, to purchase liquor and tobacco, and of undergoing the rites of passage in some cultural groups (Collins & Steinberg, 2006:1009). Such privileges are associated with greater responsibilities, such as the need for the self-regulation of learning.

Grade 10 is the first point of entry into the Further Education and Training band (FET), and it is here where many students first encounter subjects that they are expected to write at the end of Grade 12. Besides the developmental challenges associated with the adolescent stage, students in Grade 10 may be faced with the increasing task-demands of this education level where much emphasis is placed on academic performance and achievement (Gouws, et al., 2008:147). Furthermore, subject specialisation at this level requires more skills, responsibility and commitment. Grade 10-students are thus inevitably to be affected by these transitions and demands.

The transition from school to higher education and its associated problems of adjustment have been noted as facilitating poor achievement (Benner & Graham, 2007:208; Gouws, et al., 2008:149; Long, Monoi, Harper, Knoblauch & Murphy, 2007:197). Therefore, the researcher contends that relevant intervention with regard to learning in Grade 10 may prepare the students to cope with the academic demands of the grade. Furthermore, it may be appropriate to develop skills which could enhance the students' general and academic self-efficacy. Students with enhanced academic self-efficacy are better able to develop and strategically adapt their learning strategies as they journey towards the Grade 12-examination and HE.

There are other reasons why this study focusses on the Grade 10-students. Research indicates that the students' motivation-level declines during adolescence as they move from primary to high school (O'Connell-Schmakel, 2008:742; Sakiz, 2008:487; Wang & Pomerantz, 2009:1272; Witkow, 2009:152). At the same time, these students are expected to assume more responsibility and to manage their own learning (Harter, 2006:530; Zimmerman & Cleary, 2006:46). A declining motivation has implications for the students' career decision-making, their future career-choices, and their employability (Mansfield & Wosnitza, 2010:149). Students in Grade 10 need learning support and the development of skills that will enhance their motivation and achievement. Therefore, Grade 10 may be the right time to address the possible causes of low achievement and its associated consequences.

The adolescent students in Grade 10 may benefit from various skills-programmes that may improve their achievement. Some experts identified *responsibility* as one of the three life-skills that may potentially raise the students' achievement (Cogan, Russel & Wright, 2004:3). *Responsibility* is a variable that is associated with self-regulatory skills, in the sense that students who are self-regulated learners are those who are able to take the responsibility for their learning, and to select effective learning strategies (Rueda, 2011:17). In a study on how to enhance the academic skills-development of unprepared students, Brüssou (2007:145) found that self-regulation was necessary for the academic success of these students.

The findings in the study by Brüssou (2007:145) were confirmed by those of other researchers. For example, an improvement in the academic performance of a group of engineering students was observed after life-skills intervention based on a SRL perspective (Moseki & Schulze, 2010: 356-375). According to Cleary (2005:308), studies reveal that SRL-intervention may be of benefit to all students, specifically to those who are at risk of academic difficulties. In his discussion on the similarity between SRL and the 21<sup>st</sup> century competencies, Wolters (2010:18) states that SRL is an effective framework for the development and implementation of interventions that are aimed at improving students' achievement at school and beyond.

Despite some of the findings of the preliminary literature review that confirm the efficacy of SRL-skills in improving performance, there appears to be uncertainty regarding some of the findings. Zeidner, Boekaerts and Pintrich (2005: 761) contend that most research on self-regulation has been conducted from a Western perspective and with Western populations. On the other hand, Wolters (2010:19) believes that not much is known about when students should begin to develop particular SRL-skills, as well as in respect of the programmes that should be implemented to promote optimal development in SRL. Furthermore, Zeidner, et al. (2005:759) indicate that only limited information is available on the validity of some of the instruments that are used to measure self-regulation.

According to Zimmerman (2008:169), the measurement approaches used in current research indicate that SRL is an attribute that can be viewed as either an

event or as an aptitude. When viewed as an *aptitude*, SRL refers to a relatively enduring attribute that predicts the person's future behavior. When viewed as an *event*, SRL refers to a temporal entity which has a recognisable beginning and an end (Perry, 2002:1; Zimmerman & Cleary, 2009:255). According to Winne and Perry (2005:563), studies that involve the triangulation of SRL measurement as both an aptitude and an event are limited, particularly across a wide range of populations. Therefore, another area that needs further investigation is that of research designs that involve the measurement of SRL both as an event and as an aptitude, as is the goal of this study.

In summary, high school students may not necessarily acquire the learning- and study-strategies through Life Orientation as expected, due to the teachers experiencing difficulty with both the handling of the content, and the implementation of the curriculum. As a result, most students may either end up performing poorly or being unprepared to cope with demands of learning at HEIs. Students who are eventually admitted at HEIs on the basis of their Grade 12- results often find it difficult to access the available intervention and support programmes (if any), due to time constraints linked to the demands of the courses for which they are registered.

The above preliminary literature review shows that providing psycho-educational support and development for adolescents in Grade 10 may be important, due to the life and academic challenges that they are faced with at this stage. Furthermore, although there is some evidence that attests to the efficacy of SRL- skills in enhancing academic achievement in some contexts, much can still be learnt about the applicability of the findings in other contexts. The studies further appear to indicate that developing the adolescents' self-regulatory skills is imperative in order to prepare them to cope with the challenges of life effectively, and to reduce the consequences of poor scholastic achievement such as school drop-out. In the light of the above, the researcher believes that it is important to develop the students' skills in order to enable them to become self-regulated learners in Grade 10. This can be done by means of an intervention programme to develop their SRL competencies.

In the next section the problem will be stated and the research questions indicated.

### **1.3 THE PROBLEM STATEMENT**

Given the above-mentioned exposition and background to the study, the following main or general research question can be stated:

*How can the SRL of adolescents be developed at high school?*

Such development may improve the students' academic performance, and prepare them for HE and beyond.

From the general question as indicated above, the following specific questions may be identified:

- What is the general profile of a group of selected grade 10-learners in terms of their SRL-competencies?
- To what extent do the students make use of SRL strategies?
- What are the students' views on an intervention programme that is aimed at developing their SRL-competencies?
- How can the intervention programme to develop the students' SRL competencies be improved, if needs be?

### **1.4 AIMS OF THE RESEARCH**

In accordance with the research questions stated above, the researcher's aim was to determine how a group of Grade 10-adolescents' SRL can be developed at school in order to improve their academic performance, and to prepare them for HE and beyond.

To this end, the researcher aims to conduct an empirical study to determine:

- the grade 10 learners' general profile in terms of their SRL competencies;
- the strategies that could best address the needs of the grade 10-students in terms of the development of their SRL skills;
- the students' views regarding the impact of the psycho-educational intervention-programme to develop their SRL-competencies; and
- in what way the intervention-programme to develop the students' SRL-competencies may be improved.

The study has been conducted quantitatively as well as qualitatively.

## **1.5 THE SIGNIFICANCE OF THE STUDY**

The two sections below provide an explanation of the significance of this study, as well as the contribution that the study can make to new knowledge.

### **1.5.1 The importance for the country's education**

- The teaching of learning strategies is imperative, according to the developmental outcome (Cross-field Critical Outcome 8) of the Government and the South African Education System (DoE, 2003:2).
- The Education White Paper 6 places an emphasis on "early intervention", and mainly focuses on interventions geared toward addressing learning barriers (DoE, 2001: 24). As a result, the Document can be interpreted as meaning that psycho-educational support is necessary for students in primary schools only, while high school students, who continuously show overall poor academic results, may in fact, need significant support. This study, therefore, creates an opportunity for the systematic identification of students who may require psycho-educational support in high school.
- The implementation of a SRL-based study-strategy development-programme is a proactive and cost-effective approach to life-skills because all the students can be accommodated, and only those with

serious challenges can be referred for additional specialised individual intervention programmes.

- The empirical study to be done will contribute towards professional development and curriculum development. The data obtained may be used to equip educators and practitioners with the knowledge that they can use to enhance the students' SRL-skills and ultimately, to promote academic success. The information may also be relevant for use in pre-service teacher development and training.
- In his discussion on the similarity between SRL and the 21<sup>st</sup> century competencies, Wolters (2010:18) states that SRL is an effective framework for developing and implementing interventions that are aimed at improving the students' achievement at school and beyond. The students are likely to continue to use the strategies, be better equipped to achieve academic success in high school and beyond, and contribute to the success-rate at HEIs. This will impact on the country's economy.

### **1.5.2 The contribution that the study can make to knowledge**

- According to Wolters (2010:19), there exists uncertainty as regards the right time to start developing particular SRL-skills, as well as in respect of the type of programme that would foster the optimal development of SRL. This study could provide some insight that will contribute to more knowledge on specific aspects of SRL, particularly in an African context.
- Zeidner, et al. (2005:759) pointed out that self-regulation measures need to be validated. The envisaged use of the LASSI-HS scale in this study may indirectly provide the data that can be used for this purpose.
- Knowledge about learning and study-strategies according to the SRL-perspective appears to be based on overseas research that used students from developed countries as samples (Zeidner, et al., 2005: 761). This investigation may provide more knowledge on, and consolidate the information on SRL from a sub-Saharan perspective, and thereby add to methodological, theoretical and applied knowledge.

The study will make use of the research design described below.

## **1.6 THE RESEARCH DESIGN**

### **1.6.1 Ethical principles**

All the ethical principals have been adhered to in this research. Among others, the researcher requested the permission from the Gauteng DoE to undertake the study. It was also expected from both the students and their parents to complete a consent form. All the students were given the assurances of anonymity and confidentiality.

Other measures to ensure an ethical research approach are discussed in Chapter 4.

### **1.6.2 The research design**

A number of researchers acknowledged the complexity and multi-dimensionality of self-regulation and SRL (Boekaerts & Niemivirta, 2005:446; Karoly & Boekaerts, 2005:304), and that using one research approach might be insufficient to explain the complex processes involved (Zimmerman, 2008:179). Given the complexity of SRL, a mixed-methods research design, which involves both quantitative and qualitative research methods, was called for. Using both quantitative and qualitative data-collection methods may compensate for the weakness of using only one method and may result in a more comprehensive study (Johnson & Onwuegbuzie, 2004:18), and present a clearer understanding of the research problem (Creswell & Garrett, 2008:322).

A mixed-methods research approach involves the collection and analysis of both quantitative and qualitative data, as indicated above (Castro, Kellison, Boyd & Kopak, 2010:344; Creswell & Garrett, 2008:326; Ivankova, Creswell & Plano Clark, 2010:262). The collection of mixed-methods data can be either concurrent, where it entails the simultaneous collection of qualitative and quantitative data, or it can be sequential, where different data types are collected at different times of the study (Castro, et al., 2010:344).

In this study, a sequential, explanatory, mixed-methods research design was used. Furthermore, this research has been conducted as a single study with multiple phases. This is explained in greater detail in Chapter 4.

### **1.6.3 The sample**

A non-probability sampling method was used. The study sought to involve all the Grade 10-students in one high school in the Tshwane West (D15) district of the Gauteng DoE. In non-probability sampling, the sample is not based on the random selection of the individuals from the population, but rather on their availability (Creswell & Plano Clark, 2011:174; Strydom, 2011:231). The choice of the sample and the decision to use only one school as a unit of analysis were based on several factors.

Firstly, the study includes the design and implementation of an intervention-programme which requires the researcher's extended involvement at a school for a particular period of time. Furthermore, the Life Orientation class period was used, and therefore adherence to the CAPS requirement of having study-skills during the second term was mandatory, to which the researcher adhered.

Secondly, a commercially-produced questionnaire/inventory, which has been used to test students before and after an intervention (i.e., pre- and post-test) has financial implications. It would have been very expensive to involve more students and more schools in the study.

Another consideration was that the school also needs to include students who are underperforming, and who are easily available. To this end, the students needed to be geographically situated close to the researcher's neighborhood. Thus the decision for the sampling approach was also influenced by financial- and time-constraints.

More detail about the selection of the sample, validity and reliability, and other research design issues are presented in Chapter 4, the research design chapter.

#### 1.6.4 The phases of the study

The study is undertaken in phases as follows:

Phase1:

This phase includes a quantitative approach, which is conducted by means of the Learning and Study Skills Inventory for High School Students (LASSI-HS), and a biographical questionnaire. All the Grade 10-students in two classes were required to complete the questionnaire to measure their SRL-skills. The one class formed the experimental group, and the other class the comparison group. The aim was to answer the first research question, namely

What is the Grade 10-students' general profile in terms of SRL competencies/skills?

Phase 2:

This is the qualitative phase which is undertaken as follows:

- Large group sessions are conducted with the experimental group. The SRL development programme for the Grade 10-students is conducted in the form of a series of workshops over a period of 10 weeks during the Life Orientation periods and after school.
- The researcher's observations are recorded in a journal.
- Eight students are selected from this group for further intensive development, and they keep journals.
- In-depth interviews are conducted with the same eight students (four males and four females).

The qualitative phase aims to answer the second and third research questions that investigate the students' use of SRL-strategies, and how the SRL-skills of the Grade 10-students should be developed.

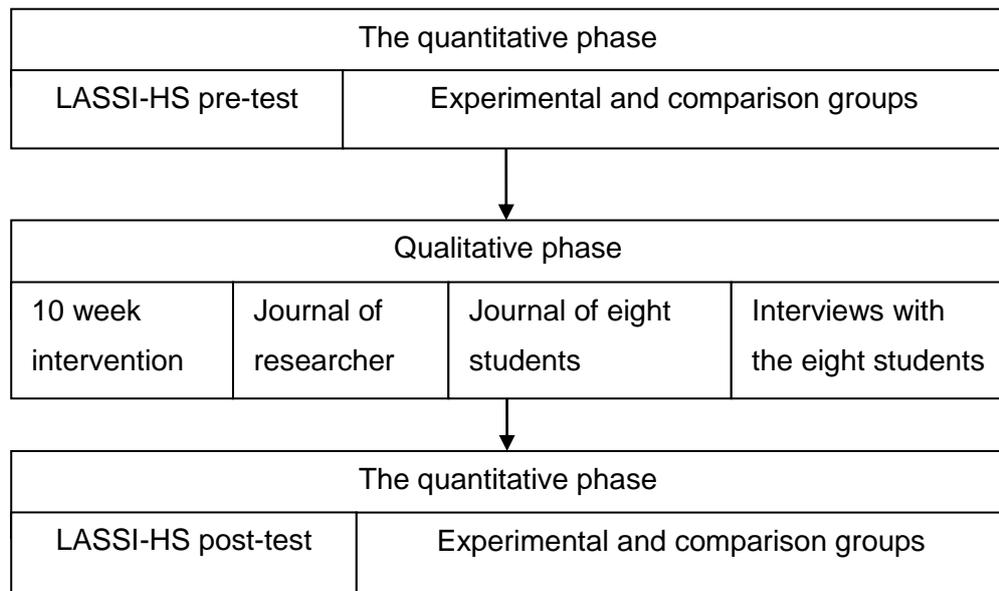
Phase 3:

In the final quantitative research phase all the students in the experimental and the comparison groups write the same post-test LASSI-HS.

The pre- and post-LASSI-HS test results of all the students are compared quantitatively. All the results are summarised and interpreted in line with the literature, and integrated into a whole.

### 1.6.5 Diagrammatic illustration

Below is a diagrammatic illustration of how the research is undertaken.



**Figure 1.1: A diagrammatic illustration of the research phases**

In summary, in the experimental group and in the comparison group, the pre-test post-test design, and the pre- and post-LASSI-HS test results are compared quantitatively, and used together with the qualitative results (from the interviews with the eight students and the journal entries). Subsequently, the results of the test, the in-depth interviews and the journal recordings are then analysed and used to suggest improvements in the programme.

## 1.7 DEFINITION OF THE CONCEPTS

### 1.7.1 Adolescent

An *adolescent* is a young person who is at a phase of transitional development from childhood to adulthood. According to the United Nations Children's Fund (2011:8), the life phase of adolescence includes individuals aged between 10 and 19 years. Adolescence may be categorised into three phases, namely, early adolescence, middle adolescence, and late adolescence (Gouws, et al., 2008:4; Steinberg, 2005:70).

As indicated in 1.2, adolescence is a stage which is marked by physiological growth, improvement in thinking and reasoning abilities, socio-emotional development, and the concomitant need for self-regulation in order to cope in society. However, adolescents are unique individuals who live in different environmental contexts that play a role in determining the course of their development. The period of adolescence can be challenging for some individuals, for example, for those whose frontal lobes may not yet be sufficiently developed to facilitate emotional and behavioural regulatory competence.

### 1.7.2 Self-regulated learning (SRL)

*SRL* is coined from self-regulation, which Zimmerman (2005:14) defines as self-generated thoughts, feelings and actions that an individual cyclically adapt to attain personal goals. Researchers believe that *SRL* involves goal-setting, and the use of meta-cognitive strategies (Vrugt & Oort, 2008:124). Therefore, *SRL* refers to the form of learning that occurs when an individual self-regulates his/her motivation, thoughts, feelings and behavior, and cyclically adapt these to attain self-set learning-goals.

According to Loyens, Magda and Rikers (2008:418), *SRL* is different from *self-directed learning (SDL)*, which is used in adult education to refer to a process in which individuals autonomously take the initiative in diagnosing their learning needs, in formulating goals and identifying resources, in choosing and

implementing suitable learning strategies, and in evaluating learning outcomes. The concept *SDL*, therefore, is mainly used to describe learning that occurs outside the school environment.

### **1.7.3 Development**

Different reference sources provide an explanation for the meaning of the word, *development*. The Collins Advanced Learners' English Dictionary (in Sinclair, 2006:386) provides the following meanings of the word, "...gradual growth or formation of something; process or result of making something; the event or incident that happened and is likely to have an effect on the present situation". According to Tulloch (1996:396), the word *development* means a stage of growth or advancement. When put in simple terms, it refers to a long-term change in skills or capacity, and a progressive growth in the effectiveness of a skill or capacity (Reber & Reber, 2001:195). Berk (2007:8-10) contends that this change occurs broadly in the cognitive, physical and emotional or social domains, and are concurrently affected by multiple interacting influences like biological, socio-cultural and historical forces.

In the context of this study, *development* refers to a change in SRL and other related attributes. Therefore, development has implications for the improvement of, and the empowerment in SRL skills.

### **1.7.4 Psycho-educational perspective**

The term *psycho-educational perspective* refers to a merge of the principles of psychology and education. In this study the combination is applied in the design and implementation of an intervention programme aimed at developing adolescents' SRL skills.

### **1.7.5 School**

The school that is referred to in this study is at a secondary (high school) level, which accommodates students in the FET phase. This phase includes students in Grades 8 to 12.

## **1.8 CHAPTER DIVISION**

Chapter 1: This chapter presented an introductory orientation. In this chapter the researcher introduced the reader to the study by providing the background, and an overview of how the study is to be conducted.

Chapter 2: This chapter indicates the conceptual framework of the study. The chapter begins with an overview of the theoretical perspectives of SRL, followed by the social-cognitive theory, which is the conceptual framework that is to be used in this study. Lastly, contemporary SRL models are discussed.

Chapter 3: This chapter presents a literature review of different types of SRL programmes, based on the social-cognitive theory. The empirical results of other research on learning strategies and study methods-programmes are also presented.

Chapter 4: Chapter four explains the research design. The mixed-methods design, sampling, and data-collection methods, and the methods of data-analysis are discussed. The researcher also discusses aspects of ethics, validity and reliability.

Chapter 5: Chapter five presents the data, as well as a discussion of the data. In addition, the design of the intervention programme and how it was implemented are included here.

Chapter 6: In Chapter 6 the conclusions of the study are given. The limitations of the study are also pointed out.

## **1.9 CONCLUSION**

This chapter provided an introductory orientation to the study in terms of the study's background, the research problem, research aims, the significance of the study, and the research design that is used. The main concepts which are relevant to the study were also defined, and the chapter division was listed.

In the next chapter the researcher discusses various theoretical perspectives on SRL, including the social-cognitive theory, which is the conceptual framework on which the study is based.

## **CHAPTER 2**

### **THE CONCEPTUAL FRAMEWORK – THE SOCIAL COGNITIVE THEORY**

#### **2.1 INTRODUCTION**

In this chapter the researcher provides an overview of the various theoretical perspectives on SRL. The researcher discusses the social-cognitive theory as the conceptual framework on which the study is based in great detail. The chapter ends with a discussion of the various models of SRL.

#### **2.2 THE MAJOR THEORETICAL PERSPECTIVES USED IN SRL RESEARCH**

There is general agreement that research needs to be organised and systematically linked to theories, and that theories give meaning to our observations (Schunk, 2008a:3). In specifying the theoretical framework, the researcher gives meaning to what is being observed and provides a sound basis for practical action that is needed (Berk, 2007:6). Similarly, research on SRL is undertaken from a particular theoretical perspective which defines the concept on the basis of that particular perspective.

Research on SRL varies according to the theoretical or conceptual framework which the investigator uses as lens. According to Zimmerman (1989:1), research on SRL has been conducted from theories based on operant conditioning, phenomenology, the social-cognitive theory, the volition theory, the constructivist theory, and the Vygotskian approaches. All these perspectives share the belief that students use various processes to regulate their learning and environments in order to improve their academic achievements.

Each theory is summarised in Table 2.1 below in terms of the related constructs and the SRL processes that are emphasised, and then discussed further in the paragraph that follows.

**Table 2.1: Major theoretical perspectives on SRL**

<b>PERSPECTIVE</b>	<b>EXPLANATION</b>	<b>MAJOR CONSTRUCT AND PROCESS</b>	<b>INSTRUCTIONAL MODELS USED</b>
Operant conditioning (behaviourist): (Zimmerman, 1989:8; Mace, Belfiore & Shea, 1989:30).	Emphasis is on the external reinforcer's role in learning to self-regulate as well as on overt processes that can be directly observed.	Self-instruction, self-monitoring, self-reinforcement.	Modelling, verbal tuition, reinforcement.
Phenomenology: (Zimmerman, 1989:11; McCombs, 1989:68).	Emphasises is on covert/ internal processes: the students' development of self-system processes and self-perceptions as precursor for self-regulation; the need for self-actualisation serves as a motive for SRL.	Self-esteem, self-concept, self-actualisation, self-image.	Focus on improving the students' self-perceptions, to develop positive views of the self to develop SRL to improve performance.
Social cognitive theory: (Zimmerman, 1989:12; Schunk, 1989:88).	Stresses the triadic reciprocal contribution of personal factors, the environment and behaviour in the development of SRL and self-efficacy as source of motivation.	Self-observation, self-judgement, self-reaction, self-efficacy.	Modelling and student practice to engage in a cyclical process of goal-setting and planning, using learning strategies; self-monitoring of progress and self-efficacy beliefs.
Volition theory: (Zimmerman, 1989: 15; Corno, 1989:119).	Focuses on both covert and overt processes that keep the learner on track, and on self-control that help to ensure that the set goals are reached. Volitional processes to be focussed in the face of personal and environmental hindrances to SRL.	Cognitive, emotional, motivational and environmental control.	Teach the students to use strategies that enable them to monitor and control their cognition, their emotions, motivation, and the environment.
Vygotskian theory: (Zimmerman, 1989: 18; Rohrkemper, 1989:148).	Stresses the role of interpersonal interactions, egocentric, self-directed speech and social interaction between adults, children and peers.	Self-instruction, motivational and affective self-statements or self-talk.	Direct strategy instruction or guidance by an adult; create opportunities for peer tutoring, social interaction and cooperative learning.

Cognitive constructivist theory: (Zimmerman, 1989:21; Paris & Byrnes, 1989:197).	SRL is multifaceted and includes effort, academic tasks, self-competence, and information-processing strategies; cognitive development is critical for SRL.	Academic tasks, effort, instrumental strategies, self-competence.	Emphasises information-processing strategies; knowledge of strategies (declarative, procedural and conditional knowledge).
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Source: Zimmerman (1989).

With regard to Table 2.1, operant theorists assert that self-regulatory responses occur as a result of the presence of effective models and reinforcers, that students are motivated by environmental factors such as the learning material and social gains, and that SRL occurs when the students reinforce and monitor themselves during learning (Mace, Belfiore & Shea, 1989:29).

The phenomenological-inclined theorists' view is that students are motivated by a global sense of self-esteem and self-concept, and that the reason for their self-regulation is self-actualisation (McCombs, 1989:71).

Those theorists aligned to the social-cognitive theory stress that SRL occurs as a result of the reciprocal contribution of personal, environmental and behavioural factors which are monitored and altered during learning, as well as the learner's self-efficacy beliefs (Schunk, 1989:84; Schunk & Ertmer, 2005:633).

The volition theorists are concerned with the self-control processes of SRL that help the students to maintain concentration in the face of personal and environmental obstacles, and thereby ensure that actions are carried out (Corno, 1989:112; Eccles & Wigfield, 2002:126).

The remaining perspectives are the Vygotskian and constructivist views of SRL (Zimmerman, 1989:5). These two views developed from the learning theories which are classified as constructivist in nature, and are based on the cognitive developmental theories of Piaget and Vygotsky (Liu & Chen, 2010:65). Piaget's and Vygotsky's theories are named *cognitive constructivism* and *social constructivism*, respectively (Liu & Chen, 2010:66; Palmer, 2005:1854; Shabani, Khatib & Ebadi, 2010:241). Both these theories argue that learning is an active process which requires meaning-making and effort on the part of the student in

order to develop understanding and to reconstruct knowledge (Palmer, 2005:1855). However, Vygotsky's social-constructivists stress that SRL happens within a particular socio-cultural context through the guidance and support of adults or experienced peers, and with the use of private speech, and that new knowledge later becomes internalised when the individual performs learning tasks independently (Gredler, 2009:9; Özdemir, 2011:305; Palmer, 2005:1855; Zimmerman, 1989:19). Furthermore, according to the Vygotskian views, the student uses self-statements to improve the self-control that is needed for self-regulation (Rohrkemper, 1989:154; Zimmerman, 1989:17).

The constructivist approach, which is based on Piaget's cognitive constructivism, explains SRL in terms of individual adaptation, exploration and meaning-making, and emphasises knowledge of information-processing strategies (Paris & Byrnes, 1989:194; Zimmerman, 1989:21). Therefore, the cognitive constructivist emphasises the individual, while the socio-cultural constructivist stresses the social interactions between the individual and other people in the environment.

## **2.3 THE CONCEPTUAL FRAMEWORK OF THIS STUDY: THE SOCIAL-COGNITIVE THEORY**

### **2.3.1 The foundation of the social-cognitive theory**

The social-cognitive theory, like many other theories, evolved from previous theories, and can be regarded as a revision of earlier theories, for example, Bandura's social-learning theory (Zimmerman, 1989:11). In fact, the social-cognitive theory emerged from the view that the behaviourist perspectives provide an incomplete explanation of the acquisition of social behaviours (Cervone & Pervin, 2007:78).

According to Cervone and Pervin (2007:452), the main contributors of the social-cognitive theory are Albert Bandura and Waller Michel. In an attempt to answer questions such as what differentiates a particular person from other individuals, or what are the interpersonal and intrapersonal differences in behaviour, the social-cognitive theorists state that, "People have the capacity to overcome

environmental influences and animalistic emotional impulses, and to gain control over the course of their lives” (Cervone & Pervin, 2007:456). Therefore, those who subscribe to the social-cognitive theory believe that there is a need to integrate cognitive, social and cultural factors and neuroscience knowledge in the study of human behaviour and learning (Bandura, 1999:24).

When formulating his theory, Bandura (1986:391) initially focused on observation-learning in his studies of performance and the acquisition of pro-social and defiant behaviour. According to Schunk (2008a:78), Bandura’s theory was later expanded to encompass the acquisition of, and the performance of various skills and strategies, moral development, and the acquisition of motor and self-regulatory skills.

Another important feature of Bandura’s social-cognitive theory that is relevant to this study is his view of how people seek control over important events in their lives through the self-regulation of their thoughts, emotions and actions (Schunk, 2008a:78). The following quote by Bandura (1986:20) (also cited in Schunk, 2008a:78), captures the essence of the social-cognitive theory, and explains why it is a relevant theoretical framework for this study:

*Another distinctive feature of the social-cognitive theory is the central role it assigns to self-regulatory functions. People do not behave just to suit the preferences of others. Much of their behaviour is motivated and regulated by internal standards and self-evaluative reactions to their own actions. After personal standards have been adopted, discrepancies between a performance and the standard against which it is measured activate evaluative self-reactions, which serve to influence subsequent behaviour. An act therefore includes among its determinants self-produced influences (Bandura, 1986:20).*

In essence, the social-cognitive theory emphasises that a human being is influenced by the social environment, and that people acquire knowledge, skills, strategies, beliefs, and attitudes by observing others (Schunk, 2008a:78). The

social-cognitive theory does not suggest that human beings merely emulate each other without questioning and thinking, and that all that is observed will be enacted. Humans are largely reflective beings. The social-cognitive theory posits that people seek to address or control important events in their lives through the self-regulation of their thoughts, emotions, and actions (Schunk, 2008a:78).

### **2.3.2 Triadic reciprocal determinism: how people acquire knowledge, skills, and beliefs**

The social-cognitive theory proposes that people's cognitive abilities enable them to direct their behaviour, and play an active role in the course of their development (Cervone & Pervin, 2007:451; Cooney, 2008:71; Schunk, 2008a:80). This theory further posits that the acquisition of behavioural and cognitive competencies occur as a result of modelling and guided mastery (Bandura, 1989:13; Schunk & Pajares, 2009:36).

The view that individuals are active participants in their development, instead of merely spectators, characterises the social-cognitive theory as a theory of human agency, which is also explained by means of the principle of reciprocal determinism (Cervone & Pervin, 2007:471). *Reciprocal determinism* is a concept coined by Bandura (in Schunk & Ertmer, 2005:633) to explain that behaviour, personal and environmental factors will operate as interacting determinants that influence each other during the course of one's life. Personal factors include the thoughts, emotions, and physiological aspects of an individual (Schunk & Pajares, 2009:35).

The following section provides an overview of the components of the triad that interact, and is thus referred to as Bandura's (1999:23) *principle of triadic reciprocal determinism*.

### 2.3.3 Triadic reciprocal determinism

#### 2.3.3.1 Personal aspects

The personal aspects of the Model are made up of cognitive and affective factors, as well as biological events that interdependently determine and influence human behaviour, and are also impacted on by the environment. Cognitive factors are competencies, skills, knowledge, and thoughts. An individual's emotions and self-efficacies are regarded as affective factors, while biological events include aspects that affect that person's bodily functions, like stamina, pain and fatigue (Zimmerman, 2005:14; Zimmerman & Cleary, 2009:247).

#### 2.3.3.2 Environmental events

*Environmental events* are situational and contextual factors which have an influence on people and their behaviour (Snowman & McCown, 2012:274). According to Bandura (1999:23), the individual's socio-cultural milieus that are referred to in the principle of triadic reciprocal determinism, are components of the environment. The social-cognitive theory posits that the environment can be further distinguished into three types, namely the:

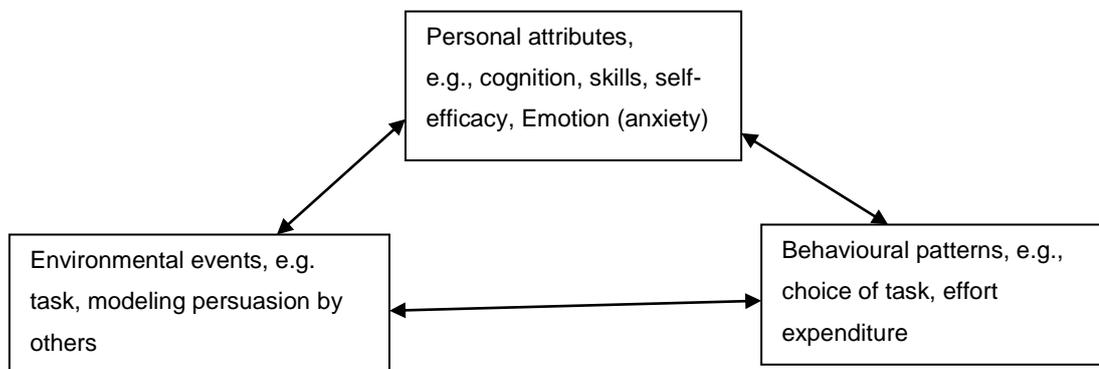
- *Imposed environment*: This is the socio-structural and physical environment which, although persons have little control over them, they have some control on how they construe it and react to it.
- *Constructed environment*: This is the institutional system and social environment which a person constructs through his or her generative effort. It implies that people can control their own lives.
- *Selected environment*: This refers to the fact that the environment is selectively activated by courses of action. That is, the *choice* of activities, actions and milieus also has an influence on the personal attributes of the individual, and can be affected by personal attributes. Therefore the environment plays a more dominant role than heredity in shaping a person's behaviour.

### 2.3.3.3 Behavioural factors

Behavioural factors comprise of actions and activities that a person engages in to influence environmental events as well as personal factors, such as cognitive, affective, as well as biological events (Bandura, 1999:23).

In summary, the principle of triadic reciprocity, according to the social-cognitive theory, indicates that behaviour, personal, and environmental factors all operate interactively to influence each other.

The diagram below illustrates a bi-directional influence in terms of how each of the elements of the triad interactively affects the other.



**Figure 2.1: A diagrammatic presentation of triadic reciprocity**

Another important aspect to consider in the understanding of the social-cognitive theory concerns how cognitive and behavioural competencies or skills are acquired.

The discussion on how these skills are acquired now follows.

## 2.4 PERSPECTIVE ON HOW LEARNING OCCURS. IMPORTANT CONSTRUCTS OF THE SOCIAL-COGNITIVE THEORY

According to the social-cognitive theory, learning occurs by doing and by observing the consequences of one's actions, as well as by observing other peoples' behaviour, and the consequences thereof. In other words, people learn from the consequences of their actions. Behaviour that results in pleasant

consequences is retained, while behaviour that leads to failure is not repeated. As noted, people also learn vicariously by observing others (vicarious learning). *Vicarious learning* occurs when people (such as students) observe or listen to models being rewarded or punished for their behaviour, irrespective of whether those models appear live, in electronic form ( e.g., in a movie or on television), or in the printed media (e.g., in books).

In his social-cognitive theory, Bandura explained the ways in which learning occurs, and distinguishes between performances of previously learnt behaviours and new learning (Schunk, 2008a:81). For instance, involvement in revision is regarded as performance of previously learned behaviour, in contrast to new learning. Factors such as motivation, perceived need, and physical states have an effect on whether people perform what they have learnt by observing a model. That is, a person's failure to perform previously learnt behaviour may be due to inadequate motivation, thereby showing that observing a model does not guarantee that the learned behaviour will be performed. Rather, modelling provides information about possible consequences of actions, and that motivates or demotivates the observer to act accordingly (Schunk, 2008a:93). The status and competency level of the model, the set goals, outcome expectations, and perceived self-efficacy may also determine whether the observer will later perform the observed behaviour (Bandura, 1989:4, Schunk, 2008a:94).

According to Schunk (2008a:78), Bandura asserts that the basic processes that are involved during observational learning are:

- setting goals;
- judging the expected outcomes of your actions (self-observation);
- evaluating progress towards goal-achievement (self-monitoring); and
- the self-regulation of cognition, actions and emotions.

In conclusion, unlike the behaviourist theory which explains learning as a response to an environmental stimulus, the social-cognitive theory acknowledges the role of thinking, the affect, and motivational factors in the learning process. Therefore, the view of the social-cognitive theory is that people can think about

what they learn, and control their thinking, emotions, behaviour, and even the environment during the process of learning. This has important implications for this study with its focus on the development of the SRL of adolescents.

Constructs that are commonly mentioned in studies that use the social-cognitive theory as a theoretical framework are expectations, goals, self-efficacy, self-regulation, self-regulated learning and competencies or skills (Cervone & Pervin, 2007:457). These constructs are also regarded as important for this study, as is indicated below.

#### **2.4.1 Expectations**

One of the variables that have an influence on observational learning in terms of the social-cognitive theory is the expectations of the observer, e.g., the adolescent student. The students' expectations of success and of the consequences of their actions can influence their future performances (Cervone & Pervin, 2007:460; Schunk, 2008a:98). According to Bandura (1997, as cited in Schunk, 2008a:105), students form beliefs and expectations about the possible consequences of given actions on the basis of their personal experiences and observational learning.

The social-cognitive theory further makes a distinction between *outcome* expectations and *efficacy* expectations (Cervone & Pervin, 2007: 461; Schunk, 2008a:105). *Outcome* expectations are the students' beliefs about the anticipated outcomes of their actions, that is, the expectation that a given action can lead to certain positive or negative outcomes, or the benefits and costs of behaviours (Maes & Gebhardt, 2005:350; Schunk & Pajares, 2009:37; Wigfield, Tonks & Klauda, 2009:57; Zimmerman, 2005:17). On the other hand, *efficacy* expectations are the students' evaluations of their capability to perform the skills required for a given outcome. Thus, an *outcome expectation* is the belief that a certain behaviour or action will lead to a certain outcome; while an *efficacy expectation* is the belief about the student's ability to perform the action. It is apparent from the above explanation of efficacy expectation that this aspect has more to do with the student's self-efficacy.

### 2.4.2 Self-efficacy

*Self-efficacy* is a concept coined by Bandura (Eccles & Wigfield, 2002:110; Schunk & Pajares, 2009:35; Zimmerman, 2005:17; Zimmerman & Cleary, 2006:47) to explain the beliefs that individuals (e.g., students) hold about their capability to learn or to perform tasks at designated levels. *Self-efficacy* is a domain-specific perception of the student's abilities to execute an action (Schunk 2008a:105; Schunk & Pajares, 2009:36; Wigfield, Eccles, Schiefele, Roeser & Davis-Kean, 2006:935). It is therefore a task- and context-specific perception, which has to do with questions such as, "How well can I do this mathematics sum?" Or, "How can I do well in the coming test?" (Zimmerman & Cleary, 2006:47). Furthermore, as Schunk and Pajares (2009:39) put it, the possession of a skill and an ability (i.e., knowing what to do) is not synonymous with self-efficacy, although students with higher abilities and better skills tend to have higher levels of self-efficacy beliefs.

Bandura proposes that individuals (e.g., adolescents) acquire knowledge about their self-efficacy from four sources, namely, their own actual performances; vicarious experiences; forms of social persuasion; and their interpretations of their own physiological reactions (Schunk, 2008a:106; Schunk & Meece 2006:73; Schunk & Pajares, 2009:36; Zimmerman & Cleary, 2006:63). The role of actual performance is shown when the students get a sense of what they can or cannot do by their achievements in tests. For example, students who obtain 80% in a history test may believe that they are capable of doing well in that subject in future. The role of vicarious experience is displayed when the self-efficacy is raised or lowered as a result of observing the success or failure of a model with whom the adolescent identifies in terms of age, gender and ability (e.g., when their peers fail, or achieve well in a mathematics test). Social persuasion in the form of performance-feedback (e.g., the encouragement that students get from their teachers to convince them that they are capable of doing well in tests) can increase the students' self-efficacy. Finally, physiological reactions (e.g., a rapid heart-rate or sweating palms that result from emotional states such as anxiety when preparing to write a test), may become a cause or a result of a student's level of self-efficacy.

It has been found that actual performance offer the most reliable source of assessing self-efficacy in that frequent successes generally raise the level of self-efficacy, whereas consistent failure leads to lower levels of self-efficacy (Schunk, 2008a:107; Schunk & Pajares, 2009:26). However, self-efficacy beliefs that develop from an interpretation of actual performance are also influenced by self-regulatory processes, such as goal-setting, self-evaluation, strategy-use and the adolescent's evaluation of factors surrounding his or her accomplishment (Zimmerman & Cleary, 2006:63). That is, actual performance is likely to raise the level of self-efficacy if the adolescent believes that the cause of success is attributed to controllable factors like goal-setting, effort, and in the use and adjustment of learning strategies. Therefore, the development of self-efficacy following actual performance depends on the type of goals and learning strategies used prior to performing a particular learning task.

Self-efficacy can play an important role in general performance. It has been found that although both outcome-expectations and self-efficacy are positively related to achievement in reading and writing (Schunk, 2008a:105), self-efficacy has a much stronger influence. Furthermore, self-efficacy is a better predictor of attitude towards mathematics than ability (Schunk, 2008a:107; Zimmerman, 2005:18; Zimmerman & Cleary, 2006:51). Researchers also discovered that a high self-efficacy is significantly associated with effort, persistence, task and career-choice, as well as with goal-setting (Eccles & Wigfield, 2002:11; Schunk, 2008a:107; Zimmerman, 2005:18; Zimmerman & Cleary, 2006:51, 53).

Self-efficacy is often confused with other constructs that deal with the 'self'. Therefore it is important to explain the 'self' constructs in terms of how they differ from self-efficacy. According to Zimmerman and Cleary (2006:48), *self-concept* and *self-esteem* are constructs that are often used interchangeably with self-efficacy, although they are different. The *self-concept* is multi-dimensional, and refers to generalised self-assessment and beliefs, such as feelings of self-worth, and beliefs people hold about their competency (Schunk, 2008a:106; Schunk & Pajares, 2009:39; Zimmerman & Cleary, 2006:48). The self-concept is said to be hierarchically arranged, and comprises the global self. It can also be specific to

certain domains of one's life, such as the emotional, physical, social, and academic aspects (Kruger, 2003:25). In comparison to the self-concept, *self-efficacy* is assumed to be more fluctuating and changeable (Schunk, 2008a:108). On the other hand, *self-esteem* refers to one's beliefs that involve a judgement of self-worth (Schunk, 2008a:496; Zimmerman & Cleary, 2006:49).

It is evident from the above discussion that personal, behavioural and environmental factors reciprocally interact to either raise or lower an adolescent's self-efficacy. Furthermore, self-efficacy is, in a sense, multi-dimensional in that it can vary according to the situation as well as the difficulty level of a task. For instance, in mathematics, students may have strong beliefs in their capacity to do algebra, but do not believe that they have the capacity to do geometry. Moreover, when linking performance-progress with strategy-use and when giving feedback, social agents such as teachers can play a major role in cultivating long-lasting effects on adolescents' self-efficacy beliefs (Zimmerman & Cleary, 2006:64). Their levels of self-efficacy can also be influenced by the use of learning strategies and the attributions they make to the results of their actual performances.

### **2.4.3 Goals**

Goals are also conceived as important components of the reciprocal triad of the social-cognitive theory and, as stated earlier, are important to self-efficacy beliefs. According to the social-cognitive theory, adolescents' ability to envision the future enables them to set specific goals for action, to motivate themselves, and to direct their own attention (Bembenuddy, 2010:6; Cervone & Pervin 2007:462; Schunk 2008a:98). Goal-setting and planning are therefore important for SRL (Zumbrunn, Tadlock & Roberts, 2011:9).

*Goal-setting* involves establishing a standard for attaining learning- and performance-outcomes (Schunk, 2012:138; Zimmerman & Cleary, 2009:250). Furthermore, goal-setting enhances performance by directing the student's actions or behaviour. According to Schunk (2012:425), *goal-setting* is an effective time-management strategy that is used by self-regulated learners. For instance, a student may have the aspiration to pass the Grade 12-examinations with marks

that satisfy the requirements for university entrance, and therefore he or she may set him/herself the short-term goal of studying daily for scheduled time-periods in order to ensure success.

Observing models who are successful can motivate students to set themselves specific goals, and can enhance their learning and performance through the self-evaluation of their progress (Schunk, 2008a:99). However, regarding the effect of goal-setting on performance and learning, *commitment* is required to attain the set goals because goal-setting without action will have no positive influence on performance.

There are various conditions which should exist in order for goal-setting to affect learning and performance positively. One such a condition is that the goals should be self-set. It was discovered that high goal-attainment is more likely when the goals are self-set than when they are decided upon by others (Cassazza, 2006:148; Schunk, 2008a:102). Such goal-setting, which refers to specifying the intended outcomes of the student's actions, is an important aspect of learning (Wolters, 2003:198; Zimmerman, 1998:76).

The effect of goals differs not only in terms of whether they are self-set or not, but also in terms of proximity, specificity, and difficulty (Cervone & Pervin, 2007:465; Schunk 2008a:19). *Proximity* is a concept used to differentiate goals in terms of how close or how far they project into the future. *Difficulty* refers to the level of proficiency required to do the task as evaluated against a set standard. *Specificity* refers to the fact that the goals need to be specific in describing the standard of performance required, instead of just being general.

The three properties of goals referred to above (specificity, proximity and difficulty), are important, and have an effect on behaviour for various reasons. *Specific goals* tend to enhance learning more than general goals, in that they help to determine the amount of effort needed for success (Schunk, 2008a:99). Similarly, specific goals promote self-efficacy, when students evaluate their progress towards goal-attainment, and feel satisfied when the goals have been reached (Wolters, 2003:198). *Proximal goals* are normally short-term. Short-term

goals are more likely to direct behaviour than distant or long-term goals. Evaluating progress and achievement with short-term goals are easier, and provides immediate feedback (Schunk, 2008a:100). A difficult goal demands more effort than an easy one, and is more likely to enhance performance, depending on the availability of prerequisite skills (Bandura, 1999:28).

It is not only goals in general that are necessary, but also the *type* of goal-orientation that needs to be considered. The construct 'goal orientation' is used to explain the reason for engaging in achievement tasks (Sakiz, 2011:771; Schunk, 2008a:489). Goal-orientation, therefore, determines how students approach and respond to the learning activities (Brophy, 2010:73; Jackman, Townsend & Hamilton, 2009:151; Pintrich, 2005:472; Vrugt & Oort, 2008:125). According to Mansfield and Vallance (2009:51), the term *goal-orientation* is derived from the achievement goal-theory. *Goal-theory* states that students engage in learning activities in order to achieve either one of two academic goals, namely learning or mastery, and performance goals (Covington, 2000:175; DiPerna, 2006:9; Senko, Hulleman & Harackiewicz, 2011:27; Wolters, 2003:180). Learning goals orient students to focus on the process and skills that help them to try to understand their work, and to improve their skills (competence). On the other hand, performance goals orient them towards focusing on their ability to outperform others, and on getting recognition for superior performance (Linnenbrink & Pintrich, 2002:321; Schunk 2008a:487). Students who approach a learning task with the goal of *understanding* the learning material are said to be adopting a *mastery* or learning goal-orientation. On the other hand, students who approach the material with the goal to *out-perform* others are said to be adopting a *performance* goal-orientation (Covington, 2000:175; Eccles & Wigfield, 2002:115; Vrugt & Oort, 2008:125).

The goal or goal-type directs a student's behaviour, choice of task, effort expenditure, and persistence (Cervone & Pervin, 2007:462; Schunk, 2008a:98). This dynamic interaction between goals and engagement is the essence of the triadic reciprocal determination, as explained by the social-cognitive theory. The goal that a student selects or regards as important at a particular moment influences the type of action, as well as the amount of effort that he or she would put in to manage a task. The type of goal that the student chooses also depends

on the opportunity that is provided in the environment, as well as his/her self-efficacy for goal-attainment (Cervone & Pervin, 2007:465).

Goals have been found to be closely linked to the students' perceptions or beliefs about the nature of intelligence. The implicit theory of intelligence, which was posited by Dweck (1986:1041), explains this belief, and differentiates between *entity* theory and *incremental* theory (Dupeyrat & Mariné, 2005:44; Dweck, 2008:2; Snowman & McCown, 2012:368). According to the *implicit* theory of intelligence, students who believe that being smart is a finite quality that a person is born with, hold an *entity* theory of intelligence, while those students who believe that smartness is a malleable attribute which can be developed through effort and learning, hold an *incremental* theory of intelligence. It has been found that students with beliefs in an incremental theory of intelligence are more likely to pursue learning goals which are aimed at developing skills and increasing competencies, even when doubting their abilities (Baird, Scott, Dearing & Hamill, 2009:885; Cervone & Pervin, 2007:506).

The influence of the environment on goals can also be explained in terms of feedback on progress. *Progress-feedback* provides information about a student's progress towards set goals. Students who received positive feedback on previous goal-accomplishments tend to perform better than students who received negative feedback (Schunk, 2008a:103). *Self-revaluation* also provides the student with some form of progress feedback. Progress feedback can be regarded as a form of social persuasion from which the students acquire information about their self-efficacy (Schunk, 2008a:106). The above exposition indicates the students' personal attributes (i.e., self-efficacy, self-set goals) their behaviour (i.e., effort-expenditure or persistence) and environmental factors (i.e. the teachers' feedback) reciprocally determine one another.

In summary, the preceding discussion shows that goals are regarded as important elements in the social-cognitive theory, due to their contribution to an adolescent's capacity for self-control, and for influencing learning and performance. Goals give direction to adolescents' behaviour and performance, especially if they are specific and self-set. Goals also help to initiate behaviour, despite what the environmental

situation offers the adolescent. This confirms the view of an adolescent as an agent of change, instead of as a victim of circumstances. Goals can be altered if the resultant behaviour does not lead to the desired outcome. This capacity to change or alter their thoughts (when deciding to change goals), and behaviour could be the essence of the adolescents' capacity for self-regulation. Thus, the goal-theory helps to explain and predict the students' achievement-behaviours (Schunk, 2008a:487). The goal-theory emphasises different types of goals that influence behaviour in achievement situations. The theory on goal-orientation also helps researchers to gain a clear understanding of how motivation fits into Bandura's social cognitive theory, and into his principle of triadic reciprocal determination.

#### **2.4.4 Self-regulation**

Self-regulation has been a focus of interest for researchers of psychology and education since the 1980's (Boekaerts, 2006:345; Boekaerts, Pintrich & Zeiner, 2005:1). According to Schunk (2008a:78), Bandura expanded his theory of observational learning to address how people (e.g., adolescent students) seek control over important events in their lives through self-regulation. *Self-regulation* is related to self-generated thoughts, feelings and actions that interact with individual plans, and which can be adapted to attain personal goals (Zimmerman, 2005:14). This description indicates that there is an interactive involvement of cognition, affect, and behavior when a student is engaged in self-regulation.

Just as behaviour, personal and environmental factors interact in a cyclical fashion. According to the social-cognitive theory, the three self-regulatory processes of forethought, performance-control and self-reflection similarly interact during the course of learning and performance. An important point to note is that the student uses feedback from prior performances to make adjustments that are necessary for constantly changing his personal, behavioural and environmental factors (Zimmerman, 2005:14).

According to Snowman and McCown (2012:274), the elements of the triadic reciprocal model that are involved during self-regulation are:

- *Personal factors*, that include inner factors that affect the students' learning, such as cognition and affect, meta-cognitive knowledge (the insight on declarative, conditional and procedural knowledge), self-efficacy, goals and anxiety.
- *Behavioural factors*, that include self-observation (e.g., using journals to note the factors that affect learning, motivation and self-efficacy), and adjusting the students' behaviour to overcome perceptions of low self-efficacy, to reduce anxiety and ineffective learning strategies, and to create productive study and learning environments.
- *Environmental factors*, that include the students' external influences and physical environments, such as when others model and explain particular skills to them and verbally persuade them to display particular behaviours. The nature of the tasks and reinforcing consequences may also form part of the environment.

Some self-regulation strategies were found to be predictive of academic achievement and resilience amongst Italian high school students (Nota, Soresi & Zimmerman, 2004:214). The capacity for proactive self-regulation is often linked to pro-social behaviour, hope, and high academic achievement (Abdullah, 2007:365; Jones, 2007:7). According to Zimmerman (1998:73), individuals in various fields of expertise rely on using self-regulatory strategies to enhance their performance, while studies in health psychology show that self-regulation is also associated with good health. On the other hand, dysfunctions in self-regulatory skills can adversely affect individuals' health (e.g., the failure to take the needed medicines); behaviour (e.g., procrastination, alcohol-abuse, unprotected sex) (Zimmerman, 2005:26).

#### **2.4.5 Self-regulated learning**

Educational psychologists study SRL as a form of learning that is strategic, meta-cognitively-guided, and in part, intrinsically-motivated (Winne & Perry, 2005:533). According to Zimmerman (2008:166), *SRL* refers to proactive, self-directive processes and self-beliefs that enable students to transform their mental abilities

into academic performance skills. It was mentioned earlier that, according to the social-cognitive theory, personal, behavioural and environmental factors are elements that form a triad (see section 2.3.3). These same factors seem to operate in SRL. However, in the case of SRL, different concepts are used to refer to the same factors of the triad. The factors that are involved in SRL are referred to as *covert* self-regulation, *behavioural* self-regulation and *environmental* self-regulation. The *personal* factors involved in covert self-regulation include cognition (remembering); affective states (fears about performance), and self-processes; the *behavioural* factors include methods of self-control, and self-monitoring of the student's performance; the *environmental* factors refer to observation and adjustment to environmental conditions (Snowman & McCown, 2012:274; Zimmerman, 2005:14).

SRL is displayed in "...students who self-direct efforts to acquire skills and knowledge by implementing specific strategies instead of reacting passively to their teachers' instructions" (Nota, et al., 2004:199). Furthermore, students who display proactive qualities, such as perseverance, personal initiative, and adaptive skills are often self-regulated learners who are motivationally, meta-cognitively and behaviourally active participants in their own learning processes (Zimmerman, 2008:167).

Many researchers have undertaken work on SRL, and various models of SRL have been developed (Boekaerts, 2006:346; Puustinen & Pulkkinen, 2001:270; Valle, Cabanach, Núñez, González-Pienda, Rondíguez & Piñeiro, 2003:558; Winne & Hadwin, 2011:35; Ziegler, Stoeger & Grassinger, 2011:162).

Table 2.2 is a synthesis that provides details of SRL models that have appeared in the literature.

**Table 2.2: Models of self-regulated learning**

Author	Focus	Associated theoretical perspective	Research context and applicability
Boekaerts & Niemivirta, (2005).	Motivation and volition strategies.	Influenced largely by Kuhl's volitional perspective.	Classrooms.
Pintrich, (2005).	Motivation and goal-orientation. Four phases (forethought, monitoring, control, reflection). Four areas of regulation (cognition, motivation, behaviour, context).	Build on Zimmerman's work.	Initially developed for university students.
Winne & Hadwin (Winne & Perry, 2005).	Four stages (task definition, goal setting and planning, enacting the strategies, adapting the strategies).	Influenced by the Information Processing Theory (Greene & Azevedo, 2007).	Computer-based learning, initially for university students.
Zimmerman, (2005).	Three cyclical processes (forethought, performance control, self-reflection).	Influenced by Bandura.	Used in all contexts.

The different models presented in Table 2.2 will now be explained.

(i) *Boekaerts' SRL model of adaptable learning*

Boekaerts focused on volitional strategies and motivational aspects of SRL (Boekaerts, 2002:599; Boekaerts & Cascaller, 2006:201; Boekaerts & Corno, 2005:202; Puustinen & Pulkkinen, 2001:280; Winne & Hadwin, 2011:35). With her model of *adaptable learning*, Boekaerts (2002:600) proposes that the student rarely pursues single goals, but instead shows the need to extend knowledge and skills (academic and learning goals), as well as the need to belong, and to achieve emotional wellbeing (social and wellbeing goals). This model is also known as the *dual processing model* (Boekaerts, 2006:349). That is, the students attempt to

strike a balance between engaging in tasks that are linked to the achievement of academic goals (such as improving cognitive strategy-use), and pursuing goals that help to maintain psychological wellbeing (such as withdrawing from learning tasks when they feel anxious about the tasks).

As stated earlier in Chapter 1, adolescents are often challenged by peer group pressure as they try to fit in, and may therefore engage in tasks to satisfy group-goals at the expense of individual goals. In this instance, Boekaert's (2006) model, which confirms that students often pursue multiple goals, is supported by recent research findings (Mansfield & Wosnitza, 2010:162). Furthermore, the model stresses that students use volitional skills to commit to whatever goals are chosen at any particular moment. It can therefore be argued that although Boekaert's (2006) model emphasizes both the social and the cognitive aspects of learning, it tends to place more emphasis on volitional strategies and on the role of effort.

(ii) *Pintrich's four-phase model of SRL*

Pintrich proposed a four-phase model of self-regulation (Greene & Azevedo, 2007:335; Pintrich, 2005:455-456; Puustinen & Pulkkinen, 2001:274; Schunk, 2005:86-87). The model explains what possibly happens in each of the four areas of regulation, namely cognition, affect or motivation, behavior, and context. The four phases are not necessarily linearly ordered. Individuals need not engage in all of the phases in some situations. They may also simultaneously engage in more than one phase in other learning situations (Pintrich, 2005:453; Schunk, 2005:86).

According to Pintrich (2005:454), the SRL phases and processor activities that take place as students engage in learning tasks are as follows:

- *Forethought phase*: The activities that take place include the students' goal-setting; prior content and meta-cognitive knowledge-activation (i.e., cognitive area of regulation); goal-orientation; task-value and efficacy-judgment (i.e., motivation area); time and effort-planning; the planning of self-observation (i.e., behaviour area), as well as the perception of context and task (i.e., context area).

- *Monitoring phase:* Activities in this phase entail the students' awareness of their meta-cognition and attending to their actions and their outcomes, including their judgment of learning (cognition); their awareness of their self-efficacies and anxieties (motivation and affect); their awareness and the monitoring of their use of time and effort (behaviour); and their monitoring of the task and learning conditions (context).
- *Control phase:* This has to do with how the individuals control their cognitions, motivations, behaviour and contexts during the four phases of the model, such as when they select and change learning strategies (cognition); choose and adapt strategies for managing anxiety and self-efficacy (motivation); persist and increase or decrease effort (behaviour); and improve learning situations to be more conducive to their learning, such as removing distractors, and asking for help (context).
- *Reflection phase:* This phase includes cognitive judgments (the evaluation of the student's performance); motivational reactions (feeling angry for failing or proud of successes; attributing failure to inability); behavioral reactions (the students reflect on their use and management of time and effort), and contextual reactions (the students evaluate task-demands and situations in terms of what to change in order to become more effective in the future).

The above-mentioned model appears to tap on the processes that occur during learning. The model explains why certain individuals do not give up after failing to perform tasks in various domains and spheres of life. Instead, they change strategies, try again, and persist until they eventually succeed.

(iii) *Winne and Hadwin's four-stage model*

Winne and Hadwin (in Puustinen & Pulkkinen, 2001:277; Winne & Perry, 2005:536) proposed a four stage model that explains SRL as an event rather than an aptitude. The acronym COPES, which refers to conditions, operations, products, evaluations and standards, is used to refer to the information and interactive processes that are involved during each stage (Greene & Azevedo, 2007:335; Puustinen & Pulkkinen, 2001:276; Winne & Perry, 2005:537).

Regarding *conditions*, there are two kinds, namely *cognitive* knowledge (e.g., motivation, information about the current task, and of study strategies and tactics), and *task* knowledge (e.g., the environmental context, resources, and time). Regarding *operations*, these are actual processes that the students engage in as they learn or perform learning tasks (e. g., rehearsing, recalling, transcribing), and which result in products. *Products* are the results of the operations (e.g., performance or observable behavior, such as the ability to transcribe pieces of information). *Evaluations* occur when the students monitor their own performances by comparing their products against set standards to check if there is a need for adaptation or not. *Standards* are the success criteria against which products are evaluated (e.g., what needs to be studied for a test, as well as the students' beliefs about the study strategies to be used).

The four stages that are identifiable in Winne and Hadwin's (2011) model are, namely defining a task (e.g., the student's general perception of the task); setting goals and planning; enacting the plans, study tactics and strategies generated in the previous stage; and the meta-cognitive adaptation of the strategies (Greene & Azevedo, 2007:335; Puustinen & Pulkkinen, 2001:276; Winne & Perry, 2005:537). Despite bearing some resemblances with the other two models (i.e., Pintrich's and Zimmerman's models), Winne and Hadwin's model emphasises procedures that relate to the processing of information. In this regard, Greene and Azevedo (2007:335) assert that the model is influenced by the information-processing theory.

(iv) *Zimmerman's social-cognitive model*

Zimmerman's model is the most well-known and commonly researched model that describes how self-regulation occurs (Nückles, Hübner & Renkl, 2009:261). According to Zimmerman's model, *self-regulation* is described as cyclical processes which occur in three phases, namely forethought, performance control, and self-reflection (Cleary & Zimmerman, 2004:538; Schunk & Ertmer, 2005:633; Winne & Hadwin, 2011:35; Zimmerman, 2002:68; Zimmerman, 2005:16; Zimmerman & Cleary, 2009:248). *Forethought* processes include processes that

occur before any effort to act or learn. An example of what happens during the first phase is when the students analyse the learning task and motivational beliefs, and select learning strategies in order to achieve the learning goals. The students execute tasks and simultaneously monitor their *performance progress* during the second phase. The *self-reflection* phase is displayed when the students judge how goals are achieved, and compare their achievements to set standards.

It has been found that *forethought* has an influence on the performance control processes (i.e., processes which occur during the learning efforts), which in turn influences the *self-reflection* processes that occur after learning or performance (Cleary & Zimmerman, 2004:538). The self-reflection processes then influence the *forethought*, and thereby complete the self-regulation cycle.

The above discussion of the four models of SRL shows that they are similar, particularly with respect to the interactive role played by the cognitive, affective and social factors in learning. Secondly, all the models emphasise similar processes that are important for SRL, e.g. goal-setting and planning; monitoring and self-evaluation, and performance-feedback. Thirdly, the models share the assumption that students are active participants in the learning process, and therefore have the capacity to choose and act on their choices (Winne & Hadwin, 2011:36).

Although the SRL models share some common features, they do not all seem to be based on the same theoretical perspective. Boekaerts' model emphasises volitional control, and may therefore be categorised as having a volitional perspective rather than a social-cognitive perspective. On the other hand, the model by Winne and Hadwin draws largely from the information-processing theory (Greene & Azevedo, 2007:364). Furthermore, the fact that Winne and Hadwin's model was developed in and mainly applied to computerised learning contexts makes it irrelevant to the learning environments where basic learning resources like textbooks are inadequate.

Pintrich's and Zimmerman's models appear to be the only ones that are mainly based on the social-cognitive theory (Puustinen & Pulkkinen, 2001:282). Both

Pintrich's and Zimmerman' models clearly show the interactive role that the environment, personal, and behavioural factors play during learning and the acquisition of academic skills. Another important aspect is that it seems that any one of these models may be simple to explain to adolescents in high schools.

It was indicated earlier (see section 2.4.1) that competencies or skills are often included in the social-cognitive theory-based research. Thus, the role of skills or competencies is discussed in the section that now follows.

#### **2.4.6 Competencies or skills**

*Competencies* are cognitive knowledge and skills which may be acquired through observational learning. There are three types of knowledge involved in the competencies, namely *declarative* (in the form of words, facts, events in a story), *procedural* (rules, concepts, algorithms), and *conditional* (knowing when to use the declarative and procedural knowledge, as well as why it is important to use them) (Cervone & Pervin, 2007:458, Schunk, 2008a:82). Therefore, according to the social-cognitive theory, competencies encompass cognitive abilities and skills involved in problem-solving that enable the students to cope with life's challenges. Schunk (2008a:153) elaborates on these knowledge types as follows:

- *declarative* knowledge is factual knowledge, subjective beliefs, and implicit and explicit knowledge – in other words, the students' knowledge *about* things;
- *procedural* knowledge is the knowledge that is demonstrated when students understand *how* to do things;
- *conditional* knowledge is the knowledge students display when they incorporate all three types of knowledge to solve problems – this implies knowing the *why* and *when* aspects of cognition

The concept *competence* as defined from the perspective of the social-cognitive theory appears to be similar to that which is in terms of the 21<sup>st</sup> Century Competencies Framework. Within this framework, *competencies* are skills that a student needs to function effectively and to adapt within any particular context

(Coatsworth, undated; Wolters, 2010:2). Therefore, competencies encompass the skills, knowledge, and attitudes needed to coordinate psychological functioning (cognitive, affective, behavioural) and environmental resources to successfully achieve goals in school and in life in general (Duckworth, et al., 2009:7; Valle, et al., 2003:553-580).

When considering skills or competencies, students need to prioritise and be mindful of relevancy and the context in which the skills will be needed. In response to the need for relevancy and in consideration of the contextual issues, an answer to the question, “What is the main purpose of schooling?” may be helpful. The main purpose of schooling is to achieve academic goals, which are often classified under the umbrella concept of *learning*. Therefore, learning skills are of particular importance here. This concept of learning does not necessarily imply that learning occurs only on the context of a school or an academic situation.

#### **2.4.7 Learning strategies and study skills**

Freeman (2004:1) describes a *learning strategy* as a student’s way of organising and using a particular set of skills to learn content or to perform tasks more effectively in school, as well as in non-academic settings. The concepts *study skills* and *learning strategies* are sometimes used interchangeably, and are often confused. According to Malan (1996:250), *study skills* include a broad array of skills necessary for success in academic settings, whereas *learning strategies* are techniques, rules or principles that enable the student to learn, to solve problems, or to complete tasks independently. Snowman and McCown (2012:285) further make a distinction between a learning *strategy* and a learning *tactic*. A *learning strategy* is a plan that is orientated towards accomplishing a learning goal, including the creation and maintenance of internal and external conditions (Howell & Watson, 2007: 169; Schunk, 2008a:217; Snowman & McCown, 2012:291). A *learning tactic*, however, refers to a specific technique that the students use to achieve immediate learning goals.

When viewed from the perspective of the social-cognitive theory, students potentially acquire declarative and procedural knowledge of competencies or

skills, such as learning strategies and learning tactics, through observational learning from models in their environments. Personal factors, such as self-efficacy, set goals and self-regulatory processes, also interactively contribute to influence the learning process. There is consensus that core competencies or skills involved in SRL are the students' repertoire of learning strategies which enable them to increase their personal control over their own behaviour and environments, and thereby improve their performances (Weinstein, in Monteith, 1996:221).

The three interactive factors (personal, behavioural and context), as discussed in the social-cognitive theory, as well as areas of the SRL and related learning strategies or study skills, are summarised in Table 2.3.

**Table 2.3: Learning strategies and study skills associated with the social-cognitive theory**

<b>Factor</b>	<b>Area of SRL and explanation</b>	<b>Learning-strategy and study-skills</b>
Personal factors	Cognition: refers to the mental processes that students use to process information or to learn when engaged in academic tasks.	Cognitive strategies are skills that students use to learn, to remember and to understand the learning material.
	Meta-cognition: refers to the students' knowledge about their own cognitive processes and the extent to which they efficiently use this knowledge to regulate their cognitive processes.	Meta-cognitive strategies are those skills that are used in the planning, monitoring and regulation of cognition during learning.
	Motivational- and affect-regulation: motivation level as influenced by set goals, emotions and self-efficacy.	Self-reinforcement, self-recording of worry.
Behavioural factors	Behavioural control: the actual participation, conduct and action involved when learning.	Strategy-use, in terms of time and effort, the monitoring and use of tactics such as note-taking.
Context/ environmental factors	Task-setting: refers to the immediate tasks and classroom or social environments.	Regulation of noise level, lighting and support systems.

Table 2.3 shows that, according to the social-cognitive theory, personal, behavioral, and environmental factors are involved during SRL. Cognition and meta-cognitive processes, as well as emotional and motivational processes, all influence behaviour and context. Certain learning strategies and study skills are associated with a particular factor. (Details about the strategies and skills which

are listed in the last column and the related intervention models are presented in Chapter 3).

In summary, four important aspects are noted, namely

Firstly, there are six major theoretical frameworks in SRL, as explained in the literature, and each emphasises different aspects of the same phenomena. For instance, the behaviourist perspective assumes that students' choices and actions, such as learning, are predominantly influenced by environmental stimuli and their consequences. However, according to Bandura's social-cognitive theory, personal characteristics, and behavioural and environmental factors interact reciprocally to influence learning. Therefore, behaviour has a role to play in SRL from both perspectives, but Bandura stresses that personal and environmental factors have an equal influence. To explain this equality of influence, Bandura stated his principle of triadic reciprocity to explain the interaction of the three factors in SRL.

Secondly, various models of SRL that could be linked to the six major theoretical frameworks were developed. Some of these models are similar in some respects, but differ in terms of being more aligned to a particular theory than the other. For example, the model of Winne and Hadwin (2011) is based, in particular, on the information-processing model of thinking, and emphasises SRL at task level. Some of the models are less user-friendly to develop SRL skills in students. Therefore, the researcher explained only four of the most recent models that frequently appear in the literature, namely that of Boekaerts (2002), Pintrich (2005), Winne and Hadwin (2011), Winne and Perry (2005) and Zimmerman (2002, 2005).

Thirdly, of the four SRL models discussed, only those of Zimmerman (2002, 2005) and Pintrich (2005) are based on the social-cognitive theory. SRL models based on the social-cognitive theory seem to clearly explain SRL and other related concepts, like self-efficacy, the role of goals and competencies or skills, such as self-regulation.

Lastly, the clarity with which the models, based on the social-cognitive theory, explain the SRL processes, and emphasise human agency, has promoted the researcher to identify the social-cognitive theory as the most preferable framework for this study. Therefore, this study draws from both Zimmerman's (2002, 2005) and Pintrich's (2005) models of SRL.

## **2.5 CONCLUSION**

In this chapter the researcher provided an overview of six theoretical perspectives on which earlier research on SRL was mainly based, namely operant conditioning; phenomenology; the social-cognitive theory; the volition theory; Vygotsky's theory; and cognitive constructivism. A detailed discussion of SRL, according to the social-cognitive theory, followed including a brief analysis of four recent models of SRL. According to the social-cognitive theory, self-efficacy, goals and learning strategies are important aspects of SRL that are relevant to this study. The researcher also explained the choice of the social-cognitive theory as the theoretical framework on which this study is based.

In the next chapter the focus will be on SRL in particular.

## **CHAPTER 3**

### **SELF-REGULATED LEARNING (SRL) PROGRAMMES**

#### **3.1 INTRODUCTION**

The previous chapter addressed various theories on SRL.

The focus of this chapter is on the types of SRL intervention programmes that are based on the social-cognitive theory, with a focus on learning strategies, as well as on other researchers' findings with regard to SRL. Thus, this chapter addresses the link between SRL and learning strategies, learning strategy-instruction and SRL models, and some contextual limitations of these models that motivated the researcher to undertake this study.

#### **3.2 THE LINK BETWEEN SRL AND LEARNING STRATEGIES**

Characteristics that are commonly mentioned in respect of all SRL models include the fact that SRL occurs in the context of a task the student is trying to pursue, and that the student has the capacity to exercise freedom of choice and to act on the choices made (agency). Thus, SRL is about being oriented towards a particular goal; monitoring one's progress towards goal-achievement; and using memory and reasoning to make the necessary learning adjustments according to the demands of the task (Winne & Hadwin, 2011:36). Furthermore, most models of SRL emphasise particular learning strategies.

*Learning strategies* refer to any cognitive, emotional and behavioural processes or actions that enable the effective acquisition and subsequent transfer of new knowledge and skills to other contexts (Weinstein, Acee & Jung, 2011a:137; Weinstein, Husman & Dierking, 2005:727). In other words, a learning strategy also refers to a plan of how to use particular skills to facilitate a better understanding and effective learning, or how to execute other tasks (Snowman & McCown, 2012:285). As stated by Chiu, Chow and McBride-Chang (2007:345), learning strategies help students to understand new information.

Knowledge of such learning strategies is necessary, not only for students who experience learning difficulties, but for *all* students (Chiu, et al., 2007:360; Ruban, McCoach, McGuire & Reis, 2003:272). Furthermore, knowledge of learning strategies is an important or necessary attribute of SRL (Stroud, 2006:16).

Researchers believe that self-regulated learners are more likely to achieve better and to make use of effective learning strategies than other learners (Schunk, 2012:417; Seabi, 2011:240). Students who have acquired effective learning strategies generally enhance their academic performance. Thus, the education authorities in most countries saw a need to infuse training in learning strategies into the curricula in some way or another. For example, learning skills and work habits are infused into the curricula of Grades 1 to 12 Ontario schools. The learning coaches of Wales also offer study skills as one of the educational services available for students between 14 and 19 years of age (Saunders, 2008:12), while similar skills are offered as part of the subject Life Orientation in South Africa (DoBE, 2011b:6). This indicates that teaching students skills of learning is viewed as a major contributing factor to their success (Growing Success, 2010:9).

### **3.3 SRL INTERVENTION PROGRAMMES**

According to Boekaerts and Corno (2005:213), SRL interventions fall under three categories, namely cognitive behaviour modification; direct instruction to develop meta-cognitive skills and learning strategies; and socio-cultural theory-based interventions in subject-specific contexts. (i) Programmes that fall under the category of cognitive *behaviour modification* are those that are aimed at training people to replace or change maladaptive behaviours and thoughts with more adaptable ones. (ii) *Learning strategies* are included under the second category (direct instruction), which involves programmes that are aimed at the direct teaching of cognitive and meta-cognitive components of SRL, and have as a result been linked to achievement-outcomes, e.g., study skills and learning-to-learn (Boekaerts & Corno, 2005:216). (iii) The third category (interventions in subject-specific contexts), includes programmes that develop SRL skills in a *particular*

subject/domain or content area through mediated learning and learner-to-learner collaboration in communities (Boekaerts & Corno, 2005:218).

Table 3.1 below indicates a number of examples of the programmes that have been described above.

**Table 3.1: Categories of SRL interventions**

(adapted from Boekaerts & Corno, 2005)

Category	Explanation, type of programme and example
Cognitive-behaviour modification.	<u>Stress inoculation</u> : The students are taught to maintain attention, to regulate anxiety and to replace associated maladaptive cognitions with adaptive self-questioning.
	<u>Mental simulations</u> : The students are trained to use imagery to change dysfunctional beliefs, to use it in simulated contexts, and to apply it to new contexts.
	<u>Manipulating student motivation in tasks</u> : This includes the retraining of attribution, and is applicable when the teacher models the three phases of SRL: preparation before (goal-setting), during (performance-monitoring) and after task-completion (self-evaluation and feedback use) on how to accomplish academic tasks.
	<u>Modifying the classroom environment</u> : This involves adapting the classroom structure to motivate the students, e.g., in TARGET, the acronym for Types of tasks, lines of Authority, means of Recognition, Grouping methods, Evaluation practices, and Time use.
Direct instruction in learning and meta-cognition strategies.	<u>Academic strategy-instruction</u> : The students are taught learning strategies, e.g., Weinstein's course on strategic learning (Weinstein, et al., 2011a:141).
	<u>Embedded</u> : This refers to a domain-dependent or task-specific meta-curriculum course where learning strategies are taught within a particular subject, e.g., for teaching students memory strategies and the monitoring of reading comprehension.
Subject-specific interventions based	<u>Apprenticeship in activities that develop subject matter expertise</u> : Reciprocal teaching to improve reading comprehension; peer-

on the socio-cultural theory.	mediated learning. <u>Computer-mediated learning environment:</u> This refers to interactive computer programmes that are used to check the students' responses, their use of strategies and help-seeking behaviours.
	<u>Collaborative learning in the classroom:</u> Able students model their learning and motivational strategies to others, e.g., peer tutoring.

It is clear from Table 3.1 that there are advantages and disadvantages to each of the types of SRL interventions in the three categories. For example, mental simulation (cognitive behavior-modification) is useful for addressing anxiety-provoking activities which interfere with performance during assessment. On the other hand, computer-mediated learning (subject-specific intervention based on socio-cultural theory), is not advantageous to students who do not have access to computers. Furthermore, although each category may be more relevant in a particular context, one intervention may include some aspect of the other, thus indicating overlaps in terms of application. Cognitive-behaviour therapy is also made up of multiple procedures, thus making it difficult for one to determine which of the interventions are successful.

Another notable point about the information in Table 3.1 is that learning strategies relate to academic strategy-instructions. The literature cites some types of strategy-programmes that offer instruction in cognitive strategies (Weinstein, et al., 2005:733). For instance, Weinstein, et al. (2005:735-736), citing Simpson and others, categorised programmes that are aimed at assisting students to acquire learning strategies as follows:

- learning-to-learn programmes;
- paired/supplemental programmes (learning and strategy are embedded within the content of a specific course);
- bridging programmes (offered to at-risk students considered unprepared for university);
- writing-to-learn programmes; and
- Learning-assistance centres.

*Learning-to-learn* is a course which Pintrich and his colleagues (Schunk, 2005:90) developed to teach undergraduate university students the basic concepts of motivation and cognition, and to assist them to apply the strategies to develop their SRL. These courses, which are regarded as adjunct to the content area course, usually consist of a series of workshops on general learning and study strategies (Weinstein, et al., 2011a:50). Therefore, the students are assisted to acquire a repertoire of learning and study strategies that they can change and transfer to other situations. According to Weinstein, et al. (2005:735), these courses helped to increase university students' retention, and their graduation rates.

With regards to the *paired or supplemental approach*, the courses on learning and study strategies are paired with a specific course, or provided as additional sessions in small seminars (Weinstein, et al., 2005:735; Weinstein, et al., 2011a:50). An example of how this approach works is where students are taught how to manage their time, and to summarise the main ideas as they work through a Science project.

*Bridging programmes* are normally assigned to a particular group of students who are considered to be unprepared for coping with university work. This category includes intervention programmes that often focus on fundamental study skills, as well as on writing and reading, aimed at bridging the gaps between high school and the university first year (Weinstein, et al., 2005:735).

The *writing-to-learn* programmes focus on teaching academic writing, and are usually embedded within a learning-strategies or -content course (Weinstein, et al., 2005:736). The outcomes of these programmes in terms of the improvement of performance are reportedly inconsistent (Ackerman, in Weinstein, et al., 2005:736).

The *learning assistance centres* entail a variety of brief, stand-alone services that are offered to students on a needs-basis. The intervention provided in this category includes skills to improve reading and studying, and also subject-specific tutoring. According to Weinstein, et al. (2005:736), these programmes do not have

any overarching conceptual theory to guide their provision, and research on their impact on academic achievement is scanty.

According to Mireles, Offer, Ward and Dochen (2011:13), the first two categories listed above are grounded on the developmental education perspective which emerged in response to the need for dealing with attrition of unprepared university/college students. Therefore, it appears that the majority of the programmes listed above were mainly applied in the higher education environment, and most impact studies were done in that sector. This indicates the need for a greater focus on high school intervention, as is envisaged with this study.

### **3.4 SPECIFIC SRL STRATEGIES**

The discussion in the preceding section shows that various terms and nomenclature are used for SRL strategies. With regard to the two general categories, namely *domain-dependent* strategies and *domain-independent* strategies (Weinstein, et al., 2011a:140), *domain-dependent* intervention refers to a programme where the students learn domain/content or task-specific strategies. It is also referred to as *meta-curriculum* intervention, since learning and study strategies are embedded in the content/course. Therefore, a range of SRL interventions can be implemented to improve general learning strategies, as well as knowledge of the core content and skills across a range of academic levels (Wolters, 2010:15). On the other hand, intervention programmes that fall under the category of *domain independent* strategies range from a single class session or lesson to a whole course, during which students are directly taught how to learn and study.

#### **3.4.1 Examples of domain-dependent interventions**

One example of a meta-curriculum is where the learning and study strategies are embedded within the course content in what was called the *Maths Fundamental of Conceptual Understanding and Success* (Maths FOCUS) programme (Mireles, et al., 2011:13). Similarly, the Mathematic Self-regulated Learning Programme was

designed to help selected Philippine students improve their Mathematics achievement and study habits (Camahalan, 2006:196). The experimental group showed significant improvement in their Mathematics achievement and Mathematics SRL strategies after 30 sessions of one hour training each throughout the programme.

### **3.4.2 Examples of domain-independent interventions**

There exists a variety of intervention programmes that can be implemented to improve general SRL skills which can be transferred to different subjects. Programmes can be integrated and taught to students with significant skill deficits. For example, the cumulative Grade Point Averages (GPA) of the university students who participated in a SRL course was higher than those of the general population (Weinstein, et al., 2005:743). In some cases instruction in these programmes can also be offered on-line (H & H Publishing, 2013).

Effective programmes appear to be those that give rise to users that implement effective strategies. Researchers explain the characteristic of good learning strategy-users on the basis of the three kinds of knowledge they have about the general or domain-specific strategy. According to Weinstein, et al. (2005:730), good learning strategy-users have declarative, procedural, and conditional knowledge of a particular strategy. Similarly, Dehn (2010:76) asserts that the three kinds of knowledge must be emphasised in memory strategies. (This point is further clarified later in this chapter.)

The three knowledge types in terms of learning strategies are the following, namely *declarative* knowledge that involves factual information, referred to as *knowing what*, *procedural* knowledge is *knowing how*, and *conditional* knowledge is *knowing when and where* (Maggioni & Alexander, 2011:118; Woolfolk, 2010:245). Therefore, it is not sufficient that students know a variety of strategies, or what mnemonics is (declarative). They also need to know *how* to use them, and need to have practiced the use of the strategy (procedural). In addition, students need to know *when* to use a particular strategy (conditional knowledge). For

example, to learn material by reciting it aloud may not be effective when the learning material is complex.

It has been found that students are more likely to apply a learning strategy to a variety of tasks if they possess conditional knowledge (Dehn, 2010:236). Therefore, the three kinds of knowledge that are sometimes referred to as *meta-cognitive knowledge of the strategies* (Vrugt & Oort, 2008:126) are important to consider in discussions about learning strategies.

### **3.4.3 Learning strategies in the context of the SRL theory**

Weinstein and Mayer (in Vrugt & Oort, 2008:128) initially mentioned two categories of learning strategies, namely *cognitive* and *meta-cognitive* strategies, in their taxonomy of learning strategies. However, it was later found that *motivation* also played a role, namely that the students needed the will to use the strategies, and maintain this throughout the learning process (Dignath & Büttner, 2008:236; Weinstein, et al., 2005:732). Furthermore, SRL strategies are also viewed as the 'engine' that helps to control all the other strategies (Weinstein, Acee & Jung, 2011b:139).

Processes that occur as the students acquire, encode and process information while studying or solving problems are referred to as *cognitive strategies*. *Meta-cognitive strategies* refer to the students' knowledge of how to execute, monitor and control their cognitive processes. Meta-memory is another important aspect in learning which relates to meta-cognition. *Meta-memory* refers to the students' awareness and knowledge of their memories, as well as the regulation and beliefs regarding recalling newly-acquired information (Dehn, 2010:76). Meta-memory is an important aspect that has to be included in the instruction of learning and study strategies, especially where there is a need for memory skills.

*Motivational strategies* are strategies that the students use to improve their motivation in the goal-setting stage, and can be spontaneous or be taught (Boekaerts, 2006:356). *SRL strategies* are strategies that the students use to adapt their motivation, cognition, and behaviour, and to apply them in order to

achieve their self-set learning goals (Nota, et al., 2004:199; Winne & Hadwin, 2011:34). Researchers' descriptions of SRL strategies seem to be influenced by their theoretical orientations.

Although there are different descriptions of SRL, all SRL models are based on the assumption that students with knowledge of SRL strategies have the reasoning and the memory-capacity to make choices, and to act on the choices made. In addition, they are oriented towards goals, and can monitor their progress towards goal-achievement (Winne & Hadwin, 2011:36).

The above-mentioned strategies will now be explained further.

#### 3.4.3.1 Cognitive strategies

The types of learning strategies that are commonly discussed in relation to cognitive strategies include rehearsal, elaboration, and organisation (Schunk, 2012:420; Weinstein, et al., 2005:731-732; Weinstein, et al., 2011b:138). *Rehearsal* includes strategies that involve a repetitive exposure to the learning material, either verbally (orally and sub-vocally, or in writing), or non-verbally (seeing or reading over, or hearing a song). *Rote-rehearsal* can be differentiated into rote, passive or simple rehearsal, which has been found to be more effective for learning a list of names, or things in serial order (Dehn, 2010:246, Weinstein, et al., 2011a:47).

*Active rehearsal*, although sharing some of the methods of passive rehearsal such as repetition, is intended as a tool that enables students to hold onto information so that it can be further processed and encoded (Weinstein, et al., 2011b:138). Examples of active rehearsal include highlighting (underlining), copying, and note-taking and summarizing the main ideas (Schunk, 2012:418; Weinstein, et al., 2005: 731). *Elaboration* involves connecting new information to already existing but related knowledge and experience, and then expressing the newly-learned material in the student's own words (Dehn, 2010:286). *Organisational* strategies involve graphically reorganising the learning material into meaningful hierarchical

structures and categories so that it can easily be understood and encoded (Dehn, 2010:243; Schunk, 2012:422; Weinstein, et al., 2011a:48, 139).

#### 3.4.3.2 Meta-cognitive strategies

The types of learning strategies that fall under the category of *meta-cognitive strategies* include the monitoring of comprehension. The students engage in comprehension-monitoring when they reread, or test themselves to check whether they understand what they are learning (Schunk, 2012:424; Weinstein et al., 2005:732; Weinstein, et al., 2011a:140).

#### 3.4.3.3 Motivational strategies

According to Boekaerts (2006:356), researchers mention three types of *motivational strategies*, namely environmental control, interest or value-enhancement, and self-consequating. *Environmental control* refers to the skills used when the student arranges the environment in a way that enables the completion of a task without disruption. *Interest enhancement skills* are those that make a task to be more contextually interesting and enjoyable to complete. Lastly, *self-consequating skills* are operational in a situation where the students engage or disengage in a task as a result of anticipated external consequences. Motivational strategies include beliefs about the task and the self, the interest and related emotional reactions. Therefore, they have to do with self-efficacy beliefs and the will to self-regulate, and are comprised of strategies that help the students to improve their interest and maintain their motivation while being actively involved in learning tasks (Dignath & Büttner, 2008:236).

#### 3.4.3.4 SRL strategies

The last of the categories mentioned above is *SRL strategies*. A three-phase cyclical model that explains the self-regulatory process was developed on the basis of other theoretical perspectives on SRL (Bembenutty, 2008a:9). The SRL strategies mentioned by most researchers are based on this work. Accordingly, academic goal-setting, the regulation of beliefs and motivation, the selection of

learning strategies, progress-monitoring and self-evaluation are specific skills that fall under the category of SRL (Boekaerts & Niemivirta, 2005:431; Weinstein et al., 2011a:139).

The above-mentioned categories of strategies by Weinstein, et al. (2011a:139) are illustrated in Table 3.2 below.

**Table 3.2: Categories of learning strategies and related skills**

(adapted from Weinstein, et al. 2011a:139)

Category		Type and examples	Explanation: Why, when and how to use
Cognitive strategies.	Surface learning	Rehearsal: passive(rote) or Active.	Helps to sustain information in short-term memory, especially when learning the sequence of a list; ineffective for long-term retention; not as effective as self-testing (Dehn, 2010:248).
	Deep learning	Elaboration: using mnemonics, imagery, discussion in study groups, questioning,	Suitable for learning difficult concepts and for deeper processing of information and the improvement of long-term recall; effective for all content subjects (Dehn, 2010:287).
		Organisation: outlining, clustering, concept-map, mind-map.	Helpful when the goal is to learn, analyse and remember material at a deep level and to understand related information (Weinstein, et al., 2011a:139); information is organised into clusters or categories. Useful for learning history and science material (Dehn, 2010:244).
Meta-cognitive-control, monitoring and evaluation of cognition (Dinsmore,		Comprehension monitoring: re-reading, self-questioning, self-testing.	Strategies contribute to meaningful learning, help to ensure that misunderstandings are detected; and ineffective strategies are altered. Misunderstanding can lower self-efficacy and cause unsuccessful

Alexander & Loughlin, 2008:401).			performance.
Motivational strategies - beliefs about tasks and the self, interest and related emotional reactions.		Affective learning techniques: self-talk, time-management strategies, interest- and self-efficacy-enhancement skills.	The strategies help the students to self-regulate their academic performance through goal-setting and a review of the goal progress. Goal-progress enables the coping with anxiety and develops self-efficacy.
SRL strategies.		Goal-setting, self-monitoring, implementing and self-evaluating of success.	Skilled performance is linked to suitable goal-setting, goal-progress-monitoring and self-evaluation of success after action. Successful students monitor their use of learning strategies and therefore improve their performance. A lack of a clear goal reduces motivation and self-efficacy.

The above have several implications for the understanding and practice of learning and study strategies.

Firstly, it is evident that SRL strategies include cognitive and affective aspects of motivation. According to Schunk (2012:431), this particular link is more visible in the models by Zimmerman and Pintrich (in Schunk, 2012:431), which are based on the social-cognitive theory. Self-regulated learners do not only have knowledge of learning strategies, but they also have the will, the adaptive attitude and the beliefs that drive them to persistently engage in academic tasks (Wolters, 2003:189). The intersection point between motivation and SRL is in the area of goals and the students' beliefs about themselves and about learning, as well as task attribution. In terms of the social-cognitive theory, motivation is goal-directed behaviour which is sustained the by students' self-efficacies and their expectations of the outcomes of their actions (Schunk, 2012:372; Woolfolk, 2010:279).

*Attributions* refer to perceived causes of learning outcomes (Schunk, 2012:366). Students attribute their successes or failures to their ability, the difficulty of the task, to effort, or to luck (Schunk, 2012:368; Woolfolk, 2010:389). According to Wolters (2003:197), self-regulated learners can use the attributions made during or after a task to increase or maintain their motivation for tasks that are similar at a later stage. Therefore, attributions influence motivation and expectations for subsequent behaviour and emotional reactions.

Secondly, monitoring activity is enacted in both meta-cognitive and SRL strategies (Entwistle & McCune, 2004:334). These overlaps can lead to confusion regarding the use of these concepts, and subsequently have an undesirable impact on intervention practice. In an attempt to limit the confusion, Dinsmore, et al (2008:401) maintain that *monitoring* in SRL may refer to cognition, motivation and behavior, whereas in meta-cognition the focus is on the monitoring of cognition. In fact, Schunk (2008b:464) recommends that researchers should provide clear definitions of these concepts. In the light of this, the current study draws from Zimmerman's definition of SRL that includes thoughts, motivation, behaviour and affect.

Various models of academic learning were designed to empower the students to become self-regulated learners. In addition, researchers developed instruments for assessing the students' SRL skills prior to implementing intervention.

It is worthwhile to look at the approaches used in measuring SRL before discussing the specific types of SRL interventions across the world, including what is being done in South African schools.

### **3.5 MEASURING SELF-REGULATED LEARNING**

Just as there are different theoretical perspectives and models of SRL as indicated earlier in the text, various approaches of measuring SRL exist. The methods used to measure SRL include surveys, questionnaires, interviews, observations, diaries, and think-aloud protocols (Boekaerts & Corno, 2005:209). The instruments that have been developed differ in terms of the processes and the criteria that

researchers classify as *self-regulatory* (Wirth & Leutner, 2008:103; Zimmerman, 2008:168). Furthermore, instruments that measure SRL are used to assess the students' knowledge and use of learning strategies (Weinstein, et al., 2011a:142).

It is believed that research on instruments that have been developed can be classified into two types, namely research that assesses SRL as an aptitude or as an event (Winne & Perry, 2005:534). SRL as an *aptitude* describes a relatively enduring attribute that predicts the student's behavior, while an *event* is a temporal entity that has a clear beginning and an end (Zimmerman, 2008:169; Zimmerman & Cleary, 2009:255).

The different measures used for assessing SRL are briefly explained in the section below. The rationale for the approach used in this study is also provided.

### **3.5.1 Measures that assess SRL as an aptitude**

According to Zimmerman and Cleary (2009:255), the three most commonly used instruments that assess SRL as an aptitude are, namely the Learning and Study Strategies Inventory (LASSI, in Weinstein, Schulte & Palmer, 2002); Motivated Strategies for Learning Questionnaire (MSLQ, in Pintrich, Smith, Garcia & McKeachie, 1991), and the SRL Interview Schedule (SRLIS, in Zimmerman & Martinez-Pons, 1986).

The LASSI-HS is a self-report inventory that was developed during the 1980s to assess students on areas that correspond to a meta-cognitive, motivational and behavioural definition of SRL (Zimmerman, 2008:167). Currently, two LASSI tests exist, one for college and one for high school students, the Learning and Study Strategies Inventory, 2<sup>nd</sup> edition (Weinstein, et al., 2002), and the Learning and Study Strategies Inventory - High school version, 2<sup>nd</sup> edition (Weinstein & Palmer, 1990a), respectively.

The LASSI-HS uses a five-point Likert scale ranging from "a" (not at all typical of me) to "e" (very typical of me), to provide the students with diagnostic and prescriptive information on each of the 10 scales. The 10 scales relate to the three

components of strategic learning, namely *skills*, the *will*, and *self-regulation* (Weinstein, et al., 2011a:50). The LASSI-HS provides standardised scores and separate norms for grades 9 to 12, and is available in self-scoring and computerised formats that are easier to use (Weinstein & Palmer, 1990b:3). (More details on this instrument are provided in Chapter 4).

The MSLQ is an instrument with 81 items and has 15 scales that measure students' motivation and learning strategies (Credé & Phillips, 2011:338; Zimmerman, 2008:168). Students rate their motivation and learning strategy-use on a seven-point Likert scale from "1" (not at all true of me) to "7" (very true of me). Users of the MSLQ can decide whether to use the entire test or select the scales that serve their needs; and there are no population norms provided due to its course-specific nature (Duncan & McKeachie, 2005:119; Wolters, Pintrich & Karabenick, 2005:255). The MSLQ appears to be a useful tool in practice and research settings, in spite of some of the psychometric problems identified by means of meta-analytic review (Credé & Phillips, 2011:344). The items in the MSLQ are written in such a way that the students are required to report on their study behaviour in a given subject, thus the instrument is context-specific. Given that the MSLQ measures SRL as context-specific phenomena, it would not be suitable for use in the current study.

Another aptitude measure of SRL is the structured interview, called the SRL Interview Schedule (SRLIS, in Winne & Perry, 2005:546; Zimmerman & Martinez-Pons, 1986). In the SRLIS, students are presented with open-ended questions on six problem-contexts (e.g., in classroom situations, when doing assignments outside classrooms, or when preparing for a test), and asked to describe how they engage in the academic tasks in those contexts (Zimmerman & Martinez-Pons, 1986:617). The students' responses are coded into 14 self-regulation categories which focus on meta-cognition, motivation and behaviour. The students use a 6-point scale, ranging from *seldom* to *most of the time*, to rate their frequency and consistency of strategy use (Nota, et al., 2004:199; Zimmerman, 2008:168).

### **3.5.2 Measures that assess SRL as an event**

Measures that assess SRL as an event include direct observations, think-aloud protocols, micro-analytic measures, and diaries (Zimmerman, 2008:169; Zimmerman & Cleary, 2009:255). These event-measures provide qualitative data on SRL behaviour. In *direct observation* the researcher or trained teacher observes the students in the classroom or other environment as they are engaged in learning behaviour (Winne & Perry, 2005:553; Zimmerman, 2008:176).

When *think aloud-protocols* are used the students are requested to verbalise their thoughts, feelings and SRL strategies while performing tasks (Boekaerts & Corno, 2005:210). This approach allows for observable signs about the thoughts that the students create as they go about their tasks, such as highlighting text, or the number of times they write notes in the margins of their printed material while reading (Winne & Perry, 2005:551).

*Micro-analytic measures* involve assessing the students' responses to open- and closed-ended, task-specific questions at key points before, during and after learning (Bembenutty, 2008b:188; Zimmerman, 2008:177). The questions that are asked in micro-analytic measures relate to key self-regulatory processes that occur during each of the three phases of Zimmerman's SRL cyclical model.

In respect of *diaries*, the students are required to keep a daily record of their use of SRL processes before, during and after studying or doing homework in terms of their frequency and success (Zimmerman, 2008:173; Zimmerman & Cleary, 2009:255).

### **3.5.3 The advantages and disadvantages of measuring SRL as an aptitude or an event**

There are advantages and disadvantages of using each of the above-mentioned categories of SRL measures. As illustrated in the preceding discussions, the types of assessments used in *aptitude* measures of SRL include self-report questionnaires, which are often used in quantitative research. Although the ease

of administering such self-report questionnaires makes it more advantageous for large sample studies, the validity thereof is often questionable, because the student might not be able to accurately “recall” past learning episodes (Wirth & Leutner, 2008:105). On the other hand, *event* measures are not cost-effective in terms of time and the ease of administration. However, the qualitative approach has an advantage in respect of enabling a better understanding of SRL processes as they occur and change over time in authentic learning situations (Bembenutty, 2008b:189; Nota, et al., 2004:212).

Given the advantages and disadvantages of the two kinds of measurements as explained above, researchers assert that there is a need for research that involves the triangulation of quantitative and qualitative approaches (Boekaerts & Corno, 2005:224; Winne & Perry, 2005:563; Zeidner, et al. 2005:759; Zimmerman; 2008:181). Therefore, in this research project, both qualitative and quantitative research approaches will be used. (This is explained in detail in the next chapter.)

In the next section, the learning and strategies models that are based on the social-cognitive theory are discussed. Subsequently, a detailed analysis of the model of intervention that the researcher used in this study is provided.

### **3.6 THE INSTRUCTION OF LEARNING AND STUDY STRATEGIES AND SRL MODELS**

#### **3.6.1 The approach used in South Africa**

As indicated previously (see section 1.2), the CAPS document of Life Orientation for the senior and FET phases shows that the South African Education Policy mandates that students need to be taught learning and study strategies. Accordingly, study skills are taught in the context of a particular subject domain called Life Orientation (DoBE, 2011a:10; DoBE, 2011b:11).

According to the CAPS, specific time should be devoted to teaching study skills in secondary school as follows:

- Grade 8 (1 hour, term 1): Different learning styles; reading and writing.
- Grade 9 (3 hours, term 1): Time-management skills; reading and writing for different purposes; keeping a journal.
- Grade 10 (3 hours, term 2): Study skills; study methods; annual study plan.
- Grade 11(4 hours, term 3): Study styles and study strategies; goal-setting skills; time-management and annual study plan; examination-writing skills.
- Grade 12 (4 hours, terms 1 and 4): Reflection on own study and examination-writing skills; strategies to use in order to succeed in Grade 12.

According to the above information from CAPS Grades 10 to 12 Life Orientation (DoBE, 2011b:14), three hours should be devoted to teaching study skills in Grade 10 (listening, concentration, reading, memory, and time-management; note-taking; selecting important concepts and content, and essay writing; critical thinking and problem-solving). Furthermore, it is indicated in CAPS Grades 7 to 9 Life Orientation that what is taught in Grade 10 should build on prior knowledge, since topics in GradeS 7 to 9 include memory skills, learning styles, reading and writing, as well as time-management (DoBE, 2011b:10).

To include a topic on study skills is a step in the right direction. However, there are some limitations to the above approach. The time allocated for teaching all the study skills appears to be inadequate. Furthermore, the programme seems to focus on declarative knowledge about study skills, with little or no emphasis on procedural and conditional knowledge about the skills (see section 2.4.1.6 where these concepts are explained). Therefore, there is a need for further research on programmes that could improve on the above and ensure that students acquire learning and study strategies that are based on SRL theory.

Various research projects were undertaken to develop different SRL skills amongst students in South Africa, although on a limited scale compared to what is done elsewhere. The most recent studies were conducted by Matseke (2011), and before that by Nieuwoudt, Nieuwoudt and Monteith (2007). The study by Matseke (2011:87) was aimed at developing the reading comprehension of Grade 7-students over 10 weeks, while the study by Nieuwoudt, et al. (2007:31), was aimed at developing SRL in Mathematics, using video material. Both these studies are examples of domain-dependent strategy-use, namely that the focus is on SRL

strategies which are aimed at the development of skills that help to improve performance and achievement in particular subjects.

### **3.6.2 SRL intervention models and approaches that originated abroad**

As stated in the previous chapter (see section 2.2), there exist different theoretical perspectives on SRL, and each deals with different aspects of SRL. Similarly, various SRL intervention models of learning strategies that are grounded on the social-cognitive theory are somewhat different to one another although there are significant ways in which they overlap (Wolters, 2010:2), and even share certain fundamental assumptions (Boekaerts & Corno, 2005:201).

Four of the models are discussed below.

#### **3.6.2.1 The Strategic Content Learning (SCL) Model**

The SCL Model is an instructional model that was initially designed to promote SRL amongst post-secondary students with learning disabilities in response to a need for the students to transfer learned strategies across context (Butler, 1998:682; Butler, 2002:83). Furthermore, the purpose of the model was to individualise the instruction for the students with learning disabilities, but was also later implemented for secondary school students. The model subsequently led to an emergence of a range of supportive intervention approaches, namely one-on-one, small-group, and whole-class instruction (Butler, 2002:81).

In the same way that some models are based on work by other researchers, the SCL is an instructional model that was designed for the development of SRL (Butler, 2002:83). However, the SCL differs from other models in terms of its aims and principles. SRL, in terms of the SCL model, is not merely about the application of well-learned strategies, but also involves the adaptive management of cognitive activities, particularly when engaging in new or challenging tasks (MacLeod, Butler & Syer, 1996:4). According to Butler (1998:682-683), the goal of SCL is to support the students' self-regulation as they engage in tasks and construct knowledge and beliefs within particular subject content. The SCL's instructional principles are

based on the integration of the constructivist and socio-cultural learning theories (Butler, 2002:84).

Butler (2002:84) states that when developing SRL in students, the researcher or teacher assists the learner to engage in a recursive cycle of cognitive activities, which includes an analysis of the tasks, the selection and use of strategies and self-monitoring, without emphasizing the teaching of predetermined strategies for the completion of the task. *Task-analysis* is about interpreting and understanding the requirement of a task, and *planning* involves setting goals or selecting approaches for addressing the particular task, and these two phases are followed by implementing the chosen strategies, monitoring progress toward the attainment of the self-set goals, and using performance feedback to evaluate how things went (Butler & Cartier, 2004:1740). According to Butler and Cartier (2004:1751), working through the phases and repeated experience with tasks, develop these work-habits, and thus the transfer of these skills to other academic work. Furthermore, the teacher or researcher also helps the students to develop productive attributional beliefs and positive self-efficacy.

According to MacLeod et al (1996:6), Butler's (1996) work was influenced by the belief that knowledge of learned strategies was not sufficient to explain SRL. There was also the limitation of self-reports in explaining the actual strategy that was implemented. Thus, Butler developed a strategy-interview which required from the students to describe their task-specific strategies. The strategy-interview was adapted from a meta-cognitive questionnaire, and used together with *direct observation* of strategy-use and development (MacLeod, et al., 1996:9). What this approach entailed was that the students were asked to provide examples of specific tasks they were working on, and to give verbal descriptions of their understanding of the tasks and the strategies and approaches they used to manage their learning. The teacher/researcher would then ask the students about their strengths and weaknesses, and how these influenced their approaches. In the second part of the assessment the students were asked to perform the same task without help, and to describe what they were doing, while the researcher was observing and taking down notes (MacLeod, et al., 1996:16).

The SCL model proposes individualised intervention and multi-mode assessment-approaches of SRL. The three modes of support which can be offered using the SCL approach are as follows:

- *One-on-one support*: Firstly, the task that is of importance to the students is identified by the researcher/teacher, or the students may identify and bring various tasks which they regard as needing urgent attention, to the session. The researcher/teacher provides supportive cues that help to define the demands of the task, and facilitates the discussions for task-analysis, performance criteria and strategies for the analysis of future tasks. The teacher/researcher provides calibrated support to the students, subsequent to task-analysis by guiding them to think through the task, to check their progress against the performance criteria (i.e., to monitor and reflect on their progress), and to keep a record of the advice given, as well as of strategies that work well. Finally, as part of self-monitoring, the students receive guidance on how to evaluate their performance against the task criteria and the strategies used, as well as to interpret the teacher's feedback, and use it for future learning.
- *Small-group instruction*: The instructional activities are almost similar to those provided for one-on-one support, but differ in some respects. The students choose a common task, share ideas, and help one another, while the teacher observes how they approach the tasks. The teacher facilitates the discussions and asks questions to guide their self-regulation (Butler, 2002:89).
- *Whole-class instruction*: The teacher sets the tasks, clarifies the performance criteria, and facilitates the discussions, while the students share ideas about the best strategies that may help them to meet the demands of the task. The teacher supports the students, and enables task-analysis. Alternatively, the students may be required to interpret the task individually or in small groups, submit a list of performance criteria, and describe the necessary strategy for the completion of the task. Individualising instruction in a whole classroom setting gives the teacher a better understanding of individual strategies, of diagnosing challenges that the individual may experience, and of providing feedback (Butler, 2002:90).

Empirical evidence exists that supports the efficacy of this approach in assisting students with learning disabilities in secondary and post-secondary settings (Butler, 2002:91). Researchers use the SCL model to provide and adjust support in a learning-assistance context (Butler, Beckingham & Novak Lauscher, 2005:172). For example, Grade 8-students who struggled with Mathematics received help on learning how to learn.

In summary, the SCL is an instructional model that promotes effective SRL in the students by supporting their cycles of task-analysis, by co-constructing strategies that work best, and in their self-monitoring. Although grounded on the integration of the constructivist and socio-cultural learning theories, the SCL model includes the SRL components that are similar to those found in other models, namely task-analysis, strategy-selection and use, and self-monitoring. However, the SRL processes which are similar to those emphasised in other models are developed in the context of subject-content knowledge.

#### 3.6.2.2 Self-regulated Strategy Development (SRSD)

SRSD is a model of cognitive strategy-instruction that was initially developed in 1982 for students with learning disabilities as well as for other students who struggled with writing and with SRL (Harris, Santangelo & Graham, 2010:238; Horner & O'Connor, 2007:4; Mayer, 2003:143). Although developed for writing, the pioneers of the SRSD programme showed how the students practiced SRL strategies of planning, goal-setting; self-instruction and self-monitoring, which were explicitly taught across all grades to improve their writing (Harris, et al., 2010:239; Mason, Harris & Graham, 2011:21; Santangelo, Harris & Graham, 2008:81). In addition, the students were helped to develop effective attributions.

The SRSD model involves six recursive stages which are used as framework for instruction, namely develop background knowledge, discuss it, model it, memorise it, support it, and practice it independently (Mason, et al. 2011:22; Santangelo, et al., 2008:82). The stages can be combined, re-ordered or modified on the basis of the students' needs, and can also be revisited if the concepts or the components of the concepts are not mastered at certain stages (Harris, et al., 2010:239).

The guidelines to teachers to implement the SRSD instructional frameworks are briefly explained next.

- *Develop background knowledge.* The teacher evaluates the students' prior knowledge and prerequisite skill-needs, and handles skill-deficits by either re-teaching or modification. The primary aim is to ensure that the students understand, learn and apply the strategies.
- *Discuss it.* Discussions are held with the students to ensure that they are motivated and willing to learn the new strategy. Similarly, the teacher enables the students to evaluate their current performance, and also introduces the concept of *progress-monitoring*. The purpose and possible benefits of the new strategy in terms of how and when to use it, are also explained.
- *Model it.* The teacher uses 'think-aloud' to demonstrate to the students how to use the new strategy, as well as positive self-talk to maintain motivation and to deal with attributions. The students are also allowed to discuss the efficacy of the new strategy and how it can be modified. The concept of *goal-setting* can be introduced and the students are encouraged to set targets based on the individual results of the evaluations done in stage 1.
- *Memorise it.* The teacher uses various activities, memorisation techniques or methods to motivate the students to use the strategies automatically. This also includes providing the students with time for practice. The purpose of this stage is to ensure that the students commit the new strategies to memory and use them automatically.
- *Support it.* The teacher scaffolds instruction and gradually hands over the control of the strategies to the students when they show that they can independently use them. The use of frequent feedback, positive reinforcement and cooperative peer-groups proved to be effective at this stage.
- *Practice it.* This stage is characterised by the fact that students begin to use the strategies consistently, and independently of the teacher. The students are also encouraged to identify other areas where the strategies can be used, as well as how they can be modified.

In summary, the model has been widely applied in both primary and secondary schools, and yielded positive results in improving SRL skills. According to Harris, et al. (2010:241), a meta-analysis of the interventions shows that the SRSD had a strong positive impact on the students' quality of work. The students learnt SRL strategies in context.

The six stages of the SRSD model are intended to serve as a flexible instructional framework which should be adjusted in response to the unique needs of each student. This characteristic makes the SRSD model appropriate to implement and adapt to any SRL intervention.

### 3.6.2.3 The Model of Strategic Learning (MSL)

Building upon prior research, Weinstein, et al. (2005:739) designed the MSL. The adjunct course on learning strategies and techniques that was developed for Texas University students with deficient learning strategies was based on the MSL (Weinstein, et al., 2011a:142). The MSL focuses on components that influence academic performance, namely skill, will, self-regulation, and the academic environment (Weinstein, et al., 2005:734; Weinstein et al., 2011a:141).

The *skill* component of the MSL includes three knowledge types, namely the *declarative*, *procedural* and *conditional* knowledge about the self (see section 2.4.1.6); demands of the academic tasks and content; and the context of learning and learning strategies. Examples of the application of the skill component include knowing how to use active rehearsal and elaboration strategies, and thinking skills.

The *will* component includes the interactive affective and motivational factors which either contributes to academic success (goal-setting, positive self-beliefs and feelings about learning), or negatively influence academic performance (high anxiety, low self-efficacy, and external attribution of performance).

Examples of the *self-regulation* component include aspects that focus on the self-management of cognition, motivation processes, and task-related emotions.

Therefore, self-regulation is regarded as the 'engine' of learning, as noted (Weinstein et al., 2011a:47).

SRL training that is based on the MSL model follows a particular process. Prior to introducing students to the model, they are assessed through some instrument such as the LASSI-HS, and a reading battery (Weinstein et al., 2005:739). Following the assessment, the students are provided with an outline of the components of the MSL, and are not only taught the strategies but also how the strategies are linked together and interact with other components of the model. Thus, the LASSI-HS is used as a pre-test/post-test measure to provide prescriptive and diagnostic information for each of the 10 scales grouped as follows:

- skill: Information-processing(INP), Selecting the main ideas (SMI), Test strategies(TST);
- will: Anxiety (ANX), Attitude (ATT), Motivation (MOT);
- self-regulation: Concentration (CON), Self-testing (SFT), Study aids (STA), Time-management (TMT).

A learning and study strategies-programme that was based in the MSL model proved to be effective in improving the students' general academic performance. According to Weinstein, et al. (2005:743), 71% of the students who participated in the course graduated after five years, despite having relatively low Scholastic Assessment Test (SAT) scores and motivation on the LASSI-HS motivation scale. Furthermore, the LASSI appears to be the instrument most often used to measure the results of learning strategy interventions.

#### 3.6.2.4 The Self-regulation Empowerment Programme (SREP)

The SREP is a school-based training programme that was originally designed to assist the self-regulation teacher to enhance the academic performance of at-risk middle and high school students in Science (Cleary & Zimmerman, 2004:540). The SREP is based on the social-cognitive theory, and is designed to enable the teacher to apply the SRL model to enhance the students' knowledge of, and use of learning strategies (Cleary & Platten, 2012:3). Furthermore, the SREP is based

on the assumption that the use of deficient strategies, poor motivation and poor self-regulation are amongst the most important factors that contribute to low academic achievement (Cleary & Zimmerman, 2004:540). Therefore, the SREP aims at empowering the students to adapt and alter their use of learning strategies in accordance with the demands of the course or hindrances that they may encounter during authentic learning (Cleary & Platten, 2012:3; Cleary, Platten & Nelson, 2008:75).

In its original form the SREP is made up of two parts, namely (a) diagnostic assessment, and (b) a development component which can be adapted according to the specific needs of the teacher (Cleary & Zimmerman, 2004:541). The diagnostic assessment component aims at trying to identify the students' weaknesses in terms of the repertoire of learning and self-regulation strategies, as well as the extent to which they have the motivation to implement, maintain or adjust these strategies when necessary.

The traditional assessment measures, such as interviews and self-report inventories or rating scales and micro-analytical assessments, are used for diagnostic purposes (Cleary, Callan & Zimmerman, 2012:4; Zimmerman & Cleary, 2009:259). *Micro-analysis* involves the measurement of cognitions, affective processes and behaviours as they occur in authentic contexts. *Micro-analytical assessment* entails asking students to respond to brief task-specific questions before, during and after an activity (Zimmerman, 2008:177).

The development component of the SREP aims at changing the students' weaknesses into strengths by expanding their repertoire of learning strategies, and by enabling them to use the cyclical approach of self-regulation (Cleary & Zimmerman; 2004:542). The model requires that an experienced teacher acts as facilitator of the development of the students' SRL skills, and thereby assumes the role of a coach.

The teacher/coach assists the students to become aware of their learning strategies and highlights the link between strategy-use and school failure or success. The teacher also shows the students how to use self-observation and

self-recording techniques to identify the reasons for poor performance, and then to develop strategies to improve their achievement (Cleary & Zimmerman, 2004:544). One of the self-observation strategies used is called *graphing* (Cleary & Zimmerman, 2004:546). The students engage in *graphing* when they record their performances on weekly quizzes over a period of time, and plot them against the expected outcomes. This enables them to monitor changes and to adapt their use of the strategies accordingly.

Once the students are aware of the negative outcomes of poor or ineffective strategies, the teacher uses cognitive modeling, cognitive coaching and guided practice to enhance the students' use of learning/study strategies. The teacher then teaches the students how to independently use the newly-learnt strategies and the graphing procedure in a cyclical, self-regulated manner. Thus, the SREP is an example of an explicit instructional approach to the teaching of learning and study strategies (Cleary, et al., 2008:85).

Studies where the SREP has been used to enhance SRL yielded positive results. For example, Bembenutty (2008b:182) found a strong, positive correlation between SRL and the successful completion of homework with at-risk technical college students. Furthermore, there was an improvement in the Science test scores, and in the frequency of the use of self-regulatory strategies amongst students who participated in the SREP, compared to the comparison group (Cleary et al., 2008:98).

### **3.6.3 Summary of the main features of several SRL models**

The main features of the SRL models discussed in the preceding paragraphs are summarised below in Table 3.3.

**Table 3.3: Summary of the SRL programmes adapted for this study**

<b>Programme and author</b>	<b>Focus, strategies and instructional framework used</b>	<b>Measuring instrument used</b>
SCL-Butler	Needs-based: task-analysis and interpretation, self-monitoring individualised instruction, adaptable to needs.	Strategy interview; direct observation.
SRSD	Reading: recursive stages of self-regulation to teach reading; explicit instruction in groups.	Self-report.
MSL-Weinstein,	Learning and study strategies: skills; the will, and self-regulation; teaching, learning and study-strategies in groups.	Self-report.
SREP	Learning strategies in each of three phases of the SRL cycle; cognitive modeling, cognitive coaching and guided practice on SRL strategies.	Self-report and micro-analytic assessment.

Each of the models depicted in Table 3.3 has some distinguishing features. The *SCL model* (see section 3.6.2.1) is based on the belief that underachievement or challenges in learning mainly arise from difficulties that the students experience in analysing tasks rather than from a lack of knowledge about strategies (Butler, 1996:4). The students are also taught how to engage in self-monitoring during the execution of tasks, while the teacher observes and engages in dialogue on task-related strategies with the students, using a strategy interview. Thus, the teacher promotes SRL through collaborative interaction, while using strategic questioning and supporting the students in their (re)construction of effective strategies to achieve their task goals (Butler, et al., 2005:171). Furthermore, the students receive timely feedback to allow for the adaptation of inefficient strategies, and thereby improve their performance.

Although Butler's model may have been successfully used to develop the students' SRL, it may have some limitations with regards to the current study. It seems that SCL is based on the assumption that the students already have self-

knowledge as well as a repertoire of strategies from which they can select in order to perform their academic tasks. Secondly, another assumption is that the education system allows for the establishment of learning assistance centres in schools where the needs of individual students receive attention. Thirdly, empirical studies regarding the effectiveness of the model on large classroom contexts are not documented. Butler's model seems inappropriate for use with large classes without human resources for dealing with individual students, and in an environment where the students' basic learning and study strategies are deficient.

As pointed out earlier (see section 3.6.2.2), *SRSD* is effective in developing SRL skills. Interventions show that it has a strong positive impact on the students' quality of work (Harris, et al., 2010:241). The fact that the students learn SRL strategies in domain-specific contexts poses some limitations with regard to the application of the model in different contexts. However, the fact that the *SRSD* model is intended to be a flexible framework which should be adapted to the unique needs of each student offers hope that the model can be useful in the current research project.

The *MSL model* (see section 3.6.2.3) is based on research with university students. Furthermore, some of the skills, such as *selecting the main ideas*, may be problematic to teach to secondary school students when each student does not have a textbook to study from and to practice the skills at home, as is the case in respect of this research project. Therefore, the *MSL* model would have to be modified before it can be successfully used for secondary school students who lack the necessary resources.

Some limitations regarding the generalisation of the *SREP* model (see section 3.6.2.4) to other contexts have been noted (Cleary & Platten, 2012:14). One such a limitation is that the *SREP* was tested on a small sample of selected students who were assessed by means of self-reports only (Cleary, et al., 2008:100; Cleary & Zimmerman, 2004:548). Besides that, the South African context is different from the context in which the original study took place. Furthermore, teaching some of the SRL skills, such as text-summarization, is problematic if the students do not have textbooks, as mentioned above.

Table 3.3 illustrates how ineffective it could be to indiscriminately use a SRL model/programme to develop SRL skills for South African students. The limitations indicated so far suggest a need for further research with a South African sample by means of a mixed-methods research design.

More evidence and arguments regarding the effectiveness of some of the various intervention programmes are discussed in the next section.

### **3.7 RESEARCH REPORTS ON INTERVENTIONS TO ENHANCE THE STUDENTS' SRL**

Numerous studies provide evidence of the efficacy and effectiveness of programmes that have been developed to improve and develop SRL in different subject areas (Boekaerts & Corno, 2005:212; Wolters, 2010:14). SRL can be encouraged during reading lessons through literary analysis (Randi & Corno, 2005:682; Randi, 2009:57). The interventions are grounded in different theoretical frameworks and implemented for students of various ages and school levels. Since this study is based on the framework of the social-cognitive theory, only the examples of intervention which are grounded in the same theory are explained next.

Although it was reported that the students who struggled with Mathematics improved their performance when the teachers used adapted SCL principles in the intervention (Butler, et al., 2005:172), the approach may not be feasible in most schools in South Africa due to several reasons. Firstly, the SCL was designed for implementation in individualised and learning-assisted settings, which are non-existent in most South African schools. Secondly, besides the fact that the teachers are trying to adapt to continuously changing curricula requirements, the often large classes are not supportive of individualised instruction. Lastly, as the researcher stated in Chapter 1 (see section 1.2), school guidance and counseling and remedial education services, with roles similar to those of learning assistance centres, are not generally available in the schools. Therefore, although proven to have potential for improving the students' performance, particularly in subjects in

which South African students performed poorly (as indicated by the Trends in International Mathematics and Science Study), the contextual issues in South African schools could make it difficult to use the SCL principles in interventions.

More than 30 studies that were undertaken since 1985 show that the students' writing across all grade levels improved with interventions based on SRSD (Reid, Harris, Graham & Rock, 2012:162). For example the 'Think, Stop, Dare' strategy for developing persuasive essays that is relevant for high school students is based on the SRSD model (MacArthur, Phillippakos, Graham & Harris, 2012:253-260), while the students' spelling performance can be similarly improved. The benefits of using SRSD have also been observed amongst students with attention deficit-disorder in terms of the improvement of their persuasive writing skills (Reid, et al., 2012:165). Moreover, SRSD-based writing intervention has been successfully used with students with autism spectrum-disorder (Asaro-Saddler & Saddler, 2010:119).

The SRSD allows for systematic and explicit instruction in self-regulated writing strategies which are relevant in the South African context. The success achieved with SRSD interventions are examples of good practice which offer hope to South African teachers, when the Annual National Assessment results show that students in Grades 3, 6 and 9 perform poorly in literacy and Mathematics (DoBE, 2012:7). However, little or no record of studies on the effectiveness of SRSD in sub-Saharan school contexts exists. Furthermore, the challenges that the teachers may experience with regard to the implementation of new school curricula may demotivate them to try and teach students study strategies. Therefore, the relevance and efficacy of interventions that are based on SRSD or other models which develop SRL skills in all learning contexts are to be investigated.

Randi (2009:61) referred to a curriculum-embedded approach that was used to develop SRL strategies amongst high school students. In this particular curriculum-embedded approach the students learn the strategies in the context of a language curriculum by analysing the literary characters, and then relating these to their own lives (Randi & Corno, 2005:666). The students are supported to understand SRL by finding examples of strategies that characters in the literature

have developed to move towards their desired goals. The students then identify their own goals and strategies that can direct their efforts towards the various tasks. Therefore, the students develop SRL by means of the use of stories.

As stated above, the students can develop their SRL aptitudes vicariously by identifying with typical characters in the literature. This approach has merits in that students are likely to be interested in literary work, not just as a requirement of the language curriculum, but also to develop a better understanding of the work. However, the approach may not be appropriate when the students lack adequate basic reading and reading comprehension skills.

In another study, Weinstein, et al. (2005:743) reported that interventions to facilitate learning strategies had positive effects on the long-term retention of university students, namely 71% of the students who successfully completed the learning strategies course graduated within the expected time. The above-mentioned intervention led to the development of the LASSI instructional module called 'becoming a strategic learner' (Acee, 2009: 22).

High school students can benefit from teaching and learning interventions based on SRL (Wolters, 2010:16). Cleary, et al. (2008:98) found that the Grade 9-students' Biology test scores, their use of self-regulatory strategies and their perceived confidence for learning the subject improved as a result of the intervention. High school students with learning disabilities also improved their Mathematics problem-solving skills, particularly in algebra, through an instructional approach which is based on SRL (Montague, 2007:81).

The studies mentioned thus far show that designing instructional intervention on the basis of SRL can lead to academic improvement in different groups of students across diverse academic levels and subjects. In South Africa one of the interventions for high school improvement includes the Quality Learning Project (QLP). Activities in the QLP include improving teacher content-knowledge, school governance and management, as well as resources (Taylor & Prinsloo, 2005:3). Although this high school improvement project made some gains in improving the students' academic performance, 69% of the schools involved did not show

improvement in Mathematics passes over five years, despite having been allocated the necessary resources (Taylor & Prinsloo, 2005:11). There is no indication whether the training involved included the teaching of effective learning and study strategies which could facilitate SRL in students. High school improvement efforts should place equal emphasis on teaching that is related to the students' independent learning. Moreover, the intervention programme may have been developed for contexts different to the South African contexts. Adaptations to programmes may be necessary for intervention to be effective.

The research designs used in previous studies, particularly the instruments used, may also influence interventions. Given these dynamics, as well as the different contexts under which learning and instruction take place across the world, more empirical evidence is needed for designing interventions that may benefit teachers and other educational practitioners in developing countries.

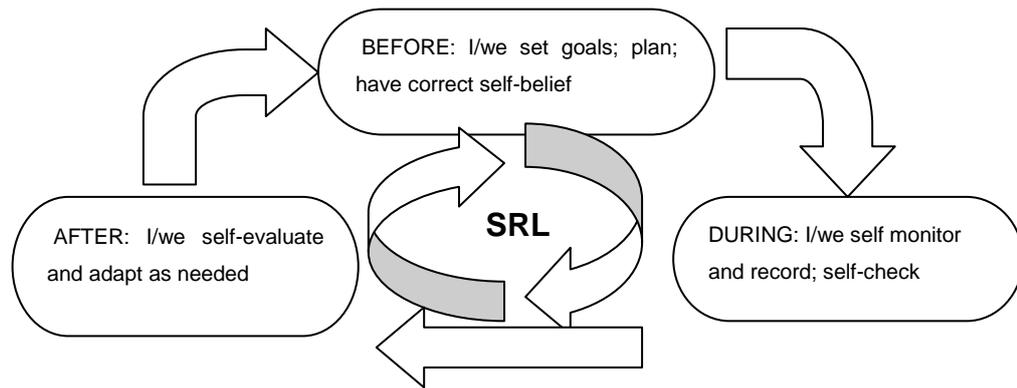
In the light of the above, it seems necessary to use a combination of different methods of enhancement and investigation of SRL. This may shed more light on the multi-dimensional phenomenon of SRL.

The conceptual model for the empirical work used in this research project is briefly discussed below.

### **3.8 THE CONCEPTUAL MODEL USED IN THIS STUDY**

This particular study was done on SRL strategies, and draws from some of the other models. This model places particular emphasis on the three phases of SRL, according to the model of Zimmerman (1998:83; 2002:68). The researcher integrated the views of two researchers, Butler (1998:682; 2002:81) and Zimmerman (1998:83; 2005:16), in working with a small group of students, and a whole class of students, in a selected secondary school setting. (The details of the intervention programme are provided in Appendix I).

Figure 3.1 illustrates the SRL process that this study seeks to develop in high school students.



**Figure 3.1: Three-phase SRL strategies**

(as adapted from Zimmerman (2002))

According to Zimmerman’s 2002-model, students engage in three cyclical phases named forethought, *performance* and *self-reflection* when engaged in learning tasks. The personal, behavioural and environmental aspects are interactively involved, namely that SRL is concerned with how an individual cognitively, affectively, motivationally and behaviourally use and adapt learning strategies according to the demand of the learning task.

The specific strategies that are necessary for the SRL intervention programme are, namely goal setting, self-monitoring, and self-testing/evaluation.

- *Goal-setting* refers to establishing the purpose of an action, and determining priorities, as well as deciding what the specific outcomes of the action plan should be (Zimmerman & Cleary, 2006:57).
- *Monitoring* is about regulating the type and duration of the students’ activities by keeping track of what is going on, and checking their levels of understanding (Schunk, 2012:286).
- *Reflecting* refers to stepping back and taking stock, and using personal experience and background to understand a particular phenomenon.
- *Self-evaluating* refers to reviewing, asking questions, and assessing the quality of the achievement of the learning goal in terms of either the processes used or the product (outcome) that has been attained (Olson, 2011:10).

The researcher used the same theoretical framework to design the SRL skills intervention programme for Grade 10 in the following areas:

- self-regulation skills: goal-setting, self-monitoring, self-evaluating;
- self-efficacy enhancement: using think-aloud and self-talk, changing attributions;
- learning strategies: using organization, elaboration and self-testing to enhance recall; and
- preparation for test-strategies: reducing test-anxiety.

### **3.9 CONCLUSION**

The literature presented in this chapter shows that there are various approaches for enhancing SRL, and various intervention models emerged from those approaches. Each of the intervention models may be more applicable to learning in general, or in a specific subject area. Furthermore, the effective use of SRL skills can lead to improvement in academic performance amongst all learners. This has been indicated by relevant research. Various measures used in SRL studies can be categorised into *aptitude* and *event* measures, and a combination of these approaches could provide a better understanding of the SRL phenomenon.

The next chapter deals with the research design and methodology used in this study.

## **CHAPTER 4**

### **THE RESEARCH DESIGN**

#### **4.1 INTRODUCTION**

Various theoretical perspectives on SRL and the social-cognitive theory (which is the conceptual framework of this study) were explained in Chapter two. Chapter three outlined the SRL intervention programmes or models that are based on the social-cognitive theory with particular reference to learning strategy-instruction. Some limitations regarding their applicability to the contexts of many students in developing countries were pointed out. Given the increasing need for SRL skills and the multi-dimensional nature of the SRL phenomena, more empirical investigation is needed regarding how to facilitate the SRL of adolescents in high school.

The purpose of this chapter is to explain the research design that was used to conduct an investigation regarding Grade 10-students' SRL competencies, and the appropriateness of the intervention programme for developing and improving their SRL. To this end, it explains the ethical measures that were adhered to, the methods of data-collection, measures to ensure validity and reliability, and the methods of data-analysis. The aim was to answer the general problem stated in chapter 1 (section 1.2), namely

*How can the SRL of adolescents be developed at high school?*

#### **4.2 THE SPECIFIC RESEARCH QUESTIONS**

As stated previously in chapter 1 (sections 1.2 and 1.4), studies show that the effective development and implementation of interventions that are geared towards improving the students' achievement at school and beyond can be achieved by means of SRL frameworks (Wolters, 2010:18). However, these interventions are generally based on research that was not done in South Africa

(Zeidner, et al., 2005:761). Furthermore, little is known about the appropriate time to start developing particular SRL skills, as well as the *kind* of programme that would encourage optimal SRL development in the South African context (Wolters, 2010:19). Given this gap in our knowledge, some limitations, highlighted in Chapter 3 (see section 3.6), and a call by Winne and Perry (2005:563) for studies that involve the triangulation of SRL measurements across a wide range of populations, this study focused on the following specific research questions (see section 1.2):

- What is the general profile of a group of selected grade 10 learners in terms of SRL competencies?
- To what extent do students use SRL strategies?
- What are the students' views of the intervention programme that is aimed at developing SRL competencies?
- How can the intervention programme to develop the students' SRL competencies be improved, if necessary?

### **4.3 THE RESEARCH DESIGN**

The quantitative and qualitative research designs are the most widely-known types of research approaches. Biesta (2010:98), however, argues that these concepts are misleading, because only *data* can be properly categorised as qualitative or quantitative. In quantitative research the phenomena under study are measured and described by means of the use of numbers and statistics (McMillan & Schumacher, 2010:21). On the other hand, qualitative research aims for a deeper understanding of naturally occurring phenomena with the focus on data-collection in the form of words (McMillan & Schumacher, 2010:23).

In contrast to selecting either a quantitative or a qualitative approach, this study made use of a mixed-methods research approach. This approach involves using both quantitative and qualitative data-collection methods (Castro, et al, 2010:344; Creswell & Garrett, 2008:326; Ivankova, et al., 2010:262; McMillan & Schumacher, 2010:25). Therefore, mixed-methods research involves the collection and analysis of both numeric and narrative data (Greene, Caracelli & Graham, 2008:122). For

instance, both structured questionnaires and interviews may be used for data-collection. Statistical techniques are used to analyse the data derived from the questionnaires, while interpretative methods are used to analyse the data collected by means of interviews (Biesta, 2010:101).

Common types of mixed-methods research designs include the *convergent*, the *embedded* and the *sequential* designs (Castro, et al., 2010:344; Creswell & Garrett, 2008:179; Nastasi, Hitchcock & Brown, 2010:316).

- The *convergent design* is sometimes referred to as a design of *triangulation*, where both qualitative and quantitative research methods receive equal priority. The results are analysed independently and then merged during the interpretation phase (Creswell & Plano Clark, 2011:70).
- The *embedded design* is where both quantitative and qualitative types of data are collected and analysed during the same phase, but one method is given more weight than the other. The one which is given less priority is embedded within the dominant method, and mixing occurs during the analysis phase (Creswell & Plano Clark, 2011:71; Ivankova, et al., 2010:269).
- In the *sequential design*, the research occurs in two or more distinct phases. The research starts with either a quantitative or a qualitative phase, depending on which phase is given priority (Ivankova, et al., 2010:262; McMillan & Schumacher, 2010:402). This is the design that was most suitable for this research, as will be explained.

Combining quantitative and qualitative research methods is usually done in order to complement the strengths of each, or to accommodate the weakness of using only one method, and thus to get a clearer understanding of the research problem (Creswell & Garrett, 2008:322; Johnson & Onwuegbuzie, 2004:18). As explained previously (see section 1.5.2), using one research approach might be insufficient to explain the complex processes involved in SRL. Thus, this research project will follow a mixed-methods approach.

The specific type of mixed methods research design that has been used in this study is a combination of the sequential *explanatory* design, and the sequential *exploratory* design. In the sequential *explanatory* design, according to Creswell and Plano Clark (2011:82) and McMillan and Schumacher (2010: 401), the researcher usually begins with a main quantitative phase, followed by a qualitative phase, to explain the quantitative phase and to elaborate on the results. This is illustrated as follows:

QUANT. → *qual.*

In the sequential *exploratory* design, the researcher usually begins with a qualitative phase, followed by a main quantitative phase, and then integrates the results. This is illustrated as follows:

*Qual.* → QUANT.

In this study the researcher began with the quantitative phase. This was followed by a qualitative study with the entire experimental group, in addition to a small group of eight students (selected from the experimental group, and by using the quantitative results of the first phase). The rationale for using this approach was not only to guide the purposeful sampling for the second phase, but also to use the results of the follow-up qualitative phase to explain the quantitative results in more detail. The above two phases were followed by a final quantitative phase. This means that the overall design in this study was as follows:

*Quant.* → QUAL. → *Quant.*

This indicates that the main phase is the qualitative phase which was conducted over a period of 10 weeks. During this time data were collected. It was also followed by additional data-collection by means of interviews. Such a *three*-phase design (instead of a *two*-phase mixed-methods design), is not often used in research, and this adds value to the study.

More details about the data-collection during these phases will be provided in the next sections.

## **4.4 THE RESEARCH METHOD**

### **4.4.1 Ethical measures**

Measures that were undertaken to ensure that the ethics requirements are adhered to in this research include the following:

#### **4.4.1.1 Approval for conducting the research**

Permission to conduct the study was granted by the Gauteng DoE (see Appendix A). Copyright permission for the research instrument from H & H Publishers (see Appendix B) was also granted, and submitted to the Gauteng DoE when requesting permission for the study. The researcher approached the selected school upon receiving approval from the relevant District Office. Approval was also received from the Ethical Committee of the University of South Africa (see Appendix H for the Ethics Approval Certificate).

#### **4.4.1.2 Informed consent and informed assent**

*Informed consent* has to do with providing a clear explanation regarding the nature and purpose of the research, giving assurances of anonymity and confidentiality, disclosing risks that could be involved in the study, and allowing the participants to decide whether they would like to participate in the study or not (McMillan & Schumacher, 2010:118).

*Informed assent* is applicable if the participant is a minor, as in this study. The parent or legal guardian is then required to give his/her approval (informed consent), but the minor has to agree to participate after understanding all the provisions (McMillan & Schumacher, 2010:119). In this study the agreements for participation were reached in this manner, since the students and their parents or guardians were asked to sign the relevant letters (see Appendices F and G).

#### 4.4.2 The intervention programme

The researcher implemented a 10-week intervention programme to develop SRL (see Appendix I for the programme). This was done by means of the explicit teaching of strategies and by giving task-related assignments to the 35 students in the experimental group. A brief overview of the SRL themes that were addressed is as follows:

- Session 1: The students received feedback of the pre-test LASSI-HS. The researcher explained the aim of the intervention programme, how the sessions would be conducted and the skills that would be addressed.
- Session 2: The researcher introduced the SRL processes and related concepts, and the students' self-recording of learning in a journal.
- Session 3: The students learnt about goal-setting, self-monitoring and self-evaluation.
- Session 4: The students reflected on time-use in relation to goals.
- Session 5: The researcher focused on learning strategies, namely memory-storage in short- and long-term memory, and the importance of concentration.
- Session 6: The researcher focused on learning strategies, namely how to enhance your memory by organising information to be stored, rehearsed and reviewed.
- Session 7: The researcher focused on retrieving information from the long-term memory, for example mnemonics and self-testing.
- Session 8: The students were supported in identifying reasons for achieving/not achieving the goals that they set for themselves, and with strategies to improve self-beliefs.
- Session 9: The researcher focused on test-preparation strategies.
- Session 10: The researcher focused on test-taking strategies.

### 4.4.3 Data-collection

#### 4.4.3.1 Sampling in each phase

The public school where this research was done was selected for reasons of convenience and for being typical of many other schools in South Africa. The school predominantly serves students from low-income households who do not pay school fees, and who sometimes receive free meals at school. The students are mainly from the lower end of the socio-economic ladder. Therefore, the research findings may be applicable to students from similar socio-economic backgrounds and schools.

In Chapters 1 and 4 (see sections 1.6 and 4.3), it was indicated that a mixed-methods design was chosen for this study. According to McMillan and Schumacher (2010:399), both quantitative (probability and non-probability) and qualitative (purposive) sampling approaches are used in mixed-methods research. In non-probability sampling, the choice of the sample is not based on random selection but on availability (Creswell & Plano Clark, 2011:174; Strydom, 2011:231).

In the quantitative phase, a combination of convenience and non-probability sampling was used at one high school in one of the districts of the Gauteng DoE. According to McMillan and Schumacher (2010:486), *convenience* sampling is "...a non-probability method of selecting subjects who are accessible or available". Purposeful sampling was also used, since the two grade 10-classes that were used in this study were purposefully selected for being adolescents of a particular age-group. The one class served as the experimental group, and the other class as the comparison group in an experimental, comparison group, pre-test post-test design.

Creswell and Plano Clark (2011:174) maintain that the individuals who participate in the initial quantitative data-collection phase should be used in the follow-up explanatory phase which intends to provide explanations of the quantitative data. Thus, in the second, the qualitative phase, purposeful sampling was considered

appropriate for selecting a sample of eight students from the experimental group for the follow-up qualitative phase (in which interviews and diaries were used to collect the data). The students' scores on the LASSI-HS pre-test were used as criteria for selecting them. In this way four students (two males and two females), who had seven or more LASSI-HS scores between the 50<sup>th</sup> and 70<sup>th</sup> percentile or above, and another four students (two males and two females) who had four or less LASSI-HS scores which are between 50<sup>th</sup> and 70<sup>th</sup> percentile or below. (See Appendix K for the LASSI-HS scores of the eight students.)

#### 4.4.3.2 Data-collection methods

##### (i) The quantitative phase

At the start of the project, all the students completed a biographical questionnaire to enable the researcher to get some background information about the extent to which the students were familiar with the different study methods (see Appendix D). The data thus obtained were not part of the formal data-collection of the study which aimed at evaluating the intervention programme to facilitate SRL.

As stated in section 4.4.3, the pre-test post-test design was used in the quantitative phases. All 70 the students in the two Grade 10-classes (the experimental and the comparison groups) took the pen-and-paper version of the LASSI-HS pre-test, and after the 10 weeks, also the post-test. (See Appendix C for an example of the LASSI-HS.) The LASSI-HS has acceptable psychometric properties in terms of validity and reliability (Weinstein & Palmer, 1990b:20). It is a 76-item self-report assessment instrument which is designed to measure the students' use of learning and study strategies according to a five-point Likert scale (ranging from 'not at all like me' to 'very much like me'), and with separate norms provided for students in Grades 9 to 12.

Weinstein and Palmer (1990b:4) indicate that the LASSI-HS consists of 10 scales, namely, Attitude (ATT), Motivation (MOT), Time-management (TMT), Anxiety (ANX), Concentration (CON), Information-processing (INP), Selecting the Main Ideas (SMI), Study Aids (STA), Self-testing (SFT), and Test Strategies (TST). The

LASSI-HS results indicate the students' strengths and weaknesses in three components, namely, *skill*, *will*, and *self-regulation*, as specified in Weinstein's model of strategic learning (Weinstein, et al., 2011a:46). Details regarding the variables that fall under each of the three components are mentioned in Chapter 3, section 3.6.2.1. Furthermore, it is stressed that the three components need to function interactively in order to facilitate effective and efficient learning (Weinstein, et al., 2011b:141).

- The *attitude* scale contains items that focus on interest, general attitude towards school and academic tasks, such as "I only study subjects I like", and "I am confused about what my educational goal should be" (Weinstein & Palmer, 1990a:13). High scores on the *attitude* scale are indicative of students who have high educational goals.
- The *motivation* scale addresses the students' level of self-discipline and diligence, and the degree to which they are willing to take responsibility for performing tasks related to school success and learning. High scores on the motivation scale show that the students are more inclined to plan and engage in routine study activities. Therefore, students who score low on *attitude* and *motivation* have to work on setting higher-level global goals and task-specific goals, and learn to attribute what happens to them at school to their own efforts.
- The *time-management* scale looks at how well-organised the students are in creating and using schedules that enable them to use their time productively, for example, having and following a study plan. Low scores on the *time-management* scale indicate that the students need to learn to manage their study time.
- The *anxiety* scale measures the extent to which the students are tense and nervous, and worry about academic tasks. It thus includes negative thoughts and self-referred statements about their abilities.
- Items on the *concentration* scale assess the students' ability to concentrate on their academic activities and to eliminate interfering situations, thoughts and emotions.

- The *information-processing* scale consists of items that determine how well the students create and use mental imagery, and verbal elaboration and organisation to enhance their understanding and recall, as well as how they monitor their comprehension.
- The scale on *selecting the main ideas*, addresses the extent to which the students are able to identify important information and to separate it from unimportant information, and then focus their attention and information-processing strategies on the information that has to be remembered. An example of such a skill is deciding which key points to underline to concentrate on.
- The *study aids* scale focuses on how the students are able to recognise and use support techniques, hints or the material provided in books, and to create their own aids to improve meaningful learning and remembering. This may include making diagrammes, underlining text, reading headings, making summaries, and attending study group sessions to aid comprehension.
- The *self-testing* scale looks at how well the students go over their class notes, and how well they review and engage in self-testing while checking their comprehension levels. For example, they may formulate questions before, during and after classes, and test themselves on anticipated test and examination questions.
- Finally, the scale on *test-strategies* evaluates how well the students prepare for different types of test questions and try to maximise the required performance. For example, this includes how to create effective examination- or test-taking plans, and how to answer different types of questions, such as multiple-choice and essay-type questions.

Each individual student received a student copy of the LASSI-HS results. The researcher explained to the students how to interpret their individual scores on each of the LASSI-HS scales. All the students received the following information in order to interpret their LASSI-HS scores:

- a score above the 75<sup>th</sup> percentile level indicates *relative strength* in an area - improving the strategies and skills in that area should not be the highest priority, but can be helpful;
- a score between the 50<sup>th</sup> and 75<sup>th</sup> percentile level shows that the students *may need to improve* their skills in that area, and that they might have difficulties if they do not develop the skill;
- a score below the 50<sup>th</sup> percentile indicates *relative weakness* in the area - improving the strategies and skills in that area should be the students' highest priority.

The results of the pre-test LASSI-HS, together with information derived from the literature, were used as a basis for the design of a 10-week intervention programme for the one grade 10-class. Thus, all the students in the experimental group participated in the study and learning strategy intervention sessions which the researcher facilitated at school during the Life Orientation periods (for 3 hours) and in the afternoons (for 7 hours).

At the end of the study, the experimental and the control groups again completed the LSSI-HS test. This was the post-test, and allowed for a comparison of pre-intervention and post-intervention scores.

(ii) The qualitative phase

Data for the qualitative phase were obtained from eight selected students. All the students in the experimental group underwent intervention and kept diaries. However, as explained in section 4.4.3.1, the sample for this phase was made up of eight students only (four who had relative strengths in seven or more areas but needed to improve a few strategies only in order to attain an optimum level of academic achievement, and another four who needed to improve the majority of their skills or strategies because they were weak in many areas). (See Appendix L for the individual support given to the students.)

All the students in the experimental group were required to keep diaries throughout the intervention period as part of their learning activities. The

researcher also recorded her own observations in a journal during this 10-week period. In addition, data were collected by means of the journal diaries of the eight selected students, and from individual interviews with the same eight students. All the data were analysed to identify dominant themes. The qualitative phase aimed at seeking answers to the following research questions, namely

- To what extent do students use SRL strategies?
- What are the students' views regarding what worked well and what did not work well of the programme?
- How could the psycho-educational support programme be improved?

Details regarding the above-mentioned procedures used in the qualitative phase are explained next.

#### *a. Diaries (journals)*

The *diary* method involves a record of repeated self-report that aims to capture reflections, events and behaviour close to the time they occur (Iida, Shrout, Laurenceau & Bolger, 2012:277). A diary is useful for providing evidence of information about phenomena that are situationally inaccessible to researchers because of being internal, rare or infrequent. The use of diaries as one of the tools for data-collection has been a common method amongst social scientists, and in psychological research (Bolger, Davis & Rafaeli, 2003:580; Nicholl, 2010:16).

Terms such as *learning diary*, *learning journal*, *learning log* and *learning protocol*, appear in the literature, and are sometimes used interchangeably. This inconsistency in the use of the terms may cause confusion. In fact, a *learning protocol* is an assignment where students are required to reflect on previously learnt content, identify gaps in their understanding of the learning material, the reasons for the gaps, and how to bridge those gaps. The term *learning journal* refers to a series of learning protocols written over a longer period (Berthold, Nückles & Renkl, 2007:565; Nückles, et al., 2009:259). The issue of *time-frame* is not mentioned as an aspect that helps to differentiate a *learning protocol* from a

learning *journal* (Hübner, Nückles & Renkl, 2010:19). Therefore, in this study, a *learning protocol* refers to a reflection-document which is written about one learning episode, and a *learning journal* is seen as a series of learning protocols written over an extended period of time. When a diary is applied in the context of learning, it is referred to as a *learning diary* or a *learning journal*. The terms *learning diary*, *learning journal* and *diary* are used interchangeably.

Nicholl (2010:18) states that diaries may be used by researchers to provide in-depth data, in addition to methods like interviews. According to Bolger, et al. (2003:581), diaries can be used to obtain information about changes over time at the inter-personal and intra-personal level, as well as for conducting a causal analysis of intra-individual changes, and individual differences in such changes. Furthermore, diaries can be used to report on experiences as they unfold over time (Iida, et al., 2012:281).

Diaries have been used as a tool for measuring daily learning SRL research (Arsal, 2009:88; Rosen, Glennie, Dalton, Lennon & Bozick, 2010:80; Schmitz & Wiese, 2006:65). However, some of the studies may have contextual and other limitations, such as the fact that not all aspects of the SRL phenomena are being addressed (Glogger, Schwonke, Holzäpfel, Nückles & Renkl, 2012:453). The fact that no documented studies exist that indicate the use of diaries in SRL studies in South Africa suggests that this method of data-collection has been under-utilised.

Diaries can be in the form of paper-and-pencil, electronically and internet-based (Bolger, et al., 2003:593), or telephone-based (Iida, et al., 2012:284). The paper-and-pencil format of diaries was found convenient for use in this study as the school does not have computers, due to financial constraints.

Completing diaries formed part of self-monitoring behaviour during the performance phase, and provided information which enabled the students to make judgments about the outcomes of their achievements following the use of learning and study strategies (self-evaluation). The researcher expected from the students to report on their study and learning activities. They therefore completed their

diaries every time they engaged in academic work, according to prompts given (see Appendix J).

All the students in the experimental group were given an A5 exercise book to record their experiences after each session of the programme. The diaries provided details of how the individual students engaged in academic work, and implemented the strategies learnt during each intervention session.

*b. The researcher's field-notes/observation journal*

According to McMillan and Schumacher (2010:350), collecting qualitative data also involves the observation of naturally occurring behaviour over many days in order to obtain a deeper understanding of a phenomenon. Researchers often record these observations and reflections on what happened in the form of field-notes (McMillan & Schumacher, 2010:354).

The fact that the researcher was the facilitator of the SRL skills-sessions for the experimental group over the period of 10 weeks allowed her to observe how the students reacted during the sessions. This type of observation is referred to as *participant observation* (Nieuwenhuis, 2010:85). The researcher also held informal conversations with some of the students at random, and took down notes after each session of the 10-week intervention programme. Informal conversations are an integral part of observation, where the interview questions arise from the immediate context, instead of being predetermined (McMillan & Schumacher, 2010:356).

*c. Interviews with the students*

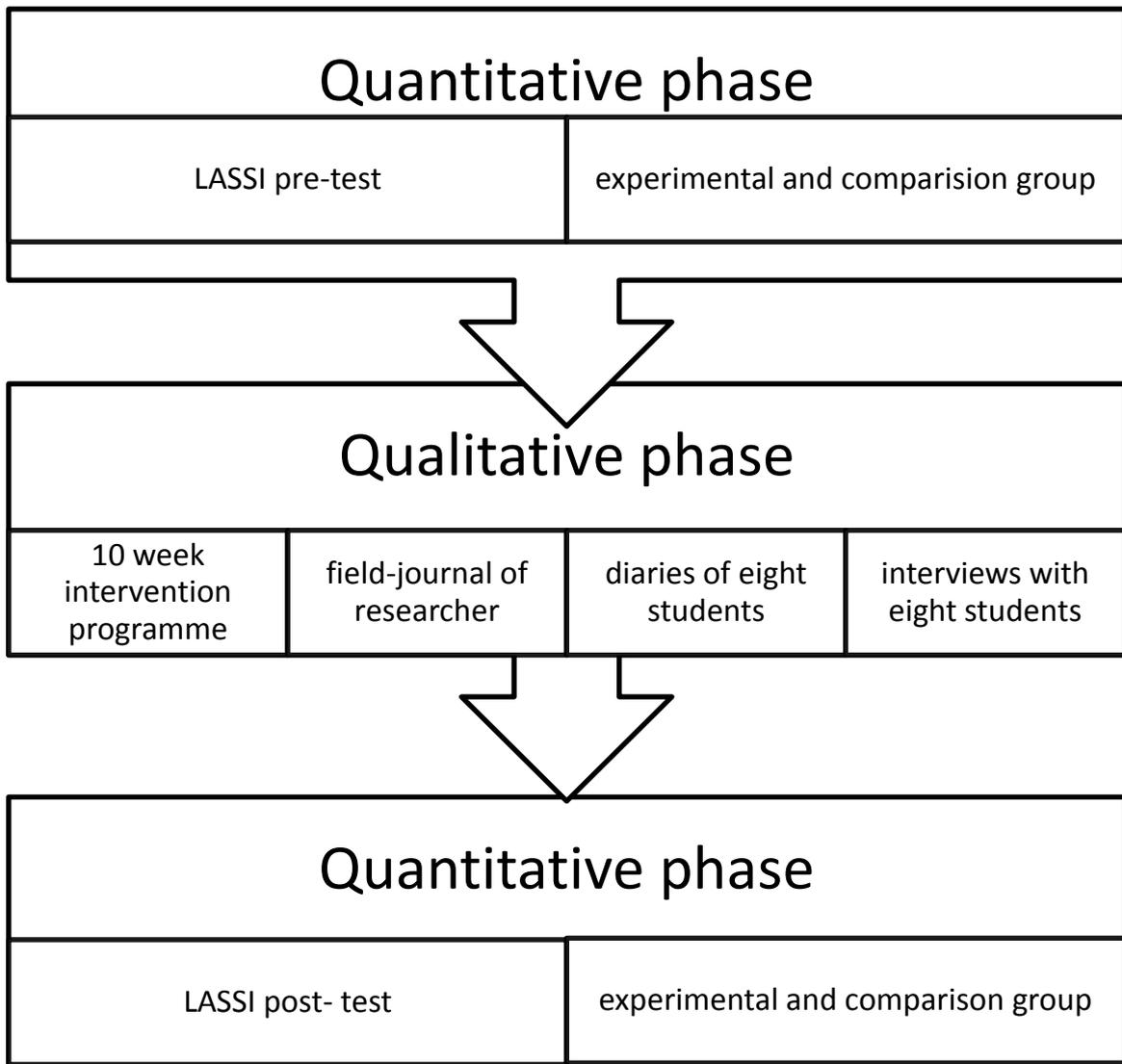
In-depth semi-structured interviews were held with the eight selected students at the end of the intervention period. The students were required to answer questions according to an interview schedule (see Appendix E). The researcher probed the answers when clarification was needed. The interviews not only allowed the researcher to corroborate diary data, but also served to answer the following research question, namely

*How can the psycho-educational support programme be improved, if necessary, to assist the students to become self-regulated learners?*

(iii) The quantitative phase

All the students in both the experimental and the comparison groups completed the same LASSI-HS post-test after the 10-week intervention programme had been completed. This formed the final part of the research. The main hypothesis that was tested was that significant differences existed between the pre- and the post-test scores for the experimental but not for the comparison group regarding the different scales of the LASSI-HS test.

The entire research process is illustrated in Figure 4.1 below.



**Figure 4.1 The phases of the research and data-collection**

Figure 4.1 clearly shows the phases of the research as: (i) a quantitative phase, during which baseline-data were collected by means of a questionnaire; (ii) an extensive qualitative phase, during which the intervention took place, and qualitative data were collected continuously; and (iii) a final quantitative phase during which the same questionnaire was completed by the experimental and the comparison groups.

#### 4.4.4 Measures to ensure validity and reliability

Issues of validity and reliability are to be addressed in research, although the latter tends to be less emphasised in qualitative research (Creswell & Plano Clark, 2011:210). Validity also needs to be addressed through the lens of mixed-methods research.

Creswell and Plano Clark (2011:239) state that *validity* in the context of mixed-methods research is defined as using strategies that address potential validity threats in data-collection, analysis, and interpretations when connecting the quantitative and qualitative strands, as well as conclusions drawn from such merging. The same authors provide details on strategies that researchers may use to minimise validity threats. As stated, the small qualitative sample was drawn from the same group as the bigger quantitative sample.

According to McMillan and Schumacher (2010:330), *validity* in qualitative research has to do with the degree of consistency/agreement between how the phenomenon is being explained and what it is in real life, according to the participants' meaning. The researcher used various ways to enhance validity, including a lengthy data-collection period, the use of multi-methods strategies that allows for data-corroboration, and member-checking to assess the accuracy of the collected information (Creswell & Plano Clark, 2011:211). The researcher's promoter also validated the open-ended questions designed for the diary and the interview questions (Appendix E) as appropriate for this study. The researcher also conducted informal interviews, and made anecdotal records of observations after each session of the 10-week intervention period. The interviews served to corroborate the information which the participants recorded in their diaries.

*Reliability* in qualitative research has to do with the extent to which multiple coders agree on the categories/codes and themes of the interview transcripts (Creswell & Plano Clark, 2011:211). The researcher and her promoter interacted with a view to agreement on the categories/codes and the themes of the interview transcripts and the diary data.

#### 4.4.5 The data-processing procedure

The data-analysis proceeded according to the recommendations of Creswell and Plano Clark (2011:221). The analysis of the data was carried out in three phases. The Statistical Package for the Social Sciences (SPSS) was used for the descriptive and inferential analysis of the data of the quantitative phase. Descriptive statistics helped to summarise the data, whereas Inferential statistics (t-tests) were used to test the hypotheses.

Thematic analysis was used for the qualitative data. *Thematic analysis* is a method for systematically identifying, organising and understanding patterns of shared meaning across a data set (Braun & Clarke, 2012:57). Furthermore, the patterns of meaning needed to address a particular topic or to be relevant to answering a particular research question. Thus, the diaries of the eight students were analysed to determine the type of SRL strategies the students used during the intervention period, and which of these strategies worked well or did not (prompts were given, as illustrated in Appendix J). The students were required to complete certain statements in their diaries. The prompts were used as categories or 'pre-determined codes' to determine dominant themes. The dominant themes in the diaries were later followed up during the interviews as part of the verification of the information.

The students' responses to the semi-structured interview questions were transcribed and then analysed in the same way as the diaries. The researcher's field-notes recorded in a journal also added to the data. The data in the diaries and the quantitative data enabled the researcher to determine the extent to which the students developed and used the SRL skills, as well as which skills worked best.

Finally, the researcher used the results obtained during the quantitative and the qualitative phase, as well as the literature, to draw conclusions in respect of how the intervention programme may be improved.

## **4.5 SUMMARY**

In this chapter the research design was explained, and a detailed description was given of how the explanatory, sequential mixed-methods research design was used in the study. The data-collection methods of each phase were also explained, and the manner how the data were analysed, merged and used together with the literature to determine how adolescent SRL can be developed at secondary schools.

The results of the quantitative and qualitative phases of the mixed-methods investigation are presented in the next chapter.

## CHAPTER 5

### RESULTS AND DISCUSSION

#### 5.1 INTRODUCTION

As mentioned in Chapter 1 (section 1.4), the aim of this study was to determine how the SRL of adolescents can be developed in high school. Specifically, the study sought to find out what the students' SRL profile was; the extent to which they used SRL strategies; their views on the intervention programme; and how the programme could be improved to effectively develop their SRL. The mixed-methods research approach that was used in this study was explained in Chapter 4. Data were collected before and after the students were exposed to a learning and study strategies intervention.

The results of the study are presented in this chapter according to the four research questions stated in Chapter 1, and interpreted in the light of the literature in Chapters 2 and 3. The quantitative results will be presented first, followed by the qualitative data.

#### 5.2 THE QUANTITATIVE RESULTS

##### 5.2.1 Student profiles on the LASSI-HS pre-tests

As previously stated (section 4.4.3.2), the results of the LASSI-HS indicate the students' strengths and weaknesses in three components, referred to as *skill*, *will* and *self-regulation*, according to Weinstein's model of strategic learning (Weinstein et al., 2011a:46). The focus of the *skill* category is not only on knowledge of learning strategies in terms of *what* to do, but is also on *how* to use the knowledge effectively and *when* it is appropriate to use a particular strategy. Furthermore, the *skill* (INF; SMI; TST), *will* (ATT; MOT; ANX) and *self-regulation* (TMT; CON; SFT; STA) components of the LASSI-HS need to work together in order to facilitate strategic learning (Weinstein, et al., 2011b:141).

In this study the students' profiles with regard to SRL competencies are explained in terms of the extent to which they would need to give priority to improving their skills and strategies in the 10 scales of the LASSI. To reiterate, a score above the 75<sup>th</sup> percentile level indicates *relative strength*, and suggests that improving skills in that area need not be highly prioritized, although it could be helpful. A score between the 50<sup>th</sup> and 75<sup>th</sup> percentile level indicates that the student may need to improve that particular skill, since he or she may have difficulties achieving successfully if the skill is not developed. However, any score below the 50<sup>th</sup> percentile indicates *relative weakness* in the particular area, and improving the skills in that area should be the student's priority.

As stated in Chapter 4 (section 4.2), the LASSI-HS test results are used to answer the research question, namely

*What is the SRL profile of the group of Grade 10-students that participated in the study?*

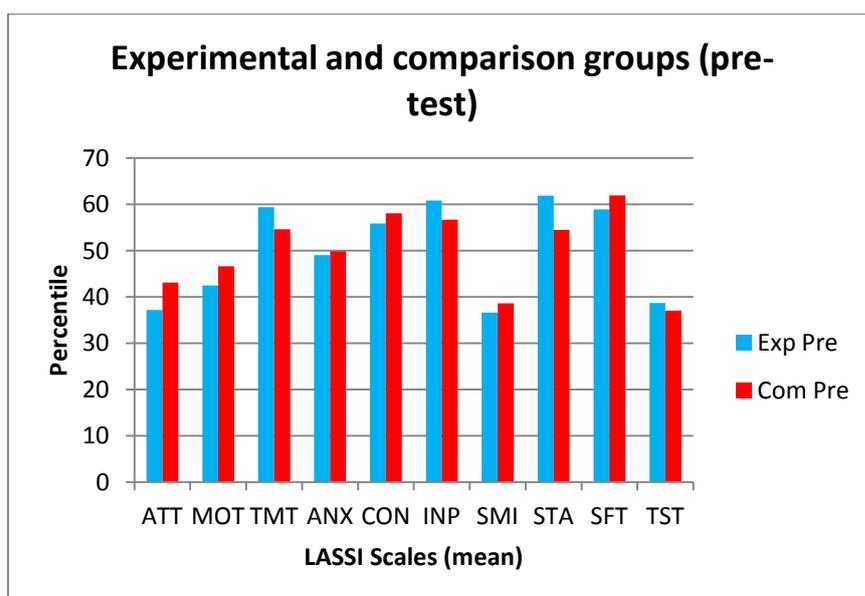
The following tables and figures indicate the students' profiles as measured by the LASSI-HS in terms of the SRL strategies they reported using.

Table 5.1 illustrates the means and standard deviations of the experimental and the comparison group on the pre-test.

**Table 5.1: Percentiles of the pre-test LASSI-HS**

LASSI SCALE	N	Pre-test means and standard deviations			
		Experimental group (intervention)		Comparison group (no intervention)	
		Mean	Std. dev.	Mean	Std. dev.
Attitude (ATT)	35	37.2	21.6031	43.14286	19.36817
Motivation (MOT)	35	42.48571	23.60879	46.62857	26.70876
Time-management (TMT)	35	59.42857	26.64504	54.62857	27.41414
Anxiety (ANX)	35	49.02857	21.47705	49.85714	21.26464
Concentration (CON)	35	55.85714	29.81624	58.05714	29.79335
Information-processing (INP)	35	60.85714	25.939	56.68571	25.44518
Selecting main ideas (SMI)	35	36.65714	25.42225	38.6	25.08949
Study aids (STA)	35	61.85714	27.00669	54.48571	26.77617
Self-testing (SFT)	35	58.94286	25.00581	61.97143	25.66009
Test-taking strategies (TST)	35	38.68571	27.90401	37.05714	26.71411

Table 5.1 shows that the two groups appear to be similar. For example, the baseline results indicate that the students in both classes had similar characteristics in that the mean scores above the 50<sup>th</sup> percentile (TMT; CON; INP; STA; SFT) and those below the 50<sup>th</sup> percentile in (ATT; MOT; ANX; SMI; TST) were obtained in the same areas of the LASSI-HS. There were only *slight* differences by one or two points, as illustrated in Figure 5.1.



**Figure 5.1: Summary of the SRL profile before the intervention**

According to Figure 5.1, the comparison group had slightly higher mean scores on four of the areas of the LASSI-HS scales that were below the 50<sup>th</sup> percentile (ATT; MOT; ANX; SMI), while the experimental group had slightly higher mean scores on three of the LASSI-HS scales which were between the 50<sup>th</sup> and 75<sup>th</sup> percentile (TMT; INP; STA).

The baseline information of the LASSI-HS mean scores may also be indicative of the relative strengths and weaknesses of the selected group of Grade 10-students with regard to their SRL strategies. In Table 5.2 the listed mean scores are arranged according to the categories which are used to interpret the students' SRL strengths and deficits as measured by the LASSI-HS. Therefore, Table 5.2 indicates the students' profiles in terms of their strengths and weaknesses.

**Table 5.2: Summary of the average LASSI-HS on the relative strengths and weaknesses**

LASSI	Pre-test LASSI scales	
	Exp. group ( n= 35)	Comp. group (n=35)
above 75 <sup>th</sup> percentile ( <i>relative strength</i> )	---	---
50 <sup>th</sup> - 75 <sup>th</sup> percentile ( <i>may need to improve</i> )	TMT	TMT
	CON	CON
	INP	INP
	STA	STA
	SFT	SFT
< 50 <sup>th</sup> percentile ( <i>relative weakness</i> )	ATT	ATT
	MOT	MOT
	ANX	ANX
	SMI	SMI
	TST	TST

Table 5.2 shows that the mean scores which were below the 50<sup>th</sup> percentile indicated that all the students were relatively weak in the *will* component (ATT; MOT; ANX) and in *selecting the main ideas*, as well as in *test-taking* strategies.

The mean scores that were between the 50<sup>th</sup> and the 75<sup>th</sup> percentile on all four scales of the *self-regulation* component (TMT; CON; STA; SFT) and on *information-processing* (INP) suggest that they have better-developed strategies in that area. The *information-processing* is one of the scales of the *skill* component (see section 4.4.3.2 for an explanation of all the LASSI-HS scales).

In summary, the pre-test mean scores indicated that the students in both groups did not show strengths in any of the areas measured by the LASSI-HS. Furthermore, the data that were collected before the intervention indicates that the students may need to improve aspects (on the 50<sup>th</sup> to the 75<sup>th</sup> percentile) on five areas of the LASSI-HS (*time-management; concentration, information-processing, study aids and self-testing*). However, their main weaknesses (< 50<sup>th</sup> percentile) were in the other five areas (*attitude, motivation, anxiety, selecting the main ideas and test-taking strategies*). Overall the results indicated that (i) the students would benefit from an improvement on all the areas of the SRL as measured by the LASSI-HS; and (ii) the profiles of the experimental and comparison groups were similar before the intervention, which involved only the experimental group (also called group A).

### **5.2.2 Post-intervention test comparisons**

After the intervention, a post-test was written by both the experimental and the comparison groups, using the same LASSI-HS. Thereafter, a t-test was used to test for the significance of the differences between the mean scores of the two tests. Tables 5.3 to 5.5 show the results of the two groups (first separately, and thereafter comparatively).

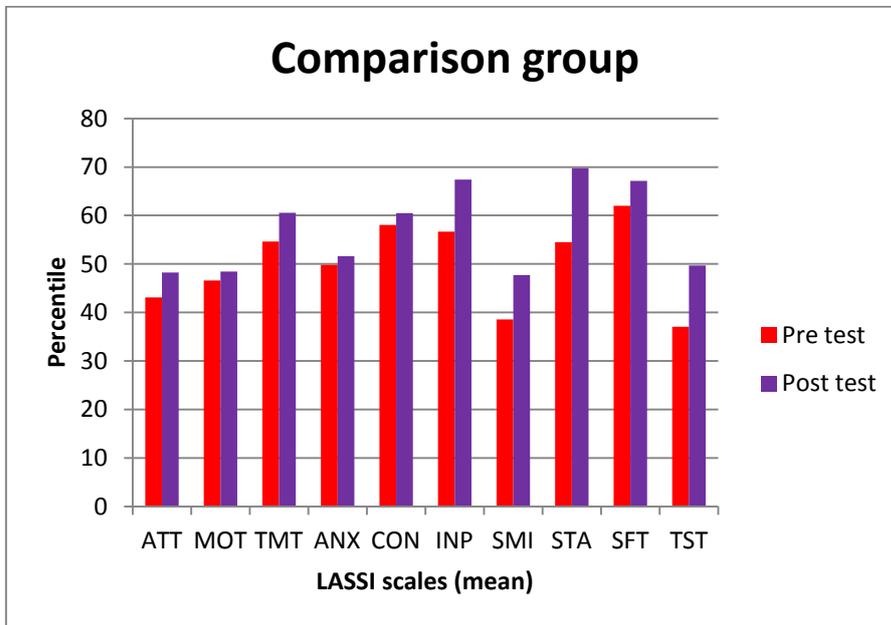
**Table 5.3: The pre- and post-LASSI-HS-tests for the comparison group**

LASSI SCALE	Period	Comparison group (intervention) (n=35)			
		Pre- and post-test scores			
		Mean	Std. dev.	T-value	Significance
Attitude ( <b>ATT</b> )	Pre	43.14286	19.36817	1.0061	P > 0.05
	Post	48.25714	23.00555		
Motivation ( <b>MOT</b> )	Pre	46.62857	26.70876	0.2921	P> 0.05
	Post	48.42857	24.81613		
Time-management ( <b>TMT</b> )	Pre	54.62857	27.41414	0.8790	P > 0.05
	Post	60.57143	29.12376		
Anxiety ( <b>ANX</b> )	Pre	49.85714	21.26464	0.2962	P > 0.05
	Post	51.57143	26.83751		
Concentration ( <b>CON</b> )	Pre	58.05714	29.79335	0.3697	P > 0.05
	Post	60.51429	25.65767		
Information-processing ( <b>INP</b> )	Pre	56.68571	25.44518	1.7772	P > 0.05
	Post	67.42857	25.12941		
Selection of main ideas ( <b>SMI</b> )	Pre	38.6	25.08949	1.4688	P > 0.05
	Post	47.71429	26.79944		
Study aids ( <b>STA</b> )	Pre	54.48571	26.77617	2.4673	P < 0.05
	Post	69.77143	25.02714		
Self-testing( <b>SFT</b> )	Pre	61.97143	25.66009	0.8764	P > 0.05
	Post	67.17143	23.95398		
Test-taking strategies ( <b>TST</b> )	Pre	37.05714	26.71411	1.9722	P > 0.05
	Post	49.71429	26.97992		

Table 5.3 shows that the post-test mean scores of the four scales (ATT; MOT; SMI; TST) that were below the 50<sup>th</sup> percentile level remained the same. The post-test mean score of only one scale (ANX) improved to a higher level of between the 50<sup>th</sup> and the 75<sup>th</sup> percentile, although the improvement was not statistically significant, and may be due to chance.

Furthermore, although there was a slight general improvement in the mean scores on all of the LASSI-HS post-test results, the differences between the means of the pre-test versus the post-test results were significant in only one instance, namely with regard to *study aids* (STA). The p-value (p<0.05) indicates that there was a

significant difference between the pre- and post-test scores. However, it should be noted that the post-test mean score of *study aids* remained on the same level – between the 50<sup>th</sup> and the 75<sup>th</sup> percentile. The pre- and post-test results of the comparison group are illustrated below in Figure 5.2



**Figure 5.2: Graphical representation of the pre- and post-test LASSSI-HS results of the comparison group**

Overall the pre- and post-test results indicate that the students in the comparison group (who did not participate in the intervention) remained at a level where they needed to improve the same areas that were between the 50<sup>th</sup> and the 75<sup>th</sup> percentile (*information-processing, time-management, concentration, self-testing and study aids*). Furthermore, the comparison group continued to be weak (below the 50<sup>th</sup> percentile) in the same four out of the five areas (*attitude, motivation, selection of the main ideas, and test-taking strategies*). There was a slight but insignificant improvement in the area of *anxiety* (from below the 50<sup>th</sup> percentile to just above the 50<sup>th</sup> percentile), which may be related to the fact that they were a little older later in the year.

The results of the experimental group who participated in the intervention are illustrated in Table 5.4.

**Table 5.4: The- pre- and post-test LASSI-HS results for the experimental group (intervention group)**

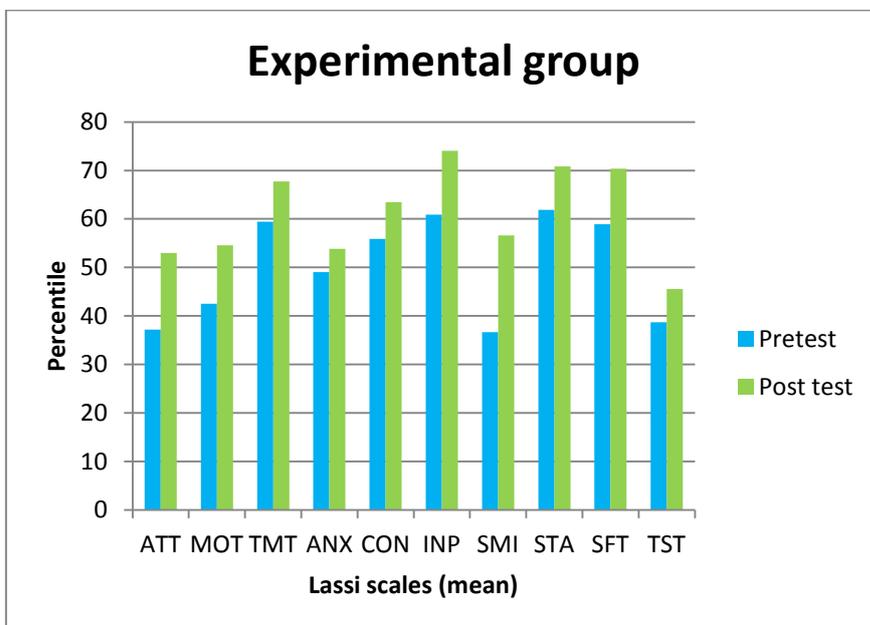
LASSI SCALE	Period	Experimental group (N=35)			
		Pre and post-test scores			
		Mean	Std Dev	Tvalue	Significance
Attitude (ATT)	Pre	37.2	21.6031	2.6364	P < 0.05
	Post	52.97143	28.032		
Motivation (MOT)	Pre	42.48571	23.60879	2.1713	P < 0.05
	Post	54.57143	22.956585		
Time-management (TMT)	Pre	59.42857	26.64504	1.4472	P > 0.05
	Post	67.71429	20.91098		
Anxiety (ANX)	Pre	49.02857	21.47705	0.8758	P > 0.05
	Post	53.82857	24.29171		
Concentration (CON)	Pre	55.85714	29.81624	1.1035	P > 0.05
	Post	63.42857	27.54172		
Information-processing (INP)	Pre	60.85714	25.939	2.0562	P < 0.05
	Post	74.02857	27.62723		
Selection of main ideas (SMI)	Pre	36.65714	25.42225	3.1457	P < 0.05
	Post	56.6	27.57578		
Study aids (STA)	Pre	61.85714	27.00669	1.3814	P > 0.05
	Post	70.82857	27.33075		
Self-testing (SFT)	Pre	58.94286	25.00581	1.8814	P > 0.05
	Post	70.37143	25.81163		
Test-taking strategies (TST)	Pre	38.68571	27.90401	0.9972	P > 0.05
	Post	45.54286	29.6036		

The results in Table 5.4 show that the mean scores of the students on the post-test improved on all the scales. Unlike the comparison group, all the improved scores were above the 50<sup>th</sup> percentile, except in the case of *test-taking* strategies (TST), which remained below the 50<sup>th</sup> percentile, even after the intervention.

The differences between the pre- and the post-test averages were also significant in four instances (*attitude, motivation, information-processing, selecting the main ideas*) of the five areas of the LASSI-HS scales in which the students initially showed relative weaknesses ( $p < 0.05$ ). The greatest improvement after the

intervention was in *selecting the main ideas* where the significance of the mean differences was smaller than 0.01.

The graphical representation of the overall results of the experimental group is shown in Figure 5.3.



**Figure 5.3 Graphical presentation of the pre- and post-LASSI–HS results of the experimental group**

It is evident from Table 5.4 and Figure 5.3 that the students in the experimental group gained from the intervention because there was a relative improvement in nine of the 10 areas of the LASSI-HS. Looking at the areas in which the students were initially weak (*attention, motivation, anxiety, selecting the main ideas, and test-taking strategies*) one can see that more gain occurred in the category of *skill*, namely the ability to *select the main ideas* (significant on the 1%-level). Regarding the mean scores that were between the 50<sup>th</sup> and 75<sup>th</sup> percentile, there was a big improvement in the area of *information-processing* of the *skill* category. In general, the students indicated a greater improvement on the *will* components, with mean scores above the 50<sup>th</sup> percentile in all three areas, namely *attitude, motivation* and *anxiety*.

Since the aim of the study was to ascertain how to develop SRL in high school students, the results of the two classes were also compared to see if the

difference in the performance on the LASSI-HS between the classes was significant. The pre- and post-test LASSI-HS results of the students in the two classes were compared, as indicated in Table 5.5.

**Table 5.5: LASSI-HS pre- and post-test results of the experimental and the comparison groups**

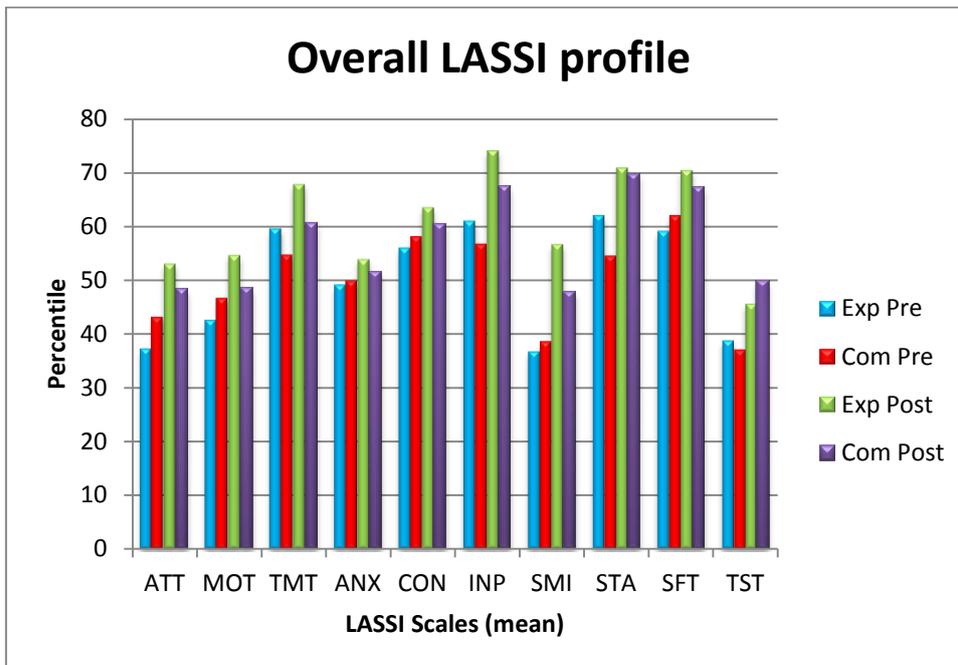
LASSI-scale	N	Test	Pre- and post-test means and standard deviations				P-value	Significance
			Experimental group (intervention), N= 35		Comparison Group (no intervention), N=35			
			Mean	Std. dev.	Mean	Std. dev.		
ATT	35	Pre	37.2	21.6031	43.14286	19.36817	0.2298	P >0.05
	35	Post	52.971 43	28.032	48.25714	23.00555	0.4445	P >0.05
MOT	35	Pre	42.485 71	23.60879	46.62857	26.70876	0.4941	P>0.05
	35	Post	54.571 43	22.956585	48.42857	24.81613	0.2862	P >0.05
TMT	35	Pre	59.428 57	26.64504	54.62857	27.41414	0.4602	p>0.05
	35	Post	67.714 29	20.91098	60.57143	29.12376	0.2427	P >0.05
ANX	35	Pre	49.028 57	21.47705	49.85714	21.26464	0.8716	p>0.05
	35	Post	53.828 57	24.29171	51.57143	26.83751	0.7134	P >0.05
CON	35	Pre	55.857 14	29.81624	58.05714	29.79335	0.7584	p>0.05
	35	Post	63.428 57	27.54172	60.51429	25.65767	0.6484	P >0.05
INF	35	Pre	60.857 14	25.939	56.68571	25.44518	0.4993	p>0.05
	35	Post	74.028 57	27.62723	67.42857	25.12941	0.2995	P >0.05

SMI	35	Pre	36.657 14	25.42225	38.6	25.08949	0.7486	p>0.05
	35	Post	56.6	27.57578	47.71429	26.79944	0.1761	P >0.05
STA	35	Pre	61.857 14	27.00669	54.48571	26.77617	0.2555	p>0.05
	35	Post	70.828 57	27.33075	69.77143	25.02714	0.8665	P >0.05
SFT	35	Pre	58.942 86	25.00581	61.97143	25.66009	0.6186	p>0.05
	35	Post	70.371 43	25.81163	67.17143	23.95398	0.5926	P >0.05
TST	35	Pre	38.685 71	27.90401	37.05714	26.71411	0.8038	p>0.05
	35	Post	45.542 86	29.6036	49.71429	26.97992	0.5399	P >0.05

Table 5.5 indicates that, although the mean scores of the students in the experimental group improved after the intervention (as indicated by the post-test), the differences in the post-test scores between the two groups were not significant (p- value > 0.05).

According to McMillan and Schumacher (2010:299), results that demonstrate statistical insignificance when small samples are used, do not necessarily imply that the differences do not exist. The observed impact may not appear to be significant due to the relatively small sample size. Thus, in consideration of the small group (only 35 participants), it is noted that in five instances the p-values were smaller than 0.5. This indicates the five areas where the intervention programme had the greatest impact, namely *attitude, motivation, time-management, information-processing* and *selecting the main ideas*.

Figure 5.4 below shows the overall scores of the two groups in the pre- and the post- tests.



**Figure 5.4: Overall LASSI-HS scores of the experimental and the comparison groups**

Figure 5.4 shows not only the general profiles of the students in the two groups. This figure indicates how they reportedly used their SRL strategies. The figure confirms the gains of the experimental group in *attitude, motivation, time-management, information-processing* and *selecting the main ideas*, in particular. Only with regard to *test-taking* strategies did the comparison group score better in the post-test than the experimental group. However, both groups were below the 50<sup>th</sup> percentile in the post-test with regard to this skill.

### 5.2.3 Discussion of the quantitative results

As indicated previously (section 5.2.1) the quantitative part of the study mainly sought to determine the SRL profile of the group of students in terms of their strengths and weaknesses. Additionally, the study also investigated whether the pre- and post-LASSI-HS mean percentile scores of the students in the experimental group improved after the SRL intervention, relative to the comparison group.

The results in Table 5.1 show that the SRL characteristics of the students in both classes were similar before the intervention. None of the groups had a mean score which was above the 75<sup>th</sup> percentile on any of the 10 scales (see Table 5.2). The pre-test LASSI-HS results indicated that the students needed to attend to their use of time (TMT), maintaining focus (CON), self-checking to see if the task-requirements are being met (SFT), how they use resources for learning (STA), and their thought-processes for making sense of new information (INP) in order to achieve success. The students of both classes lacked the self-discipline, interest and willingness to make an effort to complete their academic tasks. They tended to worry about their academic performance, and therefore needed to prioritise the development of skills within the *will* component (ATT; MOT; ANX). The students also needed to prioritise learning to *identify the main ideas* in texts (SMI), as well as their skills for *test-preparation*, and for demonstrating new knowledge in tests (TST).

The results of the LASSI-HS post-test indicate that the two groups were dissimilar after the intervention (see Table 5.5). The comparison group continued to demonstrate a need to prioritise developing skills in four areas (ATT; MOT; SMI; TST). In contrast, the LASSI-HS post-test mean scores were above the 50<sup>th</sup> percentile in all areas for the experimental group after the intervention. The results also demonstrate that the intervention had the greatest impact on the areas of *attitude, motivation, information-processing, selection of the main ideas, and time-management*. Furthermore, the mean scores were above the 60<sup>th</sup> percentile in all these areas, while the *selection of the main ideas* was the skill that improved the most. These scores suggest that the students became more skilled at recognizing important information that they needed to focus on when studying for tests.

In the next section the qualitative findings will be presented. These findings further explain and confirm the above-mentioned quantitative results regarding the impact of the intervention programme.

### **5.3 THE QUALITATIVE FINDINGS**

Data were obtained from eight participants, as indicated.

#### **5.3.1 The background data of the eight participants**

The approach used for the sampling and the selection of the participants was discussed in section 4.4.3.1 (see Appendix K for the eight students' LASSI-HS scores). Abbreviations were used to identify participants and to ensure anonymity, e.g., B (boy), G (girl), numbers 1 to 4 for each gender, and H or L if they scored high or low on the LASSI-HS. In addition, I or D indicates if interview or diary data were used. These abbreviations are indicated in brackets, e.g. (B1H, D).

A summary of each participant's background data now follows.

(i) B1H

B1H is 16 years of age. He is the second of four children. His eldest sibling is a university student. He lives with both his parents, who are unemployed. Student B1H tended to be talkative and disruptive in class. He was tardy and did not study as he should. In fact, some students indicated that he did not live up to his potential and remarked that he did not take his studies seriously, and would get distinctions if he worked hard. B1H is doing the grade for the first time.

B1H is the student with the highest scores on the LASSI-HS. B1H's scores range from the 75<sup>th</sup> percentile and above on all 10 scales of the LASSI-HS (see Appendix K). Furthermore, his responses on the pre-intervention questionnaire show that he is satisfied with his learning and study strategies, although he later acknowledges his weaknesses during an interview. He is the most fluent in English and outspoken of his peers.

An arrangement could be made for him to attend two individual follow-up sessions. He would benefit from a one-to-one support session geared towards guidance on

how to set short-term goals, an aspect which is directly linked to ATT and MOT scales.

(ii) B2H

B2H is 15 years of age and the only son of an unemployed single mother. He has an eldest sister and two younger sisters. He gets on well with his peers. Like many of his peers, he reported that he tended to spend too much of his time watching TV and socialising with friends instead of focusing on his school-work. However, he reported that his academic performance was satisfactory, because he often passed by cramming a day or two before tests or examinations. He tended to be too conscious about making grammatical mistakes when communicating in English, and openly expressed his weakness in the area. Furthermore, he tended to be the most self-disciplined male in the class, and despised students who were not enthusiastic about their school-work. His responses on the pre-intervention questionnaire indicated that he acknowledged that his learning and study strategies were inadequate, and that he had never been taught study strategies. B2H has never repeated Grade 10.

B2H scored below the 50<sup>th</sup> percentile on three areas of the LASSI-HS pre-test (attitude, anxiety, selecting the main ideas), and below the 75<sup>th</sup> percentile on test-strategies (see Appendix K). He would benefit from one-to-one support, aimed at the above-mentioned four areas.

(iii) B3L

B3L is 16 years old and an only child. He lives with his single mother and grandmother. His mother is the sole bread-winner who provides for the family, despite being in temporary employment (a casual worker in a department store).

B3L tended to be sociable and comfortable with himself, but was a bit confused about his career aspirations. His books looked neat and well-cared for. He preferred to spend time socialising with friends instead of studying. B3L's response on the pre-intervention questionnaire showed that he was not repeating

Grade 10, that he found his study methods not to be helpful, and he indicated that he had never been taught how to study effectively. He confirmed his claim of unhelpful study habits during the interview when he said he would only study when writing tests or examinations.

The results of the pre-test LASSI-HS showed that B3L has a strength in only one area (information-processing), while his weaknesses lay in nine areas – he obtained LASSI-HS pre-test scores below the 50<sup>th</sup> percentile for attitude, time-management, anxiety, concentration, selection of the main ideas, study aids, self-testing and test-taking strategies. He also scored below the 75<sup>th</sup> percentile on motivation (see Appendix K). He would benefit from attending four one-to-one support sessions all with the aim to help him improve his learning and study strategies.

(iv) B4L

B4L is 15 years old. He is the eldest of four children, and lives with both parents and three siblings. He is playful in class and likes to be the clown. His books were not very neat. He was often disruptive and inattentive in class, and did not do all his homework. However, some of his classmates believed that he had the potential to do well, but only needed to make an effort.

B4L's response on the pre-intervention questionnaire showed that he was not repeating Grade 10. In addition, he indicated that he was never taught how to study effectively although he regarded his study methods as being helpful. The information that he provided during the interview was contradictory to this original claim that his study methods were helpful.

The results of the LASSI-HS pre-test (see Appendix K) showed that B4L had weaknesses in all the relevant areas (all 10 his scores were below the 50<sup>th</sup> percentile). This student was unwilling to come for individual sessions most of the time, and always came up with excuses. He attended only one of four one-to-one support sessions that were arranged to assist him to improve his learning and study strategies.

(v) G1H

G1H is 17 years old. She is the eldest of three children of a single mother. Her mother is casual worker in a department store. She appeared to be composed and reserved. She also appeared to be a dedicated student, as she reported that she often had to juggle between doing her school-work and the household duties after school. Her books were neat and well cared-for. She reported that she always tried to do her school-work because she did not like to get into trouble with her teachers. G1H was in the same grade the previous year.

G1H was the female student with the highest average scores on the LASSI-HS. Her responses on the pre-intervention questionnaire showed that she believed that her current learning and study strategies were not helpful, and later acknowledged similar weaknesses during the interviews. She struggled to express herself well in English, and appeared to be self-conscious about her language usage.

The LASSI-HS pre-test scores indicated that G1H was weak in dealing with academic problems (the only score below the 50<sup>th</sup> percentile on anxiety). She had better-developed skills in two areas, namely information-processing and self-testing (see Appendix K). Given that her pre-test LASSI-HS scores suggested that B1H's skills were relatively developed in most areas of the LASSI, she would benefit from only two individual follow-up sessions.

(vi) G2H

G2H is a 15 year old girl. She is one of five children, and has a brother who is in high school, as well as a younger sister who is in pre-school. She lives with both her parents, with only one parent being employed in a low-paying job. She helps her mother with household duties after school, as well as with fetching her youngest sibling from pre-school.

G2H was a well-groomed and neat student, whose books showed that she took her work seriously. She expressed herself relatively well in English during the interview and had a good vocabulary. However, she stated that she was shy to speak in class and to participate in discussions because she did not like to attract attention. She believed that her mother pressured her to do well and did not accept that she would not always be able to meet her expectations. She worried that she would not be able to live up to the expectations.

G2H's responses on the pre-intervention questionnaire showed that she was satisfied with her learning and study strategies, as she regarded them as being helpful. G2H was doing Grade 10 for the first time. The LASSI-HS pre-test scores indicated that G2H's weakness lay in the areas of motivation, time-management and self-testing, with scores below the 50<sup>th</sup> percentile. However, she appeared to have better developed skills in all the other areas (see Appendix K). She attended all four one-to-one support sessions that were arranged to assist her to improve her learning and study strategies.

(vii) G3L

G3L is 16 years of age. She is the first-born child amongst four siblings, and lived with both her parents. Her self-employed father was the sole bread-winner. Although not highly educated, her mother valued education and always encouraged her to get educated in order to have a better future.

She socialised a lot, and spent most of her time with friends after school. At school she tended to socialise with friends in the lower grades. She was cooperative in class, but did not take her work very seriously.

The pre-intervention questionnaire indicated that she was not repeating Grade 10. She has also never been taught how to study effectively before, although she regarded her study methods as satisfactory. The results of the pre-test LASSI-HS showed that G3L had relative strengths in two areas (see Appendix K). For time-management and self-testing her scores were above the 50<sup>th</sup> percentile. Her weaknesses were in the other areas – her LASSI-HS pre-test scores were below

the 50<sup>th</sup> percentile on attitude, time-management, anxiety, concentration, information-processing, selecting the main ideas, study aids and test-taking strategies. G3L attended all four one-to-one support sessions that were arranged to help her improve her learning and study strategies.

(viii) G4L

G4L is 15 years of age. She is the second child amongst four children. She lives with her parents who are both self-employed. Her eldest sibling finished high school but did not qualify for further education. Her parents were supportive and encouraged her to do well in school to be able to study further. G4L was sociable and talkative in class. She cooperated with the teachers and always managed to do her homework and assignments. She did not appear to know how to use and spend her spare time wisely, and said that she only studied when she had time.

The pre-intervention questionnaire indicated that she was not repeating Grade 10, was never taught how to study effectively, and that she regarded her study methods as helpful. However, her results in the LASSI-HS pre-test were contradictory to her responses on her study skills (see below). The results of the pre-test LASSI-HS showed that G4L had weaknesses in all areas (see Appendix K). All her scores were below the 50<sup>th</sup> percentile. She received four one-to-one support sessions to help her improve her learning and study strategies.

### **5.3.2 Findings based on the interviews and the diaries/journals**

As part of the SRL intervention, all the students were taught how to set goals, to monitor the implementation of their learning and study strategies, and to record all their activities in a journal. The eight students who were willing to be interviewed also gave permission for their journal entries to be used in the analysis of the data. The extracts taken from the students' journals and interviews are used in the sections which follow.

Table 5.6 illustrates the main categories and sub-categories of the findings.

**Table 5.6: Main categories and sub-categories of the study**

Categories	Sub-categories
The extent to which the students used SRL strategies.	<p><b>Goal-setting and time-management</b> (long-term, vague and unrealistic goals, poor time-management).</p> <p><b>Self-monitoring</b> (little evidence, other commitments, misaligned with goals).</p> <p><b>Learning strategies</b> (old ways, rereading /simple rehearsal/ hesitation to use the taught strategies).</p> <p><b>Self-evaluation</b> (evidence of self-judgement, the use of previous performance, remembered studied material).</p>
The students' views on what worked well with regard to the intervention programme.	<p><b>Goal-setting and time-management</b> (evidence of short-term goals, appropriate use of the study-time schedule, improved self-beliefs).</p> <p><b>Self-monitoring</b> (record of actions, action aligned with goals; record of studying in accordance to time schedule).</p> <p><b>Learning strategies</b> (record of the use of organisational strategies: mind-maps, mnemonics, self-testing, SOAR).</p> <p><b>Self-evaluation</b> (evidence of self-satisfaction; use previous performance to change behavior; plans to improve current/ ineffective strategy).</p>
The students' views on what did not work well with regard to the intervention programme.	<p><b>Goal-setting and time-management</b> (poor exam. study time-management, schedule unadjusted for other commitments, unrealistic goals and time-use).</p> <p><b>Self-monitoring</b> (poor self-belief, lack of perseverance, inappropriate recording implementation of self-motivational strategies).</p> <p><b>Learning strategies</b> (irrelevant strategy for math, giving up easily/no motivation strategy, difficulty using strategies).</p> <p><b>Self-evaluation</b> (poor plan of action, little evidence of self-observation, study action misaligned with time schedule).</p>
The students' views on how the intervention programme can be improved.	<p><b>Goal-setting and time-management</b> (repeat the time-management session; demonstrate how to adjust the time-table for exams; link with career guidance; include assertiveness training).</p> <p><b>Self-monitoring</b> (more demonstration, more guided practice sessions, more training on self-motivation).</p> <p><b>Learning strategies</b> (include content-specific strategies, make it fun, provide notes/hand outs).</p> <p><b>Self-evaluation</b> (start in first term, show how to self-check mind-set, include coaching on assertiveness).</p>

According to Table 5.6, the qualitative data analysis was predominantly done according to the deductive approach of thematic analysis in order to find answers to the following specific research questions, namely

- To what extent do students use SRL strategies (see section 5.3.2.1)?
- What are the students' views on what worked well with regard to the intervention programme (see section 5.3.2.2)?
- What are the students' views on what did not work well with regard to the intervention programme (see section 5.3.2.3)?
- What are the students' views on how the intervention programme can be improved (see section 5.3.2.4)?

Within each of these questions, an inductive approach was followed in the analysis of the data to identify sub-categories within each category.

#### 5.3.2.1 The extent to which the students made use of SRL strategies

##### *(i) Goal-setting and time-management*

According to the social-cognitive theory, goals motivate and direct behaviour (Cervone & Pervin, 2007:464), and enhance learning and performance through their influence on self-efficacy (Schunk, 2008a:98). As explained in section 2.4.1.3, *goal-setting* has to do with establishing priorities and standards that guide one's actions towards goal-accomplishment. Goal-setting is regarded as one of the personal variables in the triadic reciprocal model of causality (Schunk, 2008a:79; Schunk, 2012:148). Furthermore, in terms of the three-phase cyclical model, goal-setting operates during the forethought stage of SRL when the students establish priorities and select strategies and situations that help them to reach their desired performance-outcomes (Zimmerman, 2005:16).

It was considered important that the students be allowed to first explore their goals and motivation for being in school before the strategy-intervention began. The students were asked to think of goals that they would like to achieve and to write them down before being orientated about SRL. They were inclined to set long-term and career-focused goals, which are generally not very specific, for example,

*In five years to come I would like to see myself as having my own house, and working and achieving the goals that I choose for myself. (G1H, D)*

*My long-term goal is to see myself in my own house, working as a pilot, and having a good healthy family. (B4L, D)*

Furthermore, the students made no mention of their short-term goals. They did not refer to academic achievement and schoolwork, as indicated in the extracts of their journal entries.

Regarding *time-management*, the students did not indicate how they spent their time, and if they did, they were unaware of their weaknesses regarding time-management. As indicated by the diary entry of G2H, D, some did not even see the value of having a study time-table, and viewed their daily time-use in relation to long-term goals.

*I study once in a day, three times in a week. (G1H, D)*

*I did not complete the study time-table because I don't think it's all that important. (G2H, D)*

*I just study when I have time, and when I do not have time, I do not study. (G3L, I)*

The above examples of the students' diary entries show that they had limited knowledge of the SRL processes of *goal-setting* and *time-management* (see Table 3.2, section 3.4.2.4). This may provide an explanation for the quantitative results presented in section 5.2.1 (see Table 5.1 for the LASSI-HS mean pre-test scores below the 50<sup>th</sup> percentile on attitude and motivation). Furthermore, the long-term goals they set were unrealistic when compared to their study habits in that they were not linked to short-term goals. It is important for the students to be aware of how their daily and weekly approaches to schoolwork, as well as how their general achievement in the monthly and quarterly tests and assignments influence their

career aspirations. The students also need to be realistic about their achievements, namely that the amount of effort and time needed for enacting on behaviours that are directed towards goal-achievement need to be in considered. They need to understand the link between short-term and long-term goals, as well as the role of planning and time-management. Therefore, unlike what is indicated in the above-mentioned extracts of selected students' diaries, career goals should be perceived in relation to academic goals, learning and study strategies, and behaviour.

As stated in section 2.4.1.3, the research indicates that short-term goals, which are referred to as *proximal goals*, direct behaviour because it is easier to check progress towards outcome-achievement than long-term, *distant* goals (Schunk, 2008a:100). Such self-evaluation provides the individual with some form of progress feedback and enables the acquisition of information about self-efficacy (Schunk, 2008a:106). Short-term goals have also been found to be related to motivation, self-efficacy, intrinsic interest, and achievement (Schunk, 2012:141).

Another important aspect of *goal-setting* is goal-clarity. It is evident that when setting career goals, the students tended to consider a wide range of careers. These careers were often unrelated, namely that they did not fall within the same career-field, and may be suggestive of poor knowledge about different careers, or of indecisiveness. The lack of clarity in respect of one's goal may create confusion and unrealistic self-expectations. The following extracts illustrate unclear career goals, namely

*I want to see myself working as a doctor, a social worker, a writer, a poet, an actor, and also as a musician; having my own house, having what is mine. (B2H, D)*

*My long-term goal is to get a good education and have a business. I want to be a fashion designer. (B3L, D)*

*My long-term goal is to see myself living in my own house. I want to be a medical doctor. (G3L, D)*

The above quotes explain some of the students' weaknesses in the areas of the *will* component (the mean scores of the students which were below the 50<sup>th</sup> percentile on attitude, motivation and anxiety on the LASSI-HS pre-test). Therefore, the findings are in accordance with other research that indicates that unclear goals increase the students' vulnerability to anxiety, and cause them to be less persistent when faced with difficult tasks (Morisano, Hirsh, Peterson, Pihl & Shore, 2010:256).

However, the students' approach to goal-setting changed after receiving instruction on how to set short-term, proximal goals, which are the stepping-stones to long-term goals (see Appendix I for details of the session). The one-on-one sessions also appear to have assisted the students in this regard. The extracts of the interview data show that the *goal-setting* and *planning*-strategies that students implemented worked well for them. For example, they improved on their planning with regard to time (see B1H, I), and on seeking help from their peers (see G4L, I). Thus, they assumed responsibility for own performance-outcomes.

*Right now I am able to, you know I am able to.... you know mmmm, ahhh, like record when I come back from school I would take about 1 hour 30 minutes reading or listening to music. After that I would do something that may help me in the future. (B1H, I)*

*What has changed is that now I do time-management. When I get home I know what to do, and I can study. After school I sometimes stay with my classmate and we do group-work together. (G4H, I)*

The findings derived from the qualitative data are consistent with the literature that indicates the importance of clearly defined goals for SRL. Setting short-term goals is important during high school where the emphasis is placed on final year results (Mansfield & Wosnitza, 2010:152). Furthermore, the lack of clear goals, among others, increases the probability of academic failure and drop-out (Morisano, et al., 2010:255). Clearly-defined goals are likely to increase the students' motivation

and to improve their academic success, and consequently reduce the probability of academic failure and drop-out (Morisano, et al., 2010:260).

In summary, the qualitative results show that the students' knowledge of effective goal-setting and time-management was limited, but improved after the intervention.

(ii) *Self-monitoring during strategy-implementation*

According to Schunk (2012:401), *self-monitoring* refers to the process where people deliberately attend to some aspects of their behaviour and record the intensity or frequency thereof. *Self-monitoring* requires that the students keep track of what is going on, check their level of understanding, and regulate the type and duration of their activities (Schunk, 2012:286). It also helps them to check for any misunderstanding. Furthermore, Schunk (2012:407) maintains that self-monitoring is conceptually similar to self-observation, which is one of the self-regulation processes proposed by the social-cognitive theory. Effective self-regulated learners act on their clearly defined goals and pay attention to their behaviour during their implementation.

Notably, *self-monitoring* often occurs during the *performance* phase of Zimmerman's cyclical model of self-regulation (Schunk, 2012:411). Keeping a record regularly allowed the students to compare their present performance with the set goals (self-judgement), and to expend effort to improve where necessary. Furthermore, the students are able to see clearly where they went wrong if they record their actions, and receive help relevant to their needs (see Appendix L).

A student wrote as follows,

*I studied mathematics for two hours. My study method presented me with questions, and then I answered them. I studied well, but I didn't understand. I studied Life Science for 30 minutes. The study method was a mind-map. I studied well but I became tired. I then studied Life Science again for one hour and 30 minutes. My study method was a mind-map. I studied well, but was not concentrating. (G3L, D) (see Appendix O).*

It became evident upon examination of the students' diaries that some contained scanty notes, with only little record of their activities (e.g., B4L, D). Some were incomplete (e.g., B1H, D), and showed no evidence of self-testing. Thus, in some cases there was little evidence of self-recording. A number of the students recorded merely for the sake of recording, without consideration of the self-set goal, or of how to spend and allocate their time accordingly.

The students' diaries provided both the researcher and the students with feedback on what happened, and what did not work in general. Valuable information such as the following was derived from informal, random checks of the students' journals, especially with regard to why the students did not complete the record regarding the learning and study-strategy that they implemented. For example:

*I didn't read/use the mind-map because I had too much work to do. I forgot that I wrote these notes. (B4L, D)*

Data from the interviews also showed that the pressure of household chores may have prevented some students from doing their schoolwork, in addition to not caring much about it. For example, "It's just that most of the time my school-work plus the work I have to do at home become too much for me" (B4L, I). It is comments like these that indicate that the teachers should not just ignore the so called 'lazy' students without probing into the causes. These students often need individual attention in the form of motivational support. During the individual sessions the researcher emphasised how long-term career goals fit in with short-term goals and daily study habits, and caused the students with low LASSI-HS to reflect on their behaviour and the changes that they need to make to ensure academic success. As indicated below, the inclusion of individual sessions created an awareness of how long-term career goals need to be linked to daily study habits,

*Yes, it helped me a lot, when I take the book and study, you now I usually say, thanks to Mrs Moseki..... Sometimes, for believing in us, that we can do better if we change..... and you see... some..., in our communities such*

*things happen, you know, some people smoke drugs, you know. So, I told myself that you have motivated us to become bbbb... better persons in future. (B4L, I)*

It is evident that the individual intervention helped to increase the students' motivation level. Through self-monitoring and feedback received from the researcher, the students were able to evaluate their study behaviour in comparison to their long-term goals, and they began to change accordingly. Furthermore, this data are supportive of the literature (see section 3.6.2.1), namely that individualized instruction enabled the researcher to give feedback on ineffective strategies that needed to be adapted (Butler & Cartier, 2004:1740). Combining the whole class with individualised instruction may be necessary for students with scores below the 50<sup>th</sup> percentile on the LASSI-HS, or for those identified by other means as having problems in respect of learning and study strategies.

Self-monitoring by means of journal-writing not only provided baseline data used for intensive support for individuals but it also afforded the researcher the opportunity to guide the students on how to do self-monitoring, to record their study behaviour and to allocate sufficient time for their studies, or to schedule. Through questioning, the researcher prompted the individuals to reflect on their time-use as recorded in the diaries, as well as on how they may need to make adjustments.

Sessions with individuals also helped them to address their inadequate capacity to self-reflect. This was a barrier to self-monitoring. Journal-writing helped the students to judge whether the standard of their performance met the required self-set goals. Checking the students' journals allowed the researcher as facilitator to identify the personal, behavioural and environmental aspects that could be hindering the learning and study process. This supported the students, and enabled them to make appropriate adjustments, for example with regard to time. For example, in the individual support sessions for students the focus was on helping them to check the amount of homework and studying to be done, and to adjusting their time accordingly. This could help them in future when faced with

similar tasks (see B3L,D below). The individual support sessions also helped them to understand how to make learning fun in order to avoid becoming bored (see G2H,D below).

*I studied geography for 45 minutes. The study method I used was a mind-map. What worked well was that I had a plan of what I was going to study, so it was easy for me to study. What did not work for me was that I got bored and stopped studying. (G2H, D)*

*I studied mathematics and used the question-and answer-method. I think it helped me to know the formula more .... I did no homework because I did not have any homework. (B3L, D)*

As indicated in section 3.4.3.4, Table 3.2, self-monitoring clarifies misunderstandings that may lower the student's self-efficacy, and result in unsuccessful performance. This study, where journal-writing was combined with the explicit teaching of learning and study strategies, enabled the students to monitor the amount of time they spent on their studies. Therefore, the qualitative results show consistency with the assertion by Zumbrunn, et al. (2011:12) that students were more likely to increase their motivation and performance level by monitoring and regulating the efficiency of the use of their learning strategies.

In summary, requesting the students to record and monitor their study behaviour in the form of journal-writing seemed to have enabled them to reflect on, and to evaluate whether their goals were clearly defined. It helped them to plan how to operationalise their goals and to use their time, as well as to check whether the planned time-frame was realistic or not. Subsequently, the students became aware of the time they spent on schoolwork, and how that related or compared to their career aspirations. Furthermore, the students tended to benefit more from self-monitoring if they received appropriate feedback. The individual support sessions offered the opportunity for such feedback.

The next section deals with the fourth sub-category, which is the implementation of learning strategies.

(iii) *The implementation of learning strategies*

According to Weinstein, et al. (2011b:139) and also as indicated in section 3.4.3, *learning strategies* include cognitive, meta-cognitive, motivational, behavioural and affective processes that facilitate learning. These processes are predominantly observable during the second phase (performance) of Zimmerman's 2005 model. Furthermore, students are said to engage in SRL when they regulate the above-mentioned processes during the acquisition of new knowledge (Winne & Hadwin, 2011:34). Similarly, the sub-categories of the above-mentioned learning strategies which are included in Table 3.2, are those that fall under the cognitive, meta-cognitive, behavioural and affective processes that self-regulated learners engage in during learning.

In addition to learning strategies, self-regulated learners have the will, adaptive beliefs and attitudes that enable them to engage in, and to persist in the face of challenging academic tasks (Wolters, 2003:189). It was pointed out in section 3.4.2, that good strategy-users possess three kinds of knowledge regarding learning strategies, namely *declarative* (the facts about what they are), *procedural* (how to use and implement them) and *conditional* knowledge (where and when to use them). *Conditional* knowledge is also called *self-regulatory* knowledge, since it refers to knowing how to manage your learning (Woolfolk, 2010:244). These three kinds of knowledge are sometimes referred to as *meta-cognitive* knowledge of the strategies (Vrugt & Oort, 2008:126). Therefore, the discussion of the implementation of learning strategies will focus on the students' declarative, procedural and conditional knowledge of the specific cognitive strategies that were addressed during the intervention.

Each time the students engaged in learning activities, they were required to use or implement the strategies (performance phase), to record the activities, and mention the types of strategies used in their journals. In addition to informal observations made during classroom instruction, what was recorded in the students' journals according to the prompts (see Appendix J), illustrated their declarative, procedural and conditional knowledge of strategies.

*I studied mathematics for five minutes. I did homework for three minutes. The study skill I used was to repeat it again. (B4L, D)*

*I studied Physical Science for three minutes every hour. I did homework in Life Science for two minutes per hour. The study skill I used was putting questions on the side of the paper and then I ask myself the questions. (G3L, D)*

The above extracts from the journals indicate that the students' knowledge of learning strategies tended to differ. The students may also fail to use the correct terms, due to challenges associated with limited background knowledge of the language of instruction. The students may also lack giving attention in class.

A student, B1, H, did not give any indication of how he used the strategies. In addition, he did not mention any other skills that he had learnt, but sounded very confident. The data further suggest that some students appear to have the declarative knowledge (i.e., the 'what' of the strategies), although they could not use the correct terminology, particularly during the initial stages of the intervention period. Furthermore, the students might have some procedural knowledge (i.e., the 'how to'), but struggle to name the skill appropriately. For example, student B4L refers to "repeat again", instead of "rehearse", while G3L use "putting questions on the side then I ask myself questions" for "self-questioning".

According to the literature (section 2.4.1.7), the strategies of *rehearsal* (what B4L, D called "repeat again") and *self-questioning* (what G3L, D referred to as "asking myself questions") fall under the categories of cognitive and meta-cognitive strategies, respectively. Repeating information is a passive rehearsal strategy which is effective for tasks which require rote memorisation, like learning the names of the rivers in Africa (Schunk, 2012:418). On the other hand, self-questioning is one of the comprehension-monitoring strategies that is seen as a meta-cognitive strategy used to check understanding. Moreover, it may also indicate the effectiveness of one's learning strategies (in Schunk, 2012:424). Studies indicate that repetition is more effective for surface learning, does not always enhance understanding, and may therefore not have a long-lasting effect

(Hattie, 2013:36). On the other hand, self-testing tends to have a greater impact on the students' performance.

As shown in section 4.4.3.2 (ii) the students received classroom instruction, had to practice using the strategies both in class and at home, and had to record it in their diaries/journals. Although the improved overall mean score of the LASSI-HS post-test indicates an improvement in learning and study strategies (see Table 5.4), the data derived from some of the students' journals, and which are corroborated by their interview extracts below, show that some students did not implement what they were taught. These students ended with a limited declarative knowledge of learning strategies, even after the intervention, for example,

*I studied the old way, I failed maths and science. I failed because I didn't study more. I thought I was using my time properly but I really wasn't. "Mmmmm! To be honest, mmmmm! I don't usually read at home, I don't study. Yes, I don't study. I only study at school. Sometimes I forget the book, sometimes maybe I'm lazy, you know. (B4L, I)*

*I can say I used one method in those skills, but I think if I used all those methods they could help me in other things. I don't know. ... Yes I didn't use all the methods. I only chose one. I did not use the one, namely reading and writing, if I am not mistaken. (G3L, I)*

There are many reasons why students do not acquire declarative knowledge about the cognitive strategies, or fail to make use of effective strategies. Bjork, Dunlosky and Kornell (2013:427) maintain that students continue to use ineffective strategies because of their beliefs in those strategies as the more effective ones. The students may also have difficulty with recall, due to information-processing deficits. Another possibility is that of behavioural disengagement, when the students are inattentive, and fail to submit their homework (Lee & Shute, 2010:188). In fact, students B1H and B4L were playing in class most of the time, and often did not do the assigned work of recording their study activities in their journals (Field-notes, April 22, 2013).

The instructional approach that is used for imparting knowledge also influences the students' responses. For example, instructional approaches which are dominated by the 'chalk-and-talk' approach could be ineffective because it may not appeal to most of the students. Therefore, social-contextual and personal factors often play a role in the students' learning. This indicates the relevance of the social-cognitive theory for this study (see section 2.2.3).

To reiterate, in addition to what the strategy is and how to use it (declarative and procedural knowledge), the students also need to know the importance of the strategy, and when to use it (see section 3.4.2). The students' journals and the data derived from the interviews indicated the extent to which the students acquired conditional knowledge (why and when to use a strategy), for example,

*I studied Geography for one hour. The study method I used was a mind-map. What worked for me was that I was able to group the information that I needed to know, and that helped me to understand it more. What did not work for me I was that I ran out of time, so I didn't finish my studies. (G2H, D)*

*What worked well for me was the mind-map because it helped me to organise the information that I was about to study, but it did not work in Mathematics so I used the question-and-answer method. (G2H, I)*

*I used a mind-map to study Geography. It worked for me because then I can remember more than if I used the question-and-answer method. (B3L, D)*

The information that was recorded in the journals showed that the most preferred organisational strategy that the students used was the *mind-map*. The students found it relatively easy to use and applicable to many subject areas, except in Mathematics.

The data from the interviews confirmed this, including the fact that they students predominantly used *self-questioning* (a meta-cognitive strategy) for Mathematics.

*Yes, but in some areas I can't write a mind-map ... you can't use the mind-map for some subjects like Mathematics. (G2H, I)*

*I studied Mathematics and used the question-and-answer method. I think it helped me to know the formula more because I was doing number patterns. (B3L, D)*

*I have been using self-testing, and it helps me to know what I know and what I don't know of those things I have studied. (B3L, I)*

*I studied Physical Science for 30 minutes. I attended to work on Saturday and to my home work of Physics based on the topic of waves. I tested myself and was able to see what I know and what I do not know. (G4L, D)*

*I have been using the mind-map in English, Life Orientation, home language, Life Science and Physics, and I used self-testing to practice Maths. (G4L,I)*

The above extracts show that the students knew 'what', 'how to' and 'when to' use the *mind-map*, and predominantly used this organisational type of cognitive strategy. The students also used *self-testing* for Mathematics, and appeared to understand the appropriateness of the strategy. However, only two of the eight students tried to use other strategies, for example:

*I used the mind-map and SOAR strategies. What worked for me were the strategies that I used because I was able to write all the things I read without looking at the notes. What did not work for me, was that I was busy sleeping while I was studying. (B2H, D)*

*What worked well for me was linking information with what I already knew... [But] what did not work for me was I found a difficult question, and then quit. (G2H, D)*

According to the above journal extracts, some students experimented with the use of *association* which is part of the SOAR method (see extract G2H, D). However, the one student was unable to regulate her motivation, and persisted under difficult situations (see comment by G2H, D). The other student (see comment by B2H, D) had difficulty in keeping awake, although the quantitative measures indicated that he was a better strategy-user (students with high LASSI-HS scores are identified with the letter H).

The tendency to quit indicates that the students may be lacking in the area of motivation-regulation. According to Cooper and Corpus (2009:526), *persistence* was found to be amongst the behaviours that significantly correlated with the use of motivational strategies by secondary school students. The motivational strategies have been mentioned previously (see chapter 3, section 3.4.3.2), and include the enhancement of self-efficacy, performance self-talk, and mastery self-talk.

The findings regarding the extent to which the students use SRL strategies have several implications. There are individual differences in terms of insight into strategy-use (for example, with regard to mind-maps, self-questioning, and the SOAR). The data indicate that some students know how and when to use the strategies, although they may have difficulty in identifying the strategies by name (e.g., *self-testing* and *mnemonics*). Some students attempted to use all the strategies that they were taught in class, others only selected those that they found easier to use. Finally, there may be students who continue to use the old methods of studying despite their being ineffective, because of a lack of motivation.

#### (iv) *Self-evaluation*

Self-evaluation occurs during the third phase (self-reflection after performance) of the SRL model of Zimmerman (Schunk, 2012:412; Zimmerman; 2005:21). As indicated in Table 3.2, section 3.2.3.4, self-regulated learners self-monitor goal-progress during the implementation of learning strategies, and they engage in the self-evaluation of success. Students engage in self-evaluation when they make judgements regarding their learning outcomes and learning progress. In other

words, *self-evaluation* is about reflecting on learning goals, action plans, the strategies that are used and their effectiveness in tests or examinations. The following are examples of students' self-evaluations expressed during the interviews.

*I did homework in Mathematics for 30 minutes, and used association. What worked well for me is linking information with what I already know... [but] what did not work for me is that I found a difficult question and then quit. (G2H,D)*

*I did homework in Physical Science. The study skill I used is the mind-map. The mind map worked well for me because I use it every time I study. What did not work well for me is that I was a little nervous because I have to have more self-confidence. I plan to improve next time by staying confident and paying attention. (G3L, D)*

The students' journal entries indicate that they could observe and evaluate their performances and progress in terms of their study habits, the learning strategies that they used, and how they needed to adjust their study skills in future in order to reach their goals.

In summary, the students differ in terms of their declarative, conditional and procedural knowledge of SRL strategies, particularly with regard to *goal-setting* and *planning*, *learning-strategies*, *performance-monitoring* and *self-evaluation*. However, the fact that some students tend to show a lack of persistence raises concern regarding the adequacy of the current study in teaching motivation-regulation strategies.

### 5.3.2.2 The students' views on what worked well with regard to the intervention programme

#### (i) *Goal-setting and time-management*

As stated in section 5.3.2.1, *goal-setting* and *planning* were dealt with in relation to *time-management*. During the intervention programme the students were guided on how to draw up a study time-table. The SRL instruction focused on demonstrating how short-term goals (studying for a set time according to the student's own time-table, and using effective learning study strategies), are used to reach long-term goals (to finish school, become an engineer, and drive a fancy car). Further emphasis was placed on the importance of comparing their current performances with their goals, and how keeping a journal would assist in this regard. Subsequently, the students implemented *time-management* strategies (planning and enacting goals by using study time-tables, and monitoring their actions). They also kept records of their actions in the journals. Examples of their statements on what worked well include,

*I think the study skills that we used worked for me because it helped me to study well. The time-table also helped, and the teacher helped me so much.* (G4L, D)

*What has changed is that now I have [acquired the skill of] time-management. When I get home I know what to do, and I can study.* (G4L, I)

*I've learnt to manage my time and to study. Before, I wasn't studying. I was just...mmmmm, even writing exams I didn't study. I would just come to school and write. I now study and hope to obtain good marks. I used to obtain good marks, but not so much, but now I have self-control. I think I can improve my marks if I seek help.* (B3L, I)

The extracts show that the students' *time-management* skills improved, following the intervention. The students' comments also show a concomitant increase in the need to take control of their learning, as well as to seek help (B3L, I). The data

confirms the literature that states that, "...effective use of SRL strategies enhance perceptions of autonomy and self-efficacy which are a motivational basis for self-regulation during learning" (Zimmerman, 1986:308).

In summary, the extracts from the students' journals and interviews show that they understood the value of *scheduling* and *time-management* in relation to learning outcomes. Furthermore, they became aware of the need of taking responsibility for their own learning, which forms the basis for developing into self-regulated learners.

(ii) *Self-monitoring during strategy-implementation*

As stated previously (section 3.4.3.4), self-regulated learners engage in self-monitoring of behaviour, cognition and motivation. The self-monitoring of progress towards goal-achievement takes place during the second (performance) phase of Zimmerman's cyclic model of self-regulation (Winne & Hadwin, 2011:35). Students who engage in tasks need to use effective strategies and adjust these when necessary, while simultaneously implementing the control process (e.g., removing distractions to keep on track towards their goal). They also need to keep record of what they do, and how well they do it. When engaging in such monitoring, the students record the frequency of task-engagement, the strategies used, the amount of time spent on the task, as well as how well things work (Zumbrunn, et al., 2011:12). Therefore, as stated in section 4.4.3.2, the students in this study monitored their learning and the implementation of their study strategies. The extracts below indicate what they recorded in their journals and stated in the interviews regarding what worked well with self-monitoring.

*I study Maths for an hour and Physical Science for 30 minutes. The time was not enough so I did not complete my studies. That means next time I will have to increase my time. (G1H, D)*

*I did my Physical Science homework for 15 minutes. The time was not enough. Next time I will increase my homework time. (B2H, D)*

*I improved so much. I saw it in the test that I wrote, and in my classwork. When I test myself I can see that I am improving. I believe that this year I am going to make it, and I am going to use these strategies all my life.*  
(B2H, I)

(See examples of journal entries in Appendices M and N.)

The above extracts show that although the recordings were initially not detailed enough, teaching the strategy and allowing the students to practice it through self-monitoring enabled them to identify their weaknesses in the use of their time. The students also recognised the need to adapt the strategies that did not work well. The self-monitoring through record-keeping also helped to identify areas that needed individual attention. For example, the students were taught that self-recording is more than just a narration of what they did, but also needed to include the type of cognitive strategy they used (e.g., a *mind-map*). Despite some of the shortcomings in the records of the students' self-monitoring tasks, the data indicated that the students gained an understanding of the purpose of self-monitoring. The extracts below provide additional evidence of this.

*I made a personal study time-table and then stuck to it, and say, today it is Physical Science, tomorrow it is Life Science. So, it's fine. Yes, I am doing everything to check myself. Now, it is different from when you study without recording your work. It goes better when you study and record what you have done. Yes, because I can see where I am at.* (B2H, I)

*I have learnt that whatever I want to become, I can fulfil my dream, and only I can do it. Most of my mistakes were made out of anger, and wanting to show other people that I am clever by doing the wrong things. But now I have learned that my attitude will affect my goal. That is why I decided to change.* (BH1, D)

The above quotes indicate that the students learnt to monitor their behaviour, their motives and their emotional responses, and to take personal responsibility for the outcomes. This shows that the intervention programme enabled the students to

understand the principle of self-regulation in terms of monitoring their responses to different situations. The data correlate with the literature that states that self-regulated skills help students to monitor their learning and problem-solving processes, and enable them to make appropriate decisions (DeCorte, Verschaffel & Op't Eynde, 2005:691).

In summary, the extracts from the students' journals and the interviews indicate that they benefited from practicing *self-monitoring*. Although they learned the strategies in the context of studying, the acquired knowledge could be extended to situations beyond academic work. Therefore, the data corroborate the research claims of Wolters (2010:18) that SRL is an effective framework for interventions that are geared towards developing competencies that can be used at school and beyond (see section 1.4.1).

(iii) *The implementation of learning strategies*

It was previously stated (section 3.4.3), that self-regulated learners do not only have a repertoire of learning strategies which are categorised into cognitive, meta-cognitive, motivational and behavioural processes, but can also control and manage them. As indicated in 5.3.2.1 (iii), the students in the study tended to use the learning strategies that they were taught. They had the following to say about what worked well regarding learning strategies,

*I studied Physics ... and did homework in Life Sciences... I used the strategy of writing questions, then answering them, a self-testing skill. Nothing went wrong. What worked for me is that I still remember all that I studied today. (B2H, D) (see Appendix P).*

*What was helpful for me..... as I learnt the strategies.... so, I've used some of the strategies like the mnemonic strategy, mind-mapping and self-testing. So, the most helpful strategy was the mnemonic strategy, because even during the exams ... as I was writing I remembered the first letters, and I just wrote. So, the mnemonic strategy was the one that worked best for me. (B2H, I)*

*The mind-mapping strategy helped me because I do the mind-mapping, and then I make like sort of an essay ... and then I write the essay according to the mind-map that I have done. And then self-testing ... I used it in Maths cos.. eeee, I can't use a mind-map in Mathematics. (B3L, I)*

The students reflected on the effectiveness of the strategies that they used. As mentioned in section 5.3.2.1 (iii) and as the data indicate, the intervention programme succeeded in enabling the students to acquire declarative, procedural and conditional knowledge of learning strategies. For example, the above extracts show that the students were able to use organisational (e.g., *mind-map*) and comprehension-monitoring (*self-testing*) strategies and they worked well for them. The data thus confirm the claim by Weinstein, et al. (2011a:49) that helping students master the three types of strategies enables them to select and use them in various situations. Furthermore, the link between self-testing and increased retention (student B2H, D) is in support of a study by Hartwig and Dunlosky (2012:131) with regard to this association. The statement by student B3L,I regarding the inappropriateness of using a *mind-map* when learning Mathematics also confirms the fact that self-regulating students adapt their efforts to the demands of different activities (Butler, Cartier, Schnellert & Gagnon, 2006: 3).

In summary, the data indicate that the intervention programme worked well in terms of equipping the students with the *what*, *how* and *when* to use the different learning strategies that they have acquired. However, whether the students found *all* the strategies useful is another issue, and that will be addressed in the next section.

#### (ii) *Self-evaluation*

As stated in 5.3.2.1 (iv), self-regulated learners make their own judgements about their performances and their capabilities by evaluating if they are making progress towards accomplishing their goals. According to Schunk (2012:412), positive *self-evaluation* increases self-efficacy, motivation and persistence. The students reported as follows on their self-evaluation,

*Yes, I would like to thank this programme because I have improved in my studies. That is why I said that at first I thought that was only a programme. But now, as I use the strategies, ... it has taught me a lot. I can use my time. I can study every subject at a set time, but previously I would just study maybe just one subject for five days. But now I already know whether I have studied it or not. (B2H, I)*

*Okay, the study method was good, because I did not know it. When I study ... I was just studying without using those study methods, but now I realise something from what you have taught us ... and those study methods work well for me. I failed the first term, but I have now passed because of the study methods that I used. I did not know the strategies before. I was just studying, but after the strategy programme I checked myself to see if I know the work. (G4L, I)*

The above extracts suggest that the students benefited in various ways. The intervention was successful in enabling the students to acquire and use certain aspects of SRL. Firstly, the students managed to acquire the specific SRL strategy of *self-evaluation*. For example, they realised that *self-monitoring* enabled them to see what they have studied as well as which study skills worked (e.g., B2H, I). Self-regulated learners monitor their behaviour and the effects of their strategy usage against self-set goals, and make the necessary adjustments (see section 3.4.3.4). Moreover, the students' self-satisfaction regarding their progress influenced their belief in the efficiency of the strategies.

Apart from the above, the students acknowledged their lack of knowledge of, and their past weaknesses in the use of effective strategies (e.g., G4L, I), and began to take full responsibility for their own learning (e.g., G1H, I). There was also an increased awareness of the important role of *effort* in improving performance. Therefore, the findings add to the personal agency views that state that self-regulated learners contribute to their own learning (Bandura, 2006b:165, Cervone & Pervin, 2007:471). The students started to believe that they were capable of improving their academic performance if they used the strategies and believed

that this would enable them to achieve their learning outcomes. Thus, the students' general attitudes towards learning improved.

The findings build on the existing knowledge regarding self-efficacy (see section 2.4.1.2) and confirm the social-cognitive theory (section 2.3.1) that posits that people seek to address or control important events in their lives through the self-regulation of thoughts, emotions and actions (Schunk, 2008a:78). There is evidence that the intervention worked well in enabling the students to engage in *self-evaluation*, which is an aspect of SRL. Therefore, the findings illustrate that SRL can be explicitly taught to students.

### 5.3.2.3 The students' views on what did not work well with regard to the intervention programme

#### (i) *Goal-setting and time-management*

Effective *time-management* is a function of the students' use of *goal-setting* and *planning* (Schunk, 2012:437), and therefore an important component of SRL. Self-regulated learners set goals, engage in planning on how to achieve their goals, and budget for their use of time to ensure success (Bembenutty, 2008a:9; Zimmerman, 1998:77). The extracts that were previously presented indicated that one of the ways how the students benefited from the intervention programme was that they could manage their time better (see section 5.3.2.2 (i)). However, the extracts below show that not *all* the students benefitted in this regard.

*What was not helpful was during examinations I didn't really have enough time. So, I can say, you did not teach me enough on how to manage my time. When you come home you find that you want to do your homework, clean [the house] and do other things, and you find that you don't have time. (B2H, I)*

*When I get home I have to do work at home and I have to do my homework. I have to do my homework first, and I have to study as well, not maths only. Yes, I do have a timetable. I put those times in [to study] but*

*the problem is that sometimes when I get home my sister isn't there. So I have too much work to do. It is hard to manage all the work. Yes, I do know how to put up a timetable, but it was difficult because of problems at home.*  
(G3L, I)

The above extracts indicate that some students did not learn to adapt and transfer their *time-management* skills to other situations, e.g., the examination situation. According to Broekkamp and Van Hout-Wolters (2007:405), self-regulated learners adapt their goals and action plans in order to optimise their performance. However, some students were not as self-regulating as expected, namely that they were unable to reschedule their time-tables, as was also noted by other researchers (Gettinger & Seibert, 2002:356). In fact, Fazal, Hussain, Majoka and Masood (2012:39) assert that students need continuous practice and help to learn the skill of *time-management*.

Possible explanations for the above-mentioned finding include the following: Firstly, it may be that the students think that the use of *time-management* strategies do not apply when they prepare for the examinations. Secondly, the instructional approach that was used to facilitate this skill was ineffective for some students. Lastly, some students may have an inability to adapt the strategies.

In summary, the success of the intervention programme in developing the students' skills of *goal-setting*, in particular the aspect of *time-management*, did not work well for all the students. It is possible that some students managed to acquire sufficient declarative and procedural knowledge of *time-management*, but still lacked conditional knowledge of the skill. This indicates that the students must also have the motivation to use the strategies (Weinstein et al., 2005:741). (The issue is addressed again later in the text.)

(ii) *Self-monitoring during strategy-implementation*

The students did not mention anything directly that did not work well in the programme regarding the implementation of the *self-monitoring* strategy.

However, some limitations in the way they monitored aspects of their learning can be inferred from the following interview data.

*When I have work and find it difficult, I don't usually try to get it right. I just leave it and do the easy ones. When it is difficult... Yes, I leave it. I would come to school ... and copy it from somebody else. (B4L, I)*

Giving-up indicates that some students lacked the motivation to really monitor themselves. Furthermore, they did not appear to have gained knowledge on how to adapt their motivational beliefs. Thus, they lacked persistence. These students were generally not inclined to persevere, even when doing the homework tasks given *during* the intervention programme (Field-notes, 7 May, 2013).

Remarks were made that B1H was more intelligent than the rest and would, in fact, be the best student if he would be serious about his schoolwork (Field-notes, 7 May, 2013). In actual fact, B1H's academic performance ranks among the top five in the class, even though he did not work as hard as he should have (Field-notes, 17 July, 2013). Besides the apparent lack of motivation to monitor their progress, the data show that most students' perspectives about their performance are inclined towards a fixed mindset, according to Dweck (Dweck & Leggett, 1988) (Field-notes, 21 May, 2013).

As was previously pointed out, self-regulated learners are motivationally-active participants of their own learning, and display pro-active qualities, including perseverance (see section 2.4.1.5). Researchers found that persistence, goal-setting and task-choice are strongly linked to *self-efficacy*, which is an important component of SRL (see section 2.4.1.2). Some students seemed to lack the meta-level knowledge of motivation, which is information about their current motivation levels, and factors that influence their motivation (Wolters, 2003:193). However, like other components of SRL strategies, motivational strategies can be acquired through explicit teaching, but the intervention programme did not give adequate attention to this aspect. (Field-notes, 23 July, 2013).

According to Wolters (2003:189), self-regulated learners are motivated for academic tasks. These motivational beliefs include *self-efficacy* beliefs that enable them to persist when faced with difficult tasks. Self-regulated learners also monitor themselves by assessing their feelings about tasks, their use of learning strategies, and their use self-motivational strategies to stay on task and to optimise their performance. According to Wolters (2003:191), motivational strategies include interest-enhancement and environmental-structuring (section 3.4.3). Students need to have the same kind of knowledge for regulating their motivation (Wolters, 2003:193).

The extracts from the interviews indicate that the programme did not work well with regards to developing the students' motivation-regulation, for example for *self-monitoring*.

(iii) *The implementation of learning strategies*

It was pointed out in section 5.3.2.1(iii) that the students used the knowledge of the learning strategies that they had gained from participating in the intervention programme, and the strategies worked well for most of them (see section 5.3.2.2 (iii)). However, they found some strategies to be more useful than others. The following quotes serve as examples of their statements,

*What did not work well for me was using...eeee the one that where you have to arrange words to form a sentence. I guess I found it too hard to make up my own sentences. I have never come across a situation that has only one word. I only tried it once, and it was difficult, so I gave up. (G2H, I)*

*SOAR is difficult to use. Mnemonics also did not work well because it is difficult to use it to form words. The reason I find it difficult is because I am not good at making my own words. (G1H, I)*

It is possible that more students struggled to implement the *SOAR* and some other strategies due to intrinsic factors. Intrinsic factors include a lack of self-belief. Some students may also have struggled, apparently due to inadequate procedural

and conditional knowledge about the *mnemonics* and *SOAR* strategies, resulting from extrinsic factors such as the instructional approach used a lack of content coverage on strategies that were applicable to subjects like Mathematics, and other classroom factors. For example, the students were not given enough time to practice the strategy of positive *self-talk* due to time constraints (Field-notes, May 21, 2013).

Effective learning strategies contribute to achievement in tests. Therefore, it is important to ensure that the students have adequate knowledge about the strategies, so that they may persevere in practising the skills, and correctly prepare for tests. The following extracts demonstrate the students' lack of knowledge of *test-taking* strategies,

*I practiced Maths every day. I understood the questions very well because when the teacher did corrections I understood. But in the exam room I didn't understand well. I think it's because I didn't read the question properly. (G3L, I)*

*Sometimes I study, but the things I study don't appear in the exam, so I get discouraged, and I think it is pointless because some of the things do not appear in the test. So then I stopped studying. I think I know how to select important ideas, but the parts I selected were not asked. So, I cannot determine what is important. (G4L, I)*

It is evident that some students continue to have difficulty with *test-taking* strategies even after the intervention, specifically with regards to anticipating possible test or examination questions (e.g., G4L, I), or reading the questions. Such poor *test-taking* strategies can result in failure, helplessness, and consequently a lack of SRL.

In summary, the programme did not work well in raising all of the students' levels of self-efficacy with regards to using certain learning and study strategies. Furthermore, the data demonstrate that some of the learning strategies that the students learnt had limited applicability to subjects like Mathematics.

(iv) *Self-evaluation*

It was stated previously in section 5.3.2.1 (iv) that self-regulated learners engage in a process of self-evaluation which comprises of the *self-judgement* of current performance relative to self-set goals. These *self-judgments* may also be made about previous performances in tests or examinations, and result in satisfaction or dissatisfaction. Negative self-judgements may not decrease the level of self-efficacy if students believe that unsatisfactory performance results from using ineffective strategies. Such students persist, and change their learning strategies (Schunk, 2012:412; Schunk & Ertmer, 2005:636). According to Schunk (2012:413), students need to be taught to engage in *self-evaluation*, and get the opportunity to practice it, because self-evaluation may not occur spontaneously.

The extracts below show that some students were not effective in their self-evaluations about their performance in various contexts, such as during normal studying time or examinations.

*I studied Mathematics for two hours. My study method is setting myself questions and then answering them. I studied well, but I didn't understand the work. I studied Life Science for 30 minutes ... study method is mind-map. I studied well, but I was tired. I studied Life Science for one hour and three minutes ... my study method was a mind-map. I studied well, but I was not concentrating. (G4L, D)*

The student's journal shows that she recorded her study activities, as well as her reactions of tiredness and poor concentration. However, she was unaware of how she could deal with her challenges, despite having received instructions on SRL with the rest of the class (e.g., *time-management*, see Appendix I). Student G4L seemed to realise that tiredness and poor concentration may result from long study sessions without any breaks. Therefore, what did not work well was that the student could not use the information gained from *self-evaluation* to alter her ineffective strategies (e.g., to adapt her strategies by asking for help with work that she did not understand, and to alter her time-table or study-environment to deal

with poor concentration). The student failed to alter her strategies, and to realise that there might be underlying reasons for her concentration-problem. The same student also stated,

*What did not work is I could not concentrate for a long time. When I take a break I don't want..... to get back to study after taking a break because I think about a lot of things. Therefore, I choose to study for a whole hour without any breaks in between. (G4L, I)*

The above extract indicates that the student may be lacking in the area of self-regulation, called *intrinsic interest*. *Intrinsic interest* refers to students' enjoyment of engaging in tasks for the sake of learning, and is therefore linked to the motivational components of SRL (Bembenutty, 2008a:10). Thus, what did not work well in the intervention programme was that this student did not learn to use motivational strategies. Although she made *self-judgements*, she did not use it to adjust her learning strategies. This is also shown in G3L's extract below,

*I did prepare and study for the exam, but I didn't do it the correct way, because I didn't manage my time very well. Like I said, I would go and ask for help from someone but I didn't do that [ask for help] (G3L, I)*

This extract is indicative of *self-judgement* where the student is dissatisfied with the amount of time that she spent on preparing for the examination, as well as her failure to ask for help when needed. The student became aware that the time allocated for preparation for the examination did not commensurate to the amount of work involved, and did not allow time for revision. Her study strategies may also have been inappropriate. An example of a situation of inappropriate preparation for an examination is cramming, which involves a lot of hard studying only one or two days before a test or examination.

Self-regulated learners adapt their methods and learning goals to the demands of different activities in order to maximise their learning performance (Broekkamp & Van Hout-Wolters, 2007:405; Butler, et al., 2006: 3). According to the extracts, the students' study habits were inconsistent with the attributes of self-regulated

learners. The students engaged in inappropriate *self-evaluation* in the sense that it did not direct them to select more effective strategies for studying (e.g., during preparation for the examination, as seen with G3L, I).

In summary, the students learned to engage in *self-evaluation*, but not to the extent that was expected of self-regulated learners. The outcomes of the programme were not adequately reached in terms of developing all the students to adapt ineffective strategies.

#### 5.3.2.4 The students' views on how the intervention programme may be improved

##### (i) *Goal-setting and time-management*

The students provided suggestions for consideration to improve the intervention programme. Two examples related to the skill of *time-management* are,

*You need to come back and teach us. What you can add and improve on is the time stuff. Most of us don't know how to use our time effectively because we have lots of work to do and we don't know when to study. Yes, we can do that but sometimes we find that perhaps there are a lot of dishes [to wash] and we spend more time on a task than the time we set for it, and we become confused. (B2H, I)*

*I think you have to come every time and remind us about the strategies and help us... to...like doing the.... to make time-tables so that we can still keep on studying even after the exams. Ja...okay, maybe it will make us not to become responsible, but if you come every year to teach us perhaps I will learn those skills. (B3L, I)*

The effective use of time forms part of *goal-setting* and *planning*, which are self-regulatory processes. The above extracts show that the students would like to have a repeat session on *time-management*. It is evident that although the students received instruction on *time-management* and how to draw up a study

schedule, it is possible that this knowledge has not been transferred from test-writing contexts to other contexts, such as preparation for the examination. Therefore, the data are in support of the literature that states that SRL skills can be limited to one context unless applied to many situations (Slavin, 2012:134).

Participating in the programme created awareness of how the students spend their time, and of potential time-wasters. However, once again the students did not transfer this knowledge to the task of *examination-preparation*. Indeed there was little discussion on situations that might call for adjustments (Field-notes, 13 May, 2013). Furthermore, the students did not get enough opportunity to practice the skill of drawing up a schedule independently outside the classroom context and to seek help if required. Instead, the researcher assumed that the students would apply this skill on their own as the examination approached.

The need for adjusting the skills of *time-management* is critical when the students are expected to do household chores in addition to schoolwork, as indicated below:

*If it were I [who was the programme facilitator], I would have considered that the students may be in need of an afternoon study period at school. I would ensure that the students do their homework during the afternoon study period while at school ... maybe for one hour. Give us a chance to do homework, ask questions on what we did, and then let us do independent study. Then, after studying, we would know that we only do household chores when we got home because we would have studied during the afternoon study period while at school. (G3L, I)*

In summary, the programme did not work well in helping the students to adjust their study-time schedules to fit the demands of various learning contexts. The finding demonstrates that the students could draw up a study schedule and work accordingly. However, they were still unable to adjust the *time-management* strategies that they used in their daily studying to other situations, and to transfer the skills they had gained. Therefore, the students recommended that the programme should allow for repeat sessions, and in some cases compulsory

afternoon study sessions, where the students are supervised and assisted with their schoolwork.

(ii) *Self-monitoring during strategy-implementation*

As noted in section 5.3.2.1 (v), self-regulated learners keep track of the frequency and duration of their engagement in learning, as well as of their comprehension level through *self-monitoring*. According to Zimmerman (1999:549), self-regulating students cyclically engage in interdependent processes of monitoring (self-observation) of how they implement and adapt strategies during learning. This involves keeping record of the frequency of task-engagement and learning progress, identifying influencing conditions, and then adapting strategies in order to achieve learning outcomes. Furthermore, self-monitoring predominantly occurs during the performance control phase of Zimmerman's (1999:549) model.

An example of self-monitoring is when the students observe and judge their comprehension or learning progress to be unsatisfactory, and then react by asking for help from their teachers or peers. As indicated previously (see section 5.3.2.1 (ii)), the data demonstrated some milestones, namely that the students implemented the SRL strategy of *self-monitoring* which worked well in creating an awareness of the need to adjust the time allocated for homework. (See section 5.3.2.2(ii) - B2H, D and G1H, D.). However, the data showed that there were some limitations regarding certain aspects of the intervention programme. For example, some students indicated that they did not have enough time for *self-monitoring*,

*I can say the time was not enough [for self-monitoring] because ... there were times when we wanted to ask questions in class [about self-monitoring] but we noticed that time was always limited and we also wanted to avoid wasting time so that we could go home and do other things, including studying. (G4L, I)*

*What need to be improved? I am not very sure but for me it's like the timing of the period that we used to have in class was so limited ...we...we.... talk for like about 30 minutes, and that's not enough. I was under a lot of*

*pressure because you were speeding up, and we weren't able to ask you questions.* (B1H, L)

It was also evident that the students monitored their comprehension-level in class and became aware of a lack of understanding. For instance, G4L wished to ask questions or to engage in discussions, but was unable to do so. Although the class period of 30 minutes may have been legitimately short for teaching some of the SRL strategies (Field-notes, 24 April, 2013), the student did not seek help from her peers. The students could also have asked the researcher to provide more explanations or to repeat the relevant sections during one of the afternoon sessions, but did not do so. Students who are self-regulated learners ask for help when needed. *Self-monitoring* occurred but did not lead to corrective behaviour.

The data can be further explained in terms of the principle of triadic reciprocity. As indicated (section 2.3.2), students are viewed as active participants in their development, instead of merely being spectators, according to the social-cognitive theory. They can alter their learning contexts and ask questions in class to clarify aspects of a lesson. The above-mentioned student did not act in accordance with SRL – she did not identify environmental factors that influenced her performance, and modify her behaviour (Zimmerman, 2005:20). This indicates that the environment (classroom and instruction), as well as behavioural and personal factors, should be considered when improving the intervention programme.

In summary, the intervention programme assisted the students to become more aware of how they learn best, as well as the conditions that influence their level of comprehension, such as the instructional approach, which allows the students to ask questions. The SRL process of *self-monitoring* occurred when the students observed and judged themselves, and kept record (physically and mentally) of how they learnt, and understood and implemented the different learning strategies. However, their *self-monitoring* did not always lead to corrective courses of action. On the other hand, the direct instructional approach and the time allocated for teaching SRL may also need to be considered when improving the intervention programme. The data suggest that the intervention needs to be

improved in such a way that the students are given more time to practice *self-monitoring* strategies, and on how to alter their environment.

(iii) *The implementation of learning strategies*

As stated previously (see section 5.3.2.2 (iii)), the students in this study acquired some declarative, procedural and conditional knowledge about various learning and study strategies. The researcher wrote notes on the chalkboard and flip-chart, and the students copied them in their exercise books. Furthermore, the students made recommendations regarding learning strategies that could be improved in the intervention programme.

*I think maybe, you must give us copies of what we are doing in class [regarding learning strategies], and the books and results. You should mentor us ... those kinds of things, but the problem is, I think that I forgot how to use some of them [learning strategies], and that's why I was asking for a copy of the notes. (B3L, I)*

According to the above extract the programme would have worked better if the students received books or copies of notes on the different learning strategies. The researcher needs to facilitate not only the declarative and conditional knowledge, but also to provide step-by step procedures in the form of detailed notes which the students could consult when they practiced the strategies outside the classroom. Indeed, the researcher observed that the students struggled to write notes. They were used to taking down notes from the chalkboard (Field-notes, 20 May, 2013), particularly because there were not any, or only a limited number of textbooks (Field-notes, 23 April, 2013). On the other hand, providing the students with notes may not have made any difference to those students who did not take the intervention programme seriously (see section 5.3.2.1 (ii) for B4L, D).

It was mentioned previously (see section 5.3.2.2 (ii)) that the students experimented with various learning and study strategies. The strategies that the students used and reported positively on, are categorised as organisational

strategies (e.g., a *mind-map*); strategies for remembering (e.g., *mnemonics*); and strategies for comprehension-monitoring (*self-testing*). Some students were less inclined to use certain learning strategies that were known to be effective. The extracts that follow indicate the areas that could be improved, namely

*I think what can be improved is the mnemonics (acrostic). We should take them out of the [study skills] programme because it makes you think a lot ... you have to think about what you are going to study, and you also have to think about what to link it with. (G2H,I)*

*I think it should be sort of like a game. You should group the class ... divide [the class in] half and say, "This is the yellow team", and "This is the blue team", and whichever group wins, gets a prize at the end of the day. Yes, so that the other people could be interested. I have one suggestion, my teacher in Grade 6, I forgot the song that she taught, but, it was sort of like a song but, it was educational at the same time and so I think if we have things like that we would remember much easier. (G2H, I)*

The above student (G2H, I) believes that *mnemonics* is an effortful strategy which is difficult to use, despite the fact that other students (e.g., B2H, I) are at ease with using it(see section 5.3.2.2 (iii)). Therefore, she suggested that it should be excluded from the programme. The extract shows that the student (G2H, I) is not keen on putting in any effort, or to persist when faced with difficult tasks. Furthermore, she recommends that the instructional approach should be made more interesting. What is derived from this data supports the assertion of Zimmerman (2005:17) that no strategy will work well for all students.

In summary, the students' comments have several implications for teaching SRL. Firstly, provision should be made for more time for students to practice learning strategies in class and at home. Secondly, motivational strategies like interest-enhancement need to be included in the SRL programme, especially since the motivation-level reportedly declines during adolescence (see section 1.2). Lastly, multi-sensory instructional approaches could be adopted in order to cater for multiple intelligences and different learning styles.

(iii) *Self-evaluation*

It was stated (see section 5.3.2.1 (iv)) that *self-evaluation* takes place after the performance-stage according to the three phase model of SRL (Zimmerman, 2005:21). *Self-evaluation* refers to the situation where self-regulating students judge the standard of their self-monitored information, and compare it with their self-set goals (e.g., the case of Caster Semenya was used to explain the process, Field-work, 6 May, 2013). Just like athletes, the different types of criteria that students use to evaluate themselves include previous performance and normative criteria. In the case of previous performance criteria, the students compare their current level of performance with earlier achievements. In the case of normative criteria, the comparison of performance is relative to that of other students (Zimmerman, 2005:23).

The students make causal attributions, namely they judge themselves as to whether their poor performance was due to ineffective learning strategies, insufficient effort, or limited ability (Zimmerman, 2005:22). Similarly, the students in this study engaged in self-evaluative and attributional *self-judgement*, and simultaneously recommended how the programme might be improved, although others believed that there was no need for improvement.

*My performance could have improved, if I had started to use effective study methods earlier. I would have managed to pass well, and been pleased with my marks. (G4L, I)*

*Honestly, I think we should have started in January, the first day we came to school. Maybe that would have influenced our marks ... maybe like [started] in term one, most people in our class would have passed. (G2H,I)*

Other students also evaluated themselves on the basis of previous performances, and believed that their performances would have improved if the programme was started during the first term. These views were similar to those expressed

previously regarding the amount of time allocated for the teaching period of the study skills programme (see B1H, I and G4H, 1, in section 5.3.2.4 (ii)).

The students made no comments about the need to increase the duration of the programme. This suggests that the data are consistent with the literature in that a meta-analytic study revealed that the *duration* of the intervention had a small effect on its effectiveness (De Boer, Donker-Bergstra & Kostons, 2012:62).

In summary, the students benefited differently from the programme, and evaluated themselves by comparing their previous levels of achievement to their present performances. Some believed that no changes should be made to the programme, and that the students should take the responsibility of applying the learning strategies. Other students believed that the programme should commence early in the year. There was consistency between the data and the literature with regard to the idea that the relationship between the duration of the intervention and its effectiveness is small.

In the above section, data from the two research methods were presented separately.

The next section entails a discussion of the merged data obtained by the mixed-methods research approach.

## **5.4 DISCUSSION OF THE RESULTS**

A mixed-methods research approach was used to answer the main research question:

*How can the SRL of adolescents be improved in high school?*

The merged results of the quantitative and qualitative data are interpreted and summarised below.

SRL involves the use of cognitive, meta-cognitive and motivational knowledge and strategies to achieve self-set learning goals. Furthermore, SRL includes the use of

declarative, procedural and conditional knowledge of learning and study strategies which can be acquired and modelled (Zimmerman, 2002:69). The SRL processes that the intervention programme sought to develop in high school students were *goal-setting, self-monitoring, the use of learning strategies, and self-evaluation*.

The SRL strategy-intervention proved to be largely successful. Regarding *goal-setting*, the data indicated that the students had the tendency to set vague, long-term goals. The qualitative data demonstrated that the students acknowledged the initial strategy deficit which later improved, following the intervention. For example, the students' journals showed that they had limited knowledge in the SRL process of *goal-setting*. Furthermore, the goals were unrealistic when compared to the students' study habits, and they were not linked to their short-term goals. Thus, the qualitative data explained the quantitative results that were presented in section 5.2 (see Table 5.1 for the LASSI-HS mean pre-test scores below the 50<sup>th</sup> percentile on *attitude* and *motivation*). Furthermore, the students' knowledge of strategies, which improved following the intervention, showed that they learnt to use and apply the strategies that they were taught.

A contradiction between the quantitative and qualitative findings existed only in the SRL area of *planning* and *time-management*. The LASSI-HS pre- and post-test scores indicated that the students were relatively skilled in *time-management* (see Table 5.3), although the qualitative data indicated that the students were not skilled in the area before the intervention (see section 5.3.2.1 (i) ), and still needed further training on how to adapt their time during preparation for the examination (see section 5.3.2.3 (i)). This contradictory finding explains why it is often necessary to use qualitative methods (e.g., interviews) to follow up on issues that might not be unearthed through the quantitative methods.

Regarding the learning strategies, the students received classroom instruction (see section 4.4.3.2(ii) and Appendix I), and had to practice using the strategies in class and at home. They also had to monitor themselves by record-keeping in their journals. The data from the journals and the interviews showed that the students who did not practice what was taught did not improve, and therefore had limited declarative knowledge, even after the intervention. However, improvement

in the mean score of the overall LASSI-HS post-test, which indicates the benefit of the intervention programme (see Table 5.3), is supported by the qualitative data (see section 5.3.2.2 (iii)). Significant improvements were noticed in the *will* area (*attitude* and *motivation*) and the *skill* area (*information-processing* and *selecting of the main ideas*) of the LASSI-HS, where there was a significant difference between the pre- and post-test mean scores.

Furthermore, the qualitative findings regarding the learning strategies indicated that the students continued to have difficulty with *test-taking* strategies even after the intervention, particularly with regards to the anticipation of possible test or examination questions, adjusting their study time-tables during the examination period, and their self-efficacy beliefs. These findings were consistent with the quantitative findings as indicated in Table 5.4. The mean scores of the pre- and post-tests on *test-taking* strategies (TST) remained below the 50<sup>th</sup> percentile after the intervention. Therefore, there was agreement between the qualitative and quantitative finding that the students needed more time to practice using the *test-taking* strategies. Secondly, motivational strategies like *interest-enhancement* need to be included in the SRL programme to help the students to carry on using the strategies beyond the examination period. Lastly, the students needed more time to practice using motivational strategies that could help to raise the level of self-efficacy such as 'attribution self-talk'. The *self-efficacy* beliefs is an important aspect of SRL, because students with low self-efficacy doubt their capabilities, tend to use ineffective learning strategies, and do not persist when faced with difficulties (Schunk & Ertmer, 2005:633).

Regarding *self-evaluation*, the programme contributed in making the students aware of the need of *self-evaluation*. The students predominantly used their previous performances in tests and examinations as evaluation criteria. There was also a tendency to use normative criteria (e.g., of social comparison) and not mastery criteria (where the students check how they gradually master the learning material and processes when using effective strategies).

In summary, the qualitative and quantitative results of the study complement each other. In general, the qualitative findings confirmed the LASSI-HS results, except

in the area of *test-taking* strategies. The students attested to the fact that they benefited from the intervention programme but needed more coaching and time to practice the different skills to ensure maintenance. The data also showed that no SRL strategy works well for *all* the students, and that there was a need to identify and assist the students who might benefit from individualised sessions.

## **5.5 SUMMARY**

In this chapter, the results of the quantitative study were presented in tables. The tables specifically illustrated the pre- and the post-test data of the experimental and the comparison groups. The findings of the qualitative phase were also presented. The findings were derived from the students' journal entries, and interviews, and from the researcher's own field-notes. The focus was on the four topics that were presented in the intervention programme, namely *goal-setting* and *time-management*; *self-monitoring*; *learning strategies* and *self-evaluation*. It was indicated what was successful, what was less successful, and what needed to be improved. Finally, the quantitative data and the qualitative data were integrated.

In the next chapter conclusions are drawn, the limitations of the study are pointed out, and recommendations are made for improved programmes, and for further study. The researcher will also highlight the contribution that the study has made.

## CHAPTER 6

### CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

#### 6.1 INTRODUCTION

The development of SRL strategies is most important for high school students, in order to prepare them for higher education and for the world of work. As indicated previously (see section 1.1), study skills are embedded in the curriculum in a limited way in the subject Life Orientation. Many students under-achieve, and consequently do not gain access to HEIs. Thus, the researcher designed and implemented an intervention programme to develop the SRL of a group of Grade 10-students.

The main research question of this study was:

*How can the SRL of adolescents be developed at high school?*

To this end the study sought to answer the following specific questions:

- What is the general profile of a group of selected grade 10-learners in terms of their SRL competencies?
- To what extent do the students use SRL strategies?
- What are students' views of an intervention programme that is aimed at developing SRL competencies?
- How can the intervention programme to develop the students' SRL competencies be improved?

This chapter deals with the conclusions and recommendations relating to the literature and the above-mentioned four questions. The limitations as well as contributions made by the study will also be highlighted.

## 6.2 CONCLUSIONS

### 6.2.1 Research question 1

*What is the general profile of a group of selected Grade 10-learners in terms of their SRL competencies?*

The data indicate the following with regard to the students' SRL profiles and competencies, based on the 10 variables (scales) as measured by the LASSI-HS:

- The grade 10 students in both the classes (the experimental and the comparison groups) had similar SRL competencies or characteristics before the intervention according to the LASSI-HS pre-test mean percentile scores. Although they had better developed skills in the areas of *time-management, concentration, information-processing, study-aid* and *self-testing*, the mean scores that were between the 50<sup>th</sup> and 75<sup>th</sup> percentile, which is on the average range, revealed that they could improve their strategies in these areas. This could prevent difficulties in achieving in the future. Moreover, mean scores below the 50<sup>th</sup> percentile in the other five areas (*attitude, motivation, anxiety, selecting the main ideas, and test-taking strategies*), indicated that the students in both classes needed to give high priority to improving their skills and strategies in these particular areas. The poor attitudes of the students needed to be addressed so that they could develop an interest in their schoolwork, improve their *goal-setting* aspirations, and realise the importance of schoolwork. Poor motivation indicated a need to improve self-discipline and goal-setting at a specific level. Therefore it was necessary for the adolescent students to acquire skills, in particular with regard to the *will* components, as well as in all other areas, in order to attain academic success.
- The LASSI-HS post-test mean scores above the 50<sup>th</sup> percentile for anxiety, showed that the students in both groups became less apprehensive about their performance in tests as the year progressed and they gained more experience in Grade 10. This was despite their weaknesses in the area of test-taking strategies (see section 5.2.2). Decreased levels of anxiety could

also be attributed to a slight improvement of skills in all areas, although these were insignificant in the case of the comparison group.

- Although the LASSI-HS post-test indicated a general increase in the mean percentile scores of both groups, the improvement of the two groups differed in some important respects. The experimental group had mean scores above the 50<sup>th</sup> percentile in nine out of the 10 areas of the LASSI-HS. In contrast, the comparison group still had scores below the 50<sup>th</sup> percentile for the same four out of five areas as in the pre-test (see Table 5.3 and Table 5.4). The difference between the pre- and post-test LASSI-HS percentile scores of the comparison group were not significant, while the differences that were observed in the four areas were significant in the case of the experimental group.
- The post-test data of the experimental group showed that there existed a statistically significant difference between the pre- and post-test mean percentile scores on four scales of the LASSI-HS. The post-test showed a significant improvement in the SRL areas of *attitude*, *motivation*, *information-processing*, and *selecting the main ideas* (see Figure 5.3). The findings are in agreement with previous research that shows that students can be taught to use self-regulation strategies by means of direct instruction.
- The experimental group showed the greatest improvement in the area of selecting the main ideas. Therefore, the students' abilities to differentiate between the main ideas and supporting details, and to focus their attention on important material, greatly improved (see Figure 5.3). On the other hand, the experimental group's post-test mean score that remained below the 50<sup>th</sup> percentile (below average) on *test-taking* strategies, shows that the intervention programme did not work well in developing the adolescents' skills in this particular area.

The results of the quantitative phase do not only indicate a general improvement in the SRL profile in almost all areas, but also that by enhancing the *will-* component of SRL, the intervention impacted on the adolescents' waning motivation for learning that are well-reported in the literature.

In the next section the conclusions regarding research questions two to four are presented to show how the qualitative data were useful to explain the results of the quantitative phase.

## 6.2.2 Research question 2

*To what extent do the students use SRL strategies?*

### 6.2.2.1 Goal-setting and time-management

The findings on the extent to which the students used SRL strategies with regard to goal-setting and time-management showed that they initially had poor knowledge and limited skills in these areas. The students' declarative, procedural and conditional knowledge of goal-setting tended to be confined towards long-term career achievement.

The students' pre-test LASSI-HS mean scores, which were below the 50<sup>th</sup> percentile in the areas of the *will* component, particularly with regard to *attitude* and *motivation*, demonstrated their weaknesses in respect of goal-setting. However, during the 10 weeks intervention, the experimental group improved relative to the comparison group, whose post-test mean scores remained below the 50<sup>th</sup> percentile. The study shows that the students initially engaged in setting distant and sometimes unclear goals, which were limited to long-term career achievement, but improved significantly as a result of the intervention programme (see section 5.3.2.1). The quantitative data were confirmed by the qualitative data to show that the intervention programme helped the students to set short-term, proximal goals which they could use as stepping-stones towards achieving their long-term career goals (see Table 5.4, and section 5.3.2.1). These findings add to the literature which states that clearly-defined goals are likely to increase the students' motivation (Morisano, et al., 2010:260) and make them less vulnerable to anxiety (Morisano, et al., 2010:256).

Regarding time-management that follows on short-term goal-setting, the students were guided on how to compile a study-time schedule, stating when they would engage in learning tasks, as well as the amount of time required. The students

kept journal records of their actions (study behaviour) that indicated how they used their study-time schedule that they had compiled (see Appendix J). The journal data indicated that the students used the strategies that aimed at increasing their knowledge of and skills in effective *time-management*.

#### 6.2.2.2 Self-monitoring during strategy-implementation

The pre-test LASSI-HS mean percentile score that increased from the 60<sup>th</sup> to the 70<sup>th</sup> percentile on the post-test on the issue of *self-testing*, shows that students in the experimental group engaged in self-evaluation and comprehension-monitoring. The findings from the qualitative phase of the study corroborate the quantitative data in demonstrating that the students used *self-monitoring* during strategy-implementation (see section 5.3.2.2). Furthermore, the findings reveal that engaging in self-monitoring and recording their actions in the journals enabled students to act on their clearly-defined goals and to pay attention to their behaviour during strategy-implementation. The students were not only able to check for misunderstandings that occurred during their learning, and to observe where they went wrong, but could also compare their performance with the self-set goals, and adapt their strategies where necessary. Such *self-monitoring* characterises SRL.

#### 6.2.2.3 The implementation of learning strategies

The students received explicit instruction and practiced using mainly the organisational type of cognitive strategies geared towards learning how to recall and remember information (see Appendix I). The data revealed that students gained the declarative, procedural and conditional knowledge of the *mnemonics*, *mind-map* and *SOAR* strategies. Furthermore, they found the use mind-maps more effective than the other strategies.

However, the findings (in section 5.3.2.1 (iii)) show that some individual differences existed in terms of strategy-use and knowledge. A number of students had difficulty in correctly naming the strategies (e.g., *self-testing* and *mnemonics*).

Some continued to use their old ineffective methods of studying, while others only selected those strategies that they found easier to use, and tended to give up when faced with difficult tasks.

The qualitative data explained the LASSI-HS results which showed a significant difference between the pre- and post-test mean percentile scores on two of the *skill* components namely, *information-processing* and *selecting the main ideas*. Furthermore, choosing only easier strategies and giving up when faced with difficult tasks may be suggestive of low self-efficacy beliefs in strategy-use (see sections 2.4.1.2 and 2.4.1.7), and a need for developing motivational strategies.

#### 6.2.2.4 Self-evaluation

The qualitative data displayed in section 5.3.2.1 (iv) indicate that the students reflected on the effectiveness of their behavior and their mistakes with strategy-implementation. These reflections were used to make judgments regarding the extent to which strategies were helping the students to achieve self-set goals. The students used *self-reflection* to decide which strategies or aspects of their behaviour they needed to adapt in order to achieve their set goals. Therefore, the data show that the students engaged in self-evaluation, which provided information for future planning.

### 6.2.3 Research question 3

*What are students' views on the intervention programme?*

#### 6.2.3.1 The students' views on what worked well with regard to the intervention programme

##### (i) *Goal-setting and time-management*

The students' showed improvement in declarative, procedural and conditional knowledge regarding goal-setting after the intervention. As stated previously (see section 6.3.2), the qualitative data demonstrated that the students were able to set goals and divide them into sub-goals; and they made plans and monitored

themselves on how to use and manage their time as they engaged in learning tasks. Improved post-test LASSI-HS mean percentile scores on the *will* component, particularly the statistically significant scores of the *attitude* and *motivation* scales, showed that the students assumed responsibility for their own learning, and began to see the relationship between school and their clearly set goals (see Table 5.4).

The LASSI-HS post-test, that showed an increase in the mean percentile scores on the time-management scale, further showed that the students became aware of the value of scheduling and of the management of time in relation to learning outcomes (see Figure 5.4). Therefore, as indicated in section 5.3.2.2 (i), there is consistency between the quantitative and qualitative data in that the students' knowledge on how to deal with distractions, and competing goals increased, as well as their ability to manage time in order to accomplish academic tasks.

(ii) *Self-monitoring during strategy-implementation*

The data show that the students engaged in self-monitoring by recording the types and frequency with which they engaged in learning tasks, the strategies they used, the amount of time that was spent, as well as the effectiveness of their behaviour. For example, the students were able to identify their weaknesses in respect of how they used their time in relation to the academic goals they had set, and their study behavior through self-monitoring. The strategies that did not work well were subsequently discarded or adjusted as necessary, as indicated in 5.3.2.2 (ii).

Furthermore, the students learnt to monitor not only their learning and study strategies, but also their motives and emotional responses in other contexts, and to assume responsibility for the outcomes of their behaviour. The findings support other research that showed that self-monitoring processes that occur during SRL assist with learning and in the problem-solving processes, and provide the students with feedback that may enable them to make appropriate decisions. This is in accordance with literature reports in other contexts (De Corte, et al., 2005:691; Wolters, 2010:18; Zumbrunn, et al., 2011:12).

(iii) *The implementation of learning strategies*

The students predominantly received instructions on cognitive strategies (see Appendix I, and section 4.4.2). As indicated in section 5.3.2.1 (iii), the students in the experimental group found the learning strategies that were covered to be useful and appropriate. The students mostly made use of the organisational (e.g., *mind-map*) and comprehension-monitoring (*self-testing*) strategies, while a few of them used *mnemonics* and the *SOAR*. Another important finding is that most of the students found it impossible to use the *mind-map* strategy to learn mathematics, and used *self-testing* instead. Therefore, the data show that the students acquired declarative, procedural and conditional knowledge about learning strategies. Furthermore, in accordance with SRL, the students in the study selected, used and adapted the strategies according to the demands of the tasks, and thereby confirmed other research findings about self-regulating students (Butler, et al., 2006:3; Weinstein, et al., 2011a:49).

(iv) *Self-evaluation*

The intervention worked well in enabling the students to engage in self-evaluation, which made them realize the value of self-monitoring. The students were able to judge the effectiveness of the strategies which they used against self-set goals and to make adjustments where necessary (see section 3.4.3.4). The finding builds on the existing knowledge-base regarding self-efficacy (see section 2.4.1.2) namely that the students' self-satisfaction increased the belief that the use of effective strategies would lead to positive outcomes.

6.2.3.2 The students' views on what did not work well with regard to the intervention programme

(i) *Goal-setting and time-management*

Although it was mentioned that the students improved with regards to the scheduling of study-time and *time-management* for tests (see sections 5.3.2 and 6.2.3 (i)), it is evident that some students did not learn to adapt and transfer those

skills to other situations, e.g. when studying for examinations. These findings support Gettinger's and Seibert's (2002:356) findings where they state that some students are unable to reschedule their time-table effectively in order to allocate enough time for studying during the examinations. This inability to reschedule the study time-table when necessary, and to act accordingly is atypical of self-regulated learners, who are described by Broekkamp and Van Hout-Wolters (2007:405) as knowledgeable in adapting their goals and action plans in order to optimize their performance.

Possible reasons for the students' challenges identified above include poor knowledge of skills for examination-preparation (e.g., *planning* and *time-management*), ineffective instructional approaches, and their lack of motivation to use the strategies they had learnt.

(ii) *Self-monitoring during strategy-implementation*

Some of the students kept record of their learning strategy-implementation, but did not realise that their self-monitoring was insufficient. Furthermore, they did not monitor themselves by assessing their feelings about tasks, or use self-motivational strategies to persevere and optimise their performance. The data indicate that some students lacked the meta-level knowledge of motivation, because self-monitoring did not enable them to regulate their motivation. Therefore, the data suggest that explicit instruction on motivational strategies was not adequately addressed in the intervention programme (see Appendix I, and section 5.3.2.3).

(iii) *The implementation of learning strategies*

Most of the students found the organisational strategy of *mind-maps* easier to use than other methods, but inappropriate for Mathematics. Other students struggled to implement the SOAR and mnemonics strategies. The students who reported to have difficulty implementing the mnemonic and SOAR strategies tended to have lower levels of self-efficacy with regards to using these strategies.

Some students continued to have difficulty with strategies on how to read and understand test and examination questions, as well as for anticipating possible questions. Such poor *test-taking* strategies, which may be linked to a lack of SRL competencies, can result in feelings of helplessness and consequently, in failure.

In summary, the programme did not work well in raising all of the students' levels of self-efficacy with regards to using certain learning and study strategies. Furthermore, the data demonstrate that some students regarded certain learning strategies (such as mind-maps), as having limited applicability to subjects like Mathematics. However, Brinkmann (2003:97) claims its usability in Mathematics education.

#### *(iv) Self-evaluation*

The students engaged in self-evaluation by making self-judgments, but some failed to use the results of the evaluations to change their ineffective strategies or behaviour. Examples of aspects that students could not adapt as necessary include seeking-help on how to alter their time-tables when preparing for examinations, developing intrinsic interests for task-engagement, and dealing with distractions that interfered with their concentration. Therefore, the intervention programme did not adequately enable the students to use self-evaluation in order to adapt ineffective self-efficacy beliefs. Furthermore, the students' beliefs in the efficacy of 'effective' strategies did not change as a result of the self-evaluations.

### **6.2.4 Research question 4**

*What are the students' views on how the intervention programme can be improved to develop their SRL competencies?*

#### 6.2.4.1 Goal-setting and time-management

The data show that the students could draw up a study-time schedule, and work according to it. However, some students still needed help in how to apply the skills in other learning contexts. They indicated that they were unable to transfer these

skills to the context of preparation for the examination, and therefore needed help in this regard. This finding confirms the assertion by Fazal, et al. (2012:39), namely that an opportunity for continuous practice is necessary for students to learn time-management skills.

#### 6.2.4.2 Self-monitoring during strategy-implementation

The programme created an opportunity for the students to monitor their behaviour, including the allocation of time for homework, and negative attitudes towards learning tasks. However, some students stated that they needed more time to learn and practice self-monitoring. Therefore, the students needed to be given more time to practice using self-monitoring strategies, and how to use the self-monitoring process to alter their environment.

#### 6.2.4.3 The implementation of learning strategies

Step-by step procedures in the form of written notes were provided on a chalkboard and flip chart in order to equip the students with declarative, procedural and conditional knowledge of learning and study strategies. It was found that some students who struggled with note-taking preferred to have textbooks or copies of notes (hand-outs), which they could consult when they wanted to practice the different learning strategies outside of the classroom. However, the researcher believes that giving hand-outs may not be helpful if the students were not taking the intervention seriously, as indicated previously (see sections 5.3.2.1, and 5.3.2.4).

Some students could implement the *mnemonics* strategy with ease after practice. A few others who gave up easily without putting in much effort stated that they found it difficult to use *mnemonics*, and therefore suggested that it should be removed from the intervention programme. The differing preferences of students regarding study skills is consistent with the assertion by Zimmerman (2005:17), namely that no strategy will work well for all the students.

The students' recommendations regarding learning strategies have several implications for teaching SRL. Firstly, the SRL intervention programme should make provision for the students to have enough time to practice learning strategies in class and at home. Secondly, interest-enhancement, which is part of motivational strategies, should be included, in order to address the declining motivational levels from schoolwork during adolescence. Lastly, more creative and fun-filled instructional approaches, such as multi-sensory teaching approaches, should be used in order to cater for the different learning styles.

#### 6.2.4.4 Self-evaluation

The findings indicate that the students evaluated themselves against their previous levels of performance. Some were satisfied with the programme, and did not make any recommendations about changes that should be implemented. They stated that it was the students' responsibility to use the strategies in order to derive maximum benefit from them. Other students recommended that the programme should allow for repeat sessions, and in some cases compulsory afternoon study sessions, where the students are supervised and assisted with schoolwork. Furthermore, unlike what the CAPS policy dictates (see section 1.2) regarding teaching study skills in Life Orientation, most of the students claimed that they would benefit more from such a programme if they were taught learning and study strategies earlier in the year (see section 5.3.2.4).

The fact that the students did not comment on the duration of the programme showed consistency with previous reports that the *duration* of the intervention had a small effect on its effectiveness (De Boer, et al., 2012:62).

#### 6.2.5 Conclusions regarding the mixed-methods results

In summary, a mixed-methods research approach was used to investigate how the SRL skills of adolescents in high school can be developed. The SRL involved the use of cognitive, meta-cognitive and motivational knowledge, and strategies to achieve self-set learning goals, which included declarative, procedural and conditional knowledge of learning and study strategies. The programme

predominantly targeted four SRL areas, namely *goal-setting*, *self-monitoring*, *the implementation of learning strategies*, and *self-evaluation*.

The study indicates that the qualitative data confirmed and explained the quantitative results, for example in revealing how the students' initial strategy deficit with regard to goal-setting improved after the intervention (see Table 5.2 and Figure 5.4 for *attitude* and *motivation* scales). Inconsistent findings existed only in the SRL area of *planning* and *time-management*, where the qualitative data showed that the students were not as skilled in adapting their time during examination-preparation (see section 5.3.2.3 (i)) as the quantitative post-test results seemed to indicate. This somewhat contradictory finding supports the rationale for using qualitative methods (e.g., interviews) in addition to quantitative methods. Regarding *self-monitoring*, the students kept records of the implementation of their learning and study strategies in journals/diaries. This method revealed that those students who did not practice using the study strategies independently as expected showed little or no improvement.

According to section 5.3.2.2 (iii) regarding knowledge of the learning strategies, the statistically significant results in the *will (attitude, motivation)* and *skill (information-processing and selecting the main ideas)* areas of the quantitative data, were confirmed by the qualitative data. The students continued to have deficits in *test-taking* strategies even after the intervention, particularly with regards to *study-time management* during tests and examinations. This emphasized the fact that the inclusion of motivational strategies in an intervention programme is necessary in order to assist the students who demonstrated weaknesses in the area, and to help them maintain an interest in using effective learning strategies.

The students engaged in self-evaluation during strategy implementation. They became aware of the need for self-evaluation by mainly using their previous performances in tests and examinations as evaluation criteria for their current performances. The quantitative and qualitative data indicate that the students improved, following the intervention, but needed more coaching and time to practice the different skills to ensure its maintenance. The findings also indicated

the need for individualised SRL sessions in order to cater for the needs of students with different learning and study strategy deficits.

### **6.3 RECOMMENDATIONS**

The main research question wanted to ascertain how the SRL of high school students can be developed. This can be done by means of the intervention programme presented in appendix I. However, after the evaluation of the programme, recommendations for improvement can be made.

#### **6.3.1 Recommendations for the enhancement of the SRL of high school students**

The following recommendations which informed the design of an improved programme, the Psycho-educational Intervention Programme to develop Self-Regulated Learning (PIP-SRL) (see Appendix Q), are made on the basis of the literature and the findings, in particular by considering the findings of research question 4 (regarding how the SRL intervention programme should be improved):

- The learning and study strategies should be introduced early in the first term in order for the students derive maximum benefit from it.
- The instructional/facilitation time for teaching SRL strategies should take 45 to 60 minutes to allow sufficient time for guided practice and immediate feedback on implementation before the students are able to use the strategies independently.
- The students should be given booklets containing detailed notes or step-by-step guidelines on study strategies (notes, examples and activities based on the declarative, procedural and conditional knowledge of the strategies).
- The instructional approach should include fun-filled activities and games.
- Motivational strategies, such as interest-enhancement activities should form part of the programme.
- The delivery modes of the PIP-SRL intervention programme should consist of three forms, namely a large group (classroom-based), a small group (two to eight students per session), and individualised periods, in order to cater

for the students' various needs. This might also resolve the human resource need, since intensive intervention will be offered only to those who need it.

- The large group (classroom-based) sessions for instruction in SRL strategies should be separate from the Life Orientation periods, although reference to certain topics in the Life Orientation curriculum can be made, so that the students may link the information to the content subject.

### **6.3.2 Recommendations for further research**

The following are recommended for future research:

- A larger sample-size involving more secondary schools and including adolescent students in grades 8, 9, 11 and 12 from a wide variety of cultural groups, is suggested for further study.
- Studies that make more use of 'micro-analytical measures' could be undertaken to assess the strengths and weaknesses of adolescent students from similar cultural and socio-economic backgrounds. Although it may be costly, using more micro-analytical assessment measures might be better in capturing the SRL processes as they occur during learning, and therefore provide more detail regarding what the intervention should focus on.
- A programme that involves collaboration between the researcher and a subject teacher is recommended to enable the students to apply the SRL strategies in context. Collaboration with subject teachers may synchronize the tasks and activities that the researcher gives the students to practice, so that these are in line with what they do in the subject.
- A study that makes use of a longitudinal research design could be undertaken to assess the long-term effect of SRL on academic achievement.

## **6.4 LIMITATIONS OF THE STUDY**

The following limitations of the study are indicated:

- As convenience sampling was used in the study, the findings are limited to the grade 10-students in one school and from one cultural group only. The findings should, however, also be applicable to the students in many similar schools.
- The qualitative data that involved eight students (in particular) who were willing to be part of the qualitative phase of the study need to be interpreted with caution, as they could be significantly different from the experiences of students that were not willing to participate in the study.
- Time and financial constraints did not allow for a longer period for the implementation and evaluation of the programme. A longer period could have given the students more time to implement the strategies, and to receive the researcher's feedback on how they should apply the strategies.
- The findings are based on a programme that was designed for SRL development of high school adolescents in grade 10, and on the mandatory Life Orientation curriculum of that grade, as stated in the CAPS document. A study that includes students in other grades might provide more data.
- The LASSI-HS is a self-report questionnaire. This is a limitation because the students are not always objective in their self-evaluations.

## **6.5 CONTRIBUTION OF THE STUDY**

The study made the following contributions:

- The data showed that SRL can be facilitated in adolescent students in high school so that they may be able to select and use effective learning and study strategies, monitor their own learning, and evaluate the consequences thereof. This can help reduce the need for developmental intervention by a HEI, and thereby allow the university student more time to focus on developing subject content knowledge. The study also revealed (see Appendix I, and in an explanation of PIP-SRL), what the content should cover and how it should be presented. These guidelines can be used as part of the subject Life Orientation, or as a stand-alone course in a workshop format.

- The study indicated that this kind of SRL programme can help to inspire adolescents from disadvantaged schools and poor socio-economic backgrounds to be goal-directed, and to improve their attitudes towards learning. A self-motivated student is a self-directed and autonomous learner who can contribute towards a global workforce. The study also contributes toward the literature on SRL in an *African* and predominantly *black* cultural context.

The acronym PIP, although it relates to a psycho-educational intervention programme, is also a metaphor for “seed”. This illustrates that SRL is a seed that needs to be planted well in advance and during the right season. It also needs to be nurtured and fed.

## **6.6 SUMMARY**

The period of adolescence is marked by developmental challenges, which include a decline in the adolescents’ motivational levels to study, and at the same time, the expectations of the society for them to assume the responsibility for independent learning in preparation for the world of work. Thus, high school students need to be equipped with competencies that enable them to adapt to the increasing demands of learning at school and beyond.

To this end, the main research question of this study was:

*How can the SRL of adolescents be developed at high school?*

The aim of the study was to design, implement and evaluate a learning- and study-skills programme for high school students. The social-cognitive theory, in particular the SRL theory, was used as the conceptual framework.

Purposeful sampling was used to select the participants for the three phases of the mixed-methods research project. Two classes of Grade 10-students in one school participated in the study. The one class was used as the experimental group and the other served as the comparison group.

- (i) In the first quantitative phase, both classes wrote a pre-test, using the LASSI-HS.
- (ii) This was followed by a qualitative phase, which was the main phase of the study. This phase lasted 10 weeks. During this time a programme was implemented to enhance the students' SRL. The programme was implemented with the entire experimental group once per week for 30 minutes (during one class period), plus an additional 30 minutes in the afternoon. In addition to these sessions, individual work was done with eight students from the same group. The eight students were selected on the basis of the quantitative results of the first phase (high- and low-achievers on the LASSI-HS). During the sessions the focus was on the individual weaknesses of the students, as revealed by their LASSI-HS scores in the pre-test. Between one and four sessions with each of the eight students took place. This individual work lasted between 30 minutes to one hour, depending on the needs of each student. During the 10 weeks the data were collected continuously from the entire class of students in the experimental group, as well as from the eight students mentioned. The data were collected by means of individual interviews with the eight students, as well as from journals (diaries) that all the students kept for the 10 weeks. In addition, the researcher collected data by means of field-notes in a reflective journal.
- (iii) After the 10-week implementation-period, the final quantitative phase involved both the experimental and the comparison groups in the writing of a post-test, using the same LASSI-HS instrument. The aim of the data-collection was to evaluate to what extent the intervention programme enhanced the students' SRL, and to make recommendations for improvement, if necessary.

The results indicated that the programme was successful in enhancing the students' goal-setting, self-monitoring and self-evaluation strategies. The students also showed improvement in their learning and study strategies, especially with regard to attitude, motivation, and information-processing and in selecting the main ideas from the work they were studying.

Although the students' self-regulating strategies improved in some instances, shortcomings were noted in a number of areas. These weaknesses formed the basis for the design of a new programme. Based on the literature and the empirical findings of the study, a programme for the development of the adolescents' self-regulated learning in high school was designed, called PIP-SRL. This programme recommends the earlier commencement than Grade 10, as well as a greater emphasis on the two problem-areas that were identified, namely *time-management* and *motivational strategies*.

## REFERENCES

Abdullah, M.L.N. 2007. *Exploring children's self-regulated learning skills*. Paper presented at The First International Conference on Educational Reform. Maharasarakham University, Thailand: November 9-11, 2007.

Acee, T.W. 2009. Strategic learning and college readiness: An interview with Claire Ellen Weinstein. *Journal of Developmental Education*, 33(1):20-26.

Arsal, Z. 2009. The effects of diaries on self-regulation strategies of preservice science teachers. *International Journal of Environmental and Science Education*, 5(1):85-103.

Asaro-Saddler, K. & Saddler, B. 2010. Planning instruction and self-regulation training: Effects on writers with autism spectrum disorder. *Exceptional Children*, 77(1):107-124.

Baird, G.L., Scott, W.D., Dearing, E. & Hamill, S.K. 2009. Cognitive self-regulation in youth with and without learning disabilities: academic self-efficacy, theories of intelligence, learning versus performance goal-preferences and effort attributions. *Journal of Social and Clinical Psychology*, 28(7):881-908.

Bandura, A. 1986. *Social foundations of thought and action: A social-cognitive theory*. Englewood Cliffs, NJ: Prentice- Hall, Inc.

Bandura, A. 1989. Social-cognitive theory. In: R. Vasta (Ed.). *Annals of child development*, Vol. 6 (Six theories of child development). Greenwich: JAI Press, 1-60.

Bandura, A. 1999. Social-cognitive theory: an agentic perspective. *Asian Journal of Social Psychology*, 2:21-41.

Bandura, A. 2006a. Adolescent development from an agentic perspective. In: F. Parajes & T. Urdan (Eds.). *Self-efficacy beliefs of adolescents*. Greenwich: Image Age Publishing, 1-43.

Bandura, A. 2006b. Towards a psychology of human agency. *Perspectives on Psychological Science*, 1(2):164-180.

Bembenutty, H. 2008a. The first word: A letter from the guest editor on self-regulation of learning. *Journal of Advanced Academics*, 20(1):5-16.

Bembenutty, H. 2008b. The last word: An interview with B.J Zimmerman: Achieving self-fulfilling cycles of academic self-regulation. *Journal of Advanced Academics*, 20(1):174-194.

Bembenutty, H. 2010. Present and future goals: Perceived instrumentality of schoolwork. *Psychology Journal*, 7(1):2-16.

Benner, A.D. & Graham, S. 2007. Navigating the transition to multi-ethnic urban high schools: Changing ethnic congruence and adolescents' school-related affect. *Journal of Research on Adolescence*, 17(1):207-220.

Berk, L.E. 2007. *Development through the lifespan*. (4<sup>th</sup>ed.). Boston: Allyn & Bacon.

Berthold, K., Nückles, M. & Renkl, A. 2007. Do learning protocols support learning strategies and outcomes? The role of cognitive and metacognitive prompts. *Learning and Instruction*, 17:564-577.

Biesta, G. 2010. Pragmatism and the philosophical foundations of mixed-methods research. In: A. Tashakkori & C.Teddlie. (Eds). *Sage Handbook of Mixed Methods in Social and Behavioral Research*. (2<sup>nd</sup>ed.). Thousand Oaks, CA: Sage Publications, 95-117.

Bjork, R.A., Dunlosky, J. & Kornell, N. 2013. Self-regulated learning: Beliefs, techniques, and illusions. *Annual Review of Psychology*, 64:418-444.

Boekaerts, M. 2002. Bringing about change in the classroom: Strengths and weaknesses of the self-regulated learning approach. *Learning and Instruction*, 12(6):589-604.

Boekaerts, M. 2006. Self-regulation and effort investment. In: K.A. Renneiger & I. E. Sigel. (Eds.). *Handbook of child psychology*. Vol. 4: Child Psychology in Practice, (6<sup>th</sup> ed.). New Jersey: John Wiley & Son, 345-377.

Boekaerts, M. & Cascallar, E. 2006. How far have we moved towards the integration of theory and practice in self-regulation? *Educational Psychology Review*, 18:199-210.

Boekaerts, M. & Corno, L. 2005. Self-regulation in the classroom: A perspective on assessment and intervention. *Applied Psychology*, 54(2):199-231.

Boekaerts, M. & Niemivirta, M. 2005. Self-regulated learning: Finding the balance between learning goals and ego-protective goals. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 417-451.

Boekaerts, M., Pintrich, P.R. & Zeidner, M. 2005. Self-regulation: An introductory overview. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 13-39.

Bolger, N., Davis, A. & Rafaeli, E. 2003. Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, 54:579-616.

Bowers, E.P., Gestsdottir, S., Geldhof, G.J., Nikitin, J., Von Eye, A. & Lerner, R.M. 2011. Developmental trajectories of intentional selfregulation in adolescence: The role of parenting and implications for positive and problematic outcomes among diverse youth. *Journal of Adolescence*, 34:1193-1206.

Braun, V. & Clarke, V. 2012. Thematic analysis. In: H. Cooper., P.M. Camic., D.L. Long., A.T. Painter., D. Rindskopf & K.J. Sher. (Eds.). *APA Handbook of research methods in Psychology*, Vol. 2: Research designs: Quantitative, qualitative, neuropsychological and biological. Washington: APA.

Brinkmann, A. 2003. Mind mapping as a tool in Mathematics education. *Mathematics Teacher*, 96(2):96-101.

Broekkamp, H. & Van Hout-Wolters, B.H.A. 2007. Students' adaptation of study strategies when preparing for classroom tests. *Educational Psychology Review*, 19:401-428.

Brophy, J. 2010. *Motivating students to learn*. (3<sup>rd</sup> Ed.). New York: Routledge.

Brüssou, S. 2007. A learning facilitation framework to enhance academic skills development among underprepared learners in South African Higher Education. Unpublished Ph.D. thesis. Bloemfontein: University of the Free State.

Butler, D.L. 1996. The Strategic Content Learning Approach to promoting self-regulated learning: An introduction to the coordinated symposium. Paper presented at 1996 (April) meeting of American Educational Research Association in New York. Available at <http://ecps.educ.ubc.ca/sites/ecps.edu.ubc.ca/files/uploads/ZZZ/SPED/Butler/AER%201996%20intro%paper.Pdf>. Accessed on 28 February 2013.

Butler, D.L. 1998. The Strategic Content Learning Approach to promoting self-regulated learning: A report on three case studies. *Journal of Educational Psychology*, 90(4):682-697.

Butler, D.L. 2002. Individualizing instruction in self-regulated learning. *Theory into Practice*, 41(2):81-93.

Butler, D.L., Beckingham, B. & Novak Lauscher, H. 2005. Promoting strategic learning by eighth-grade students struggling in Mathematics: A report of three case studies. *Learning Disabilities Research and Practice*, 20(3):156-174.

Butler, L. & Cartier, S.C. 2004. Promoting effective task interpretation as important work habit: A key to successful teaching and learning, *Teachers College Record*, 106(9):1729-1758.

Butler, D.L., Cartier, S.C., Schnellert, L. & Gagnon, F. 2006. Secondary school students' engagement in learning through reading. Paper presented at the 2006 meetings of the Canadian Society for Studies in Education, Toronto, ON, Canada.

Camahalan, F.M.G. 2006. Effects of self-regulated learning on Mathematics achievement of selected South-East Asian children. *Journal of Instructional Psychology*, 33(3):194-205.

Casey, B.J., Jones, R.M. & Hare, T.A. 2008. The adolescent brain. *Annals of the New York Academy of Sciences*, 1124:111-126.

Cassazza, M. 2006. Self-regulation: A multi-dimensional learning strategy. In: P. Suitherland & J. Crowther (Eds.). *Lifelong learning: Concepts and contexts*. London: Routledge, 146-157.

Castro, G.G., Kellison, J.G., Boyd, S.J & Kopak, A. 2010. A methodology for conducting integrative mixed methods research and data analyses. *Journal of Mixed Methods Research*, 4(4):341-360.

Cervone, D. & Pervin, L. 2007. *Personality theory and research*. (10<sup>th</sup> Ed.) New York: John Wiley & Sons.

Chiu, M.M., Chow, M.W. & McBride-Chang, C. 2007. Universals and specifics in learning strategies: Explaining adolescent maths, science, and reading achievement across 34 countries. *Learning and Individual Differences*, 17:344-365.

Cleary, T.J. 2005. The development and validation of the self-regulated strategy inventory self-report. *Journal of School Psychology*, 44:307-322.

Cleary, T.J., Callan, G.L. & Zimmerman, B.J. 2012. Assessing self-regulation as a cyclical, context-specific phenomenon: Overview and analysis of SRL micro-analytic protocols (Review Article). *Education Research International*. Available at <http://dx.doi.org/10.1155/2013/272560> Accessed on 8 March 2013, 1-19.

Cleary, T.J., Platten, P. & Nelson, A. 2008. Effectiveness of the self-regulation empowerment program with urban high school students. *Journal of Advanced Academics*, 20(1):70-107.

Cleary, T.J. & Platten, P. 2012. Examining the correspondence between self-regulated learning and academic achievement: A case study analysis. (Review articles). *Education Research International*. Available at <http://dx.doi.org/10.1155/2013/272560> Accessed on 8 March 2013, 1-18.

Cleary, T.J. & Zimmerman, B.J. 2004. Self-regulation empowerment program: A school-based program to enhance self-regulated and self-motivated cycles of student learning. *Psychology in the Schools*, 41(5):537-550.

Coatsworth, J.D.S. (Undated). A developmental psychopathology and resilience perspective on 21<sup>st</sup> century competencies. A paper for the National Research Council on behalf of the Hewlett Foundation. Available at: [http://www.hewlett.org/uploads/Developmental\\_Psychopathology\\_21st\\_Century\\_Competencies.pdf](http://www.hewlett.org/uploads/Developmental_Psychopathology_21st_Century_Competencies.pdf). Accessed on 21 February 2012, 1-35.

Cogan, J.C., Russel, G. & Wright, R.G. 2004. The other 3Rs: Teacher's manual (pp1-97). American Psychological Association. Available at: <http://www.apa.org/ed/schools/cpse/publications/teachers-manual.pdf>. Accessed on 21 February 2012.

Collins, W.A. & Steinberg, L. 2006. Adolescent development in interpersonal context. In: W. Damon, R.M. Lerner & N. Eisenberg. (Eds.). *Handbook of child psychology, Social, emotional and personality development*. (6<sup>th</sup> ed.). New Jersey: John Wiley & Sons, 1003-1067.

Cooney, F.E. 2008. Adolescent self-regulation skills, working portfolios and explicit instruction: a mixed method study. Unpublished D.Ed.dissertation. Walden University: UMI Microform, ProQuest Information and Learning.

Cooper, C.A. & Corpus, J.H. 2009. Learners' developing knowledge of strategies for regulating motivation. *Journal of Applied Developmental Psychology*, 30:525-536.

Corno, L. 1989. Self-regulated learning: A volitional analysis. In: B.J. Zimmerman & D.H. Schunk. (Eds.). *Self-regulated learning and academic achievement: theory, research and practice*. New York: Springer-Verlag, 111-141.

Covington, M.V. 2000. Goal theory, motivation and school achievement: An integrative review. *Annual Review of Psychology*, 51:171-200.

Credé, M. & Phillips, A.L. 2011. A meta-analytic review of the motivational strategies for learning questionnaire. *Learning and Individual Differences*, 21:337-346.

Creswell, J.W. & Garrett, A.L. 2008. The movement of mixed methods research and the role of educators. *South African Journal of Education*, 28:321-333.

Creswell J.W. & Plano Clark, V.L. 2011. Designing and conducting mixed methods research. (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage Publications.

De Boer, H., Donker-Bergstra, A.S. & Kostons, D.D.N.M. 2012. Effective strategies for self-regulated learning: A meta-analysis. GION/RUG, Gronings Instituut voor Onderzoek van Onderwijs. Rijksuniversiteit Groningen. Available at: [www.gion.gmw.eldoc.ub.rug.nl/...3/Effectivestrategies/...](http://www.gion.gmw.eldoc.ub.rug.nl/...3/Effectivestrategies/...) Accessed on 28 August 2013.

De Corte, E., Verschaffel, L. & Op't Eynde, P. 2005. Self-regulation: a characteristic and a goal of mathematics education. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 687-726.

Dehn, M.J. 2010. *Long-term memory problems in children and adolescents: assessment, intervention, and effective instruction*. New Jersey: John Wiley & Sons, Inc.

Department of Basic Education [DoBE]. 2011a. Curriculum and Assessment Policy Statement. Grades 7-9, Life Orientation. Pretoria: Government Printing Works. Available at: <http://www.education.gov.za>. Accessed on 18 March 2013.

Department of Basic Education [DoBE]. 2011b. Curriculum and Assessment Policy Statement. Grades 10-12, Life Orientation. Pretoria: Government Printing Works, Available at: <http://www.education.gov.za>. Accessed on 18 March 2013.

Department of Basic Education [DoBE]. 2012. Annual National Assessment: A guideline for the interpretation and use of ANA 2012 results. DoBE: Pretoria. Available at: <http://www.education.gov.za>. Accessed on 18 May 2013.

Department of Education [DoE]. 2001. Education White Paper 6: Special Needs Education, Building an Inclusive Education and Training system. Pretoria: Government Printers, Available at: <http://www.education.gov.za>. Accessed on 12 May 2010.

Department of Education. [DoE]. 2003. National Curriculum Statement, Grades 10-12 (General): Life Orientation. Pretoria: Government Printers. Available at:<http://www.education.gov.za>. Accessed on 12 May 2010.

Dignath, C. & Büttner, G. 2008. Components of fostering self-regulated learning amongst students. A meta-analysis on intervention studies at primary and secondary school level. *Metacognition Learning*, 3:231-264.

DiPerna, J.C. 2006. Academic enablers and student achievement: Implication for student assessment and intervention services in the schools. *Psychology in the Schools*, 43:7-17.

Dinsmore, D.L., Alexander, P.A. & Loughlin, S.M. 2008. Focusing the conceptual lens on meta-cognition, self-regulation and self-regulated learning. *Educational Psychology Review*, 20:391-409.

Duckworth, K., Ackerman, R., McGregor, A., Salter, E. & Vorhaus, J. 2009. Self-regulated learning: A literature review. Centre for Research on the Wider Benefits of Learning Institute of Education. London. Available at: <http://www.learningbenefitsa.net>. Accessed on 30 November 2010.

Duncan, T.G. & McKeachie, W.J. 2005. The making of the motivated strategies for learning questionnaire. *Educational Psychologist*, 40(2):117-128.

Dupeyrat, C. & Mariné, C. 2005. Implicit theories of intelligence, goal orientation, cognitive engagement, and achievement: A test of Dweck's model with returning school adults. *Contemporary Educational Psychology*, 30:43-59.

Dweck, C.S. 1986. Motivational processes affecting learning. *American Psychologist*, 41:1040-1048.

Dweck, C.S. 2008. Brainology: Transforming students' motivation to learn. *School Matters*, National Association of Independent Schools. Available at: <http://www.nais.org/ismagazinearticlePrint.cfm?print=Y&ItemNumber=150509>. Accessed on 8 February 2011.

Dweck, C.S. & Leggett, E.L. 1988. A social cognitive approach to motivation and personality. *Psychological Review*, 95(2):256-273.

Eccles, J.S & Wigfield, A. 2002. Motivational beliefs, values, and goals. *Annual Review of Psychology*, 53:109-132.

Entwistle, N. & McCune, V. 2004. The conceptual basis of study strategies inventories. *Educational Psychology Review*, 16 (4):325-345.

Fazal, S., Hussain, S., Majoka, M.I. & Masood, S. 2012. The role of study skills in academic achievement of students: A closer focus on gender. *Pakistan Journal of Psychological Research*, 27(1):37-51.

Freeman, J.R. 2004. Learning strategies. Available at: <http://www.Ldonline.org/article/Learning-Strategies?theme=print>. Accessed on 8 January 2011.

Gettinger, M. & Seibert, J.K. 2002. Contributions of study skills to academic competence. *School Psychology Review*, 31(3):350-365.

Glogger, I., Schwonke, R., Holzäpfel, L., Nückles, N. & Renkl, A. 2012. Learning strategies assessed by journal writing: Prediction of learning outcomes by quantity, quality, and combinations of learning strategies. *Journal of Educational Psychology*, 104(2):452-468.

Gouws, E., Kruger, N. & Burger, S. 2008. *The adolescent*. (3<sup>rd</sup> ed.) Sandton, Johannesburg: Heinemann.

Gredler, M.E. 2009. Hiding in plain sight: the stages of mastery/self-regulation in Vygotsy's cultural-historical theory. *Educational Psychologist*, 44(1):1-19.

Greene, J.A. & Azevedo, R. 2007. A theoretical review of Winne and Hadwin's Model of Self-regulated Learning: New perspectives and directions. *Review of Educational Research*, 77(3):334-372.

Greene, J.C., Caracelli, V.J & Graham, W.F. 2008. Towards a conceptual framework for mixed-method evaluation. In: V.P Clark & J.W Creswell. (Eds). *The mixed methods reader*. Thousand Oaks, CA: Sage Publications, 121-148.

Growing success. 2010. Assessment, evaluation and reporting in Ontario schools, (1<sup>st</sup> ed.). Covering Grades 1-12. Available at: <http://www.edu.gov.on/eng/policyfunding/growsuccess.pdf>. Accessed on 12 June 2012.

Harris, K.R., Santangelo, T. & Graham, S. 2010. Metacognition and strategies-instruction in writing. In: H.S Waters & W. Schneider. (Eds). *Metacognition, strategy use and instruction*. New York: Guilford Press, 226-256.

Harter, S. 2006. The self. In: N. Eisenberg, W. Damon & R.M. Lerner. (Eds.) *Handbook of child psychology: Social, emotional and personality development*. (6th ed.). New Jersey: John Wiley & Sons, 3:505-530.

Hartwig, M.K. & Dunlosky, J. 2012. Study strategies of college student: are self-testing and scheduling related to achievement? *Psychonomic Bulletin Review*, 19:126-134.

Hattie, J. 2013. Understanding learning: Lessons for learning, teaching and research. Presentation at the ACER Research Conference. Available at: [https://www.research.acer.edu.au/...7 & content=research conference](https://www.research.acer.edu.au/...7&content=research%20conference). Accessed on 3 October 2013.

H & H Publishing, 2013. LASSI instructional modules: Overview of LASSI instructional modules. Available at: <http://www.hhpublishing.com/onlinecourses/BSL/>. Accessed on 21 June 2013.

Horner, S.L. & O'Connor, E.A. 2007. Introduction: Helping beginning and struggling readers and writers to develop self-regulated strategies. *Reading and Writing Quarterly*, 23:1-5.

Howell, A.J. & Watson, D.C. 2007. Procrastination: Association with achievement goal-orientation and learning strategies. *Personality and Individual Differences*, 42:167-178.

Hübner, S., Nückles, M. & Renkl, A. 2010. Writing learning journals: Instructional support to overcome learning-strategy deficits. *Learning and Instruction*, 20:1-29.

Hughes, L. 2002. Paving pathways: Child and adolescent development. Belmont, CA: Wadsworth Thomson Learning.

Iida, M., Shrout, P.E., Laurenceau, J. & Bolger, N. 2012. Using diary method in psychological research. In: H. Cooper. (Ed.). *APA Handbook of research methods in Psychology: Vol 1. Foundations, planning, measures, and psychometrics*. American Psychological Association, 277-305. DOI: 10.1037/13619-016

Ivankova, N.V., Creswell, J.W. & Plano Clark, V.L. 2010. Foundations and approaches to mixed methods research. In: K. Maree. (Ed.). *First Steps in Research*. Pretoria: Van Schaik Publishers, 255-280.

Jackman, W.M., Townsend, M. & Hamilton, R. 2009. Improving motivation and performance in secondary school science. In: D.H. Ellsworth. (Ed.). *Motivation in education*. New York: Nova Science Publishers, 147-158.

Johnson, B.R. & Onwuegbuzie, A.J. 2004. Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7):14-26.

Jones, G.M. 2007. The evaluation of project SCORE: A life skills program for an inner-city high school. Unpublished Ph.D. dissertation. University of North Texas, Denton: Texas. UNT Digital library. Available at: <http://digital.library.unt.edu/ark:/67531/metadc5158/>. Accessed on 10 February 2012.

Karoly, P. & Boekaerts, M. 2005. Toward consensus in the psychology of self-regulation: How far have we come? How far do we have yet to travel? *Applied Psychology: An International Review*, 54(2):300-311.

Kruger, N. 2003. Getting to know and understand the learner. In: N. Kruger & H. Adams. (Eds.). *Psychology for teaching and learning: What teachers need to know?* Sandton, Johannesburg: Heinemann, 15-30.

Lee, J. & Shute, V.J. 2010. Personal and social-contextual factors in K–12 academic performance: An integrative perspective on student learning. *Educational Psychologist*, 45(3):85-202.

Lerner, R.M. 2005. Promoting positive youth development: Theoretical and empirical bases. National Research Council/Institute of Medicine Board on Children, Youth, and Families Workshop on the Science of Adolescence. 9 September. Washington D. C. Available at: <http://ase.tufts.edu/iaryd/documents/pubPromotingPositive.pdf>. Accessed on 12 February 2012.

Linnenbrink, E.A. & Pintrich P.R. 2002. Motivation as an enabler for academic success. *School Psychology Review*, 31(3):313-327.

Liu, C. & Chen, I. 2010. Evolution of constructivism. *Contemporary Issues in Education Research*, 3(4):63-66.

Long, J.F., Monoi, S., Harper, B., Knoblauch, D. & Murphy, P.K. 2007. Academic motivation and achievement among urban adolescents. *Urban Education*, 42(30):196-222.

Louw, D. & Kail, R. 2007. Basic concepts of child and adolescent development. In: D. Louw & A. Louw. (Eds.). *Child and adolescent development*. Bloemfontein: ABC Printers, 2-43.

Loyens, S.M.M., Magda, J. & Rikers, R.M.J.P. 2008. Self-directed learning in problem-based learning and its relationship with self-regulated learning. *Educational Psychology Review*, 20:411-427.

MacArthur, C.A., Phillippakos, Z., Graham, S. & Harris, K. 2012. Writing instruction. In: B. Wong & D. Butler. (Eds.). *Learning about learning disabilities*. (4<sup>th</sup> ed.) San Diego, CA: Academic Press, 243-270.

Mace, F.C., Belfiore, P.J. & Shea, M.C. 1989. Operant theory and research on self-regulation. In: B.J. Zimmerman & D.H. Schunk. (Eds.). *Self-regulated learning and academic achievement: Theory, research and practice*. New York: Springer-Verlag, 27-50.

MacLeod, W.B, Butler, D.L. & Syer, K.D. 1996. Beyond achievement data: Assessing changes in metacognition and strategic learning. Available at [:http://ecps.educ.ubc.ca/sites/ecps.edu.ubc.ca/files/uploads/ZZZ/SPED/Butler/AERA%201996%20intro%paper.Pdf](http://ecps.educ.ubc.ca/sites/ecps.edu.ubc.ca/files/uploads/ZZZ/SPED/Butler/AERA%201996%20intro%paper.Pdf). Accessed on 28 February 2007.

Maes, S. & Gebhardt, W. 2005. Self-regulation and health behaviour: The health behaviour goal model. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 343-368.

Maggioni, L. & Alexander, P.A. 2011. Knowledge domains and domain learning. In: V.G. Aukrust. (Ed.). *Learning and cognition in education*. Oxford: Elsevier, Academic Press, 118-127.

Malan, F. 1996. Techniques, interventions and programmers. Helping high school pupils to study. In: P. Engelbrecht, S.M. Kriegler & M.I. Booyesen. (Eds.). *Perspectives on learning difficulties*. Pretoria: Van Schaik Publishers, 249-260.

Mansfield, C. & Vallance, R. 2009. Honoring the differences: A re-examination of academic motivation with reference to student gender. In: D.H Ellsworth. (Ed.). *Motivation in education*. New York: Nova Science Publishers, 49-70.

Mansfield, C.F. & Wosnitza, M. 2010. Motivation goals during adolescence: A cross-sectional perspective. *Issues in Educational Research*, 20(2):149-165.

Mason, L.M., Harris, K.R. & Graham, S. 2011. Self-regulated strategy development for students with writing difficulties. *Theory into Practice*, 50:20-27.

Matseke, P.M. 2011. The influence of learning strategies, learners' self-efficacy and academic achievement. Unpublished M.Ed Dissertation. Pretoria: University of South Africa.

Mayer, R.E. 2003. *Learning and instruction*. Upper Saddle River, New York: Prentice Hall.

McCombs, B.L. 1989. Self-regulated learning and academic achievement: A phenomenological view. In: B.J. Zimmerman & D.H. Schunk. (Eds.). *Self-regulated learning and academic achievement: Theory, research and practice*. New York: Springer-Verlag, 51-82.

McMillan, J.H. & Schumacher, S. 2010. *Research in education: Evidence-based inquiry*. (7<sup>th</sup> ed.). Upper Saddle River, New Jersey: Pearson.

Mireles, S.V., Offer, J., Ward, D.D. & Dochen, C.W. 2011. Incorporating study strategies in developmental mathematics/college algebra. *Journal of Developmental Education*, 34(3):12-41.

Montague, M. 2007. Self-regulation and mathematics instruction. *Learning Disabilities Research and Practice*, 22(10):75-83.

Monteith, J.L.de K. 1996. A self-regulated learning perspective on pupils with learning difficulties. In: P. Engelbrecht, S.M. Kriegler & M.I. Booysen. (Eds). *Perspectives on learning difficulties*. Pretoria: Van Schaik Publishers, 207-224.

Morisano, D., Hirsh, J.B., Peterson, J.B., Pihl, R.O. & Shore, B.M. 2010. Setting, elaborating and reflecting on personal goals improve academic performance, *Journal of Applied Psychology*, 95(2):255-264.

Moseki, M. & Schulze, S. 2010. Promoting self-regulated learning to improve achievement: A case study in higher education. *Africa Education Review*, 7(2):356-375.

Nastasi, B.K., Hitchcock, J.H. & Brown, L.M. 2010. An inclusive framework for conceptualizing mixed method design typologies: Moving toward fully integrated synergistic research models. In: A. Tashakkori & C. Teddlie. (Eds.). *SAGE Handbook of mixed methods in social and behavioral research*. (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage Publications, 305-338.

Nicholl, H. 2010. Diaries as a method of data collection in research. *Paediatric Nursing*, 22(7):16-20.

Nieuwenhuis, J. 2010. Qualitative research designs and data-gathering techniques. In: K. Maree. (Ed). *First steps in Research*. (4<sup>th</sup> ed.). Pretoria: Van Schaik, 69-97.

Nieuwoudt, S., Nieuwoudt, H. & Monteith, J. 2007. Influence of a video class system on learners' study and learning strategies and their achievement in Mathematics. *African Journal of Research in Mathematics, Science and Technology Education*, 11(1):29-35.

Nota, L., Soresi, S. & Zimmerman, B.J. 2004. Self-regulation, academic achievement and resilience: A longitudinal study. *International Journal of Educational Research*, 41:198-215.

Nückles, M., Hübner, S. & Renkl, A. 2009. Enhancing self-regulated learning by writing learning protocols. *Learning and Instruction*, 19:259-271.

O'Connell-Schmakel, P. 2008. Early adolescent perspectives on motivation and achievement in academics. *Urban Education*, 43(6):723-749.

Office of Population Affairs, US Department of Health & Human Affairs: Adolescence a second phase of brain plasticity. Undated. Available at: [http://www.hhs.gov/opa/familylife/tech\\_assistance/etraining/adolescent\\_brain/Development/Adolescence/index.html](http://www.hhs.gov/opa/familylife/tech_assistance/etraining/adolescent_brain/Development/Adolescence/index.html). Accessed on 20 March 2012.

Olson, C.B. 2011. *Reading and writing connection: Strategies for teaching and learning in the secondary classroom*. (3<sup>rd</sup> ed.). Boston: Allyn & Bacon.

Özdemir, E.Y. 2011. Self-regulated learning from a socio-cultural perspective. *Education and Science*, 36(160):298-308.

Palmer, D. 2005. A motivational view of constructivist informed teaching. *International Journal of Science Education*, 27(15):1853-1881.

Paris, S.G. & Byrnes, J.P. 1989. The constructivist approach. In: B.J Zimmerman & D.H. Schunk. (Eds.). *Self-regulated learning and academic achievement: Theory, research and practice*. New York: Springer-Verlag, 169-200.

Perkrun, R. 2009. Emotions at school, In: K.R. Wentzel & A. Wigfield. (Eds.). *Handbook of motivation at school*. New York: Routledge, 575-604.

Perry, N.E. 2002. Introduction: Using qualitative methods to enrich understandings of self-regulated learning. *Educational Psychologist*, 37(1):1-3.

Pintrich, P.R. 2005. The role of goal orientation in self-regulated learning. In: M Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 451-502.

Pintrich, P.R., Smith, D.A.F., Garcia, T. & McKeachie, W.J. 1991. A manual for the use of the motivated strategies for learning questionnaire (MSLQ) (Technical Report No. 91-B-004). Ann Arbor, Michigan: National Centre for Research to Improve Post- secondary Teaching and Learning.

Puustinen, M. & Pulkkinen, L. 2001. Models of self-regulated learning: A review. *Scandinavian Journal of Education*, 45(3):269-286.

Randi, J. 2009. I think I can: Developing children's concepts of themselves as self-regulated learners. *New England Reading Association Journal*, 45(1):55-63.

Randi, J. & Corno, L. 2005. Teacher innovations in self-regulated learning. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 651-685.

Reber, A.S. & Reber, E.S. 2001. *The Penguin dictionary of psychology*. London: Penguin Books.

Reid, R.R., Harris, K.R., Graham, S. & Rock, M. 2012. Self-regulation among students with LD and ADHD. In: B. Wong & D. Butler. (Eds.). *Learning about learning disabilities*. (4<sup>th</sup>ed.). San Diego, CA: Academic Press, 141-173.

Richardson, J.S., Robnolt, V.R. & Rhodes, J.A. 2010. A history of study skills: Not hot, but not forgotten. Reading improvement, Project Innovation. Available at: <http://www.thefreelibrary.com/A+history+of+study+skills%3A+not+hot,+but+not+forgotten.-a0233607050>. Accessed on 12 July 2012.

Rohrkemper, M.M. 1989. A Vygotskian view of self-regulated learning. In: B.J. Zimmerman & D.H. Schunk. (Eds.). *Self-regulated learning and academic achievement: Theory, research and practice*. New York: Springer-Verlag, 143-167.

Rosen, J.A., Glennie, E.J., Dalton, B.W., Lennon, J.M. & Bozick, R.N. 2010. Non-cognitive skills in the classroom: New perspectives on educational research. RTI Press Publication No.BK-0004-1009, Research Triangle Park, NC: RTI International. Available at: <http://www.rti.org/rtipress>. Accessed on 12 May 2013.

Ruban, L.M., McCoach, D.B., McGuire, J.M. & Reis, S.M. 2003. The differential impact of academic self-regulatory methods on academic achievement among university students with and without learning disabilities. *Journal of Learning Disabilities*, 36(3):270-286.

Rueda, R. 2011. *The three dimensions of improving student performance: Finding the solutions to the right problems*. New York: Teachers' College Press.

Sakiz, G. 2008. An interview with Dale Schunk. *Educational Psychology Review*, 20:285-491.

Sakiz, G. 2011. Mastery and performance approach goal orientations in relation to academic self-efficacy beliefs and academic help-seeking behaviours of college students in Turkey. *Education Research*, 2(1):771-778.

Salovey, P. 2004. Emotions and emotional intelligence for educators. In: I. Eloff & L. Ebersöhn. (Eds.). *Keys to educational psychology*. Cape Town: UCT Press, 31-43.

Santangelo, T., Harris, K.R. & Graham, S. 2008. Using self-regulated strategy development to support students who have "trubol giting thangs into werds". *Remedial and Special Education*, 29 (2):78-89.

Saunders, P. 2008. The learning coaches of Wales: Learning Path 18-19. Available at: <http://dera.ioe.ac.uk/10886/1/090302/earningcoachesofwalesen.pdf>. Accessed on 22 October 2011.

Scarborough, M.K, Lewis, C.M. & Kulkarni, S. 2010. Enhancing adolescent brain development through goal-setting activities. *Social Work*, 55(3):276-278.

Schmitz, B. & Wiese, B.S. 2006. New perspective for the evaluation of training sessions in self-regulated learning: Time-series analyses of diary data. *Contemporary Educational Psychology*, 31:64-96.

Schunk, D.H. 1989. Social cognitive theory and self-regulated learning. In: B.J. Zimmerman & D.H. Schunk. (Eds.). *Self-regulated learning and academic achievement: Theory, research and practice*. New York: Springer-Verlag, 83-110.

Schunk, D.H. 2005. Self-regulated learning: The educational legacy of Paul R. Pintrich. *Educational Psychologist*, 40(2):85-94.

Schunk, D.H. 2008a. *Learning theories: An educational perspective*. (5<sup>th</sup> ed.). Saddle River: Prentice Hall.

Schunk, D.H. 2008b. Metacognition, self-regulation and self-regulated learning: Research recommendation. *Educational Psychology Review*, 20:463-467.

Schunk, D.H. 2012. *Learning theories: An educational perspective*. (6<sup>th</sup> ed.). Boston: Allyn Bacon.

Schunk, D.H. & Ertmer, P.A. 2005. Self-regulation and academic learning: self-efficacy enhancing interventions. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds). *Handbook of self-regulation*. San Diego, CA: Academic Press, 631-649.

Schunk, D.H. & Meece, J.L. 2006. Self-efficacy development in adolescence. In: F. Pajares & T. Urdan. (Eds.). *Self-efficacy beliefs of adolescents*. Greenwich, CT: Information Age, 71-96.

Schunk, D.H. & Pajares, F. 2009. Self-efficacy theory. In: K.R. Wentzel & A. Wigfield. (Eds.). *Handbook of motivation at school*. New York: Routledge, 35-53.

Seabi, J. 2011. Relating learning strategies, self-esteem, intellectual functioning with academic achievement amongst first-year engineering students. *South African Journal of Psychology*, 41(2):239-249.

Senko, C., Hulleman, C.S. & Harackiewicz, J.M. 2011. Achievement goal theory at the crossroads: Old controversies, current challenges and new directions. *Educational Psychologist*, 46(1):26-47.

Shabani, K., Khatib, M., & Ebadi, S. 2010. Vygotsky's zone of proximal development: Instructional implications and teachers' professional development. *English Language Teaching*, 3(4):237-248.

Sinclair, J. (Ed.). 2006. *Collins COBUILD Advanced Learners' English Dictionary*. (5<sup>th</sup> ed.). Glasgow: HarperCollins Publishers.

Skosana, P.S. 2010. Evaluating the impact of the principles of the National Curriculum Statement on Grade 10 Life Orientation. Unpublished D.Ed. thesis. Pretoria: University of South Africa.

Slavin, R.E. 2012. *Educational psychology: Theory and practice*. (10<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.

Snowman, J. & McCown, R. 2012. *Psychology applied to teaching*. (13th ed.). Belmont, CA: Wadsworth Cengage Learning.

Stang, J. & Story, M. 2005. Guidelines for Adolescent Nutrition Services 1. Available at: [http://www.epi.umn.edu/let/pubs/adol\\_book.shtm](http://www.epi.umn.edu/let/pubs/adol_book.shtm). Accessed on 12 January 2012.

Steinberg, L. 2005. Cognitive and affective development in adolescence. *Trends in Cognitive Sciences*, 9(2):69-74.

Stroud, K.C. 2006. Development of the school motivation and learning strategies inventory. Unpublished Ph.D. dissertation. Texas: A & M University.

Strydom, H. 2011. Sampling in the quantitative paradigm. In: A.S de Vos, H. Strydom, C.B. Fouché & C.S.L. Delport. (Eds.). *Research at grassroots: For the social and human services professions*. (4<sup>th</sup> ed.). Pretoria: Van Schaik, 222-235.

Taylor, N. & Prinsloo, C. 2005. The quality learning project: lessons for high school improvement in Pretoria, South Africa. Available at: <http://www.education.gov.za>. Accessed on 18 March 2013.

Tlhabane, E.M. 2004. The training needs of Life Orientation educators in the Mabopane district. Unpublished M.Ed. dissertation. Pretoria: University of South Africa.

Tulloch, S.1996. *The Reader's Digest Wordfinder*. Oxford: Clarendon Press.

Turnbull, J. 2009. *Coaching for learning: A practical guide to encourage learning*. London: Continuum International Publishing Group.

United Nations Children's Fund. 2011. The state of the world's children: Adolescence: An age of opportunity. Available at: <http://www.unicef.org>. Accessed on 20 October 2011.

Valle, A., Cabanach, R.G., Núñez, J.C., González-Pienda, J., Rondriquez, S. & Piñeiro, I. 2003. Cognitive, motivational, and volitional dimensions of learning: an empirical test of hypothetical model. *Research in Higher Education*, 44(5):553-580.

Van Zuydam, L. & Mokwena, D. 2012. Four months to go, so it's heads down. Pretoria News, Tuesday, 3/07/2012.

Vrugt, A. & Oort, F.J. 2008. Meta-cognition, achievement goals, study strategies and academic achievement: Pathway to achievement. *Metacognitive Learning*, 30:123-146.

- Wang, Q. & Pomerantz, E.M. 2009. The motivational landscape of early adolescence in the United States and China: A longitudinal investigation. *Child Development*, 80(4):1272-1287.
- Weinstein, C.E., Acee, T.W. & Jung, J. 2011a. Self-regulation and learning strategies. In: V.G. Aukrust. (Ed.). *New Directions for teaching and learning*, No. 26 (Chapter 5). Available at: [wiley.com/doi/10.1002/tl.443](http://wiley.com/doi/10.1002/tl.443). Accessed 12 December 2012, 45-53.
- Weinstein, C.E., Acee, T.W. & Jung, J. 2011b. Learning strategies. In: V.G. Aukrust. (Ed.). *Learning and cognition in education*. Oxford: Elsevier Academic Press, 137-143.
- Weinstein, C.E., Husman, J. & Dierking, D.R. 2005. Self-regulation intervention with a focus on learning strategies. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 727-747.
- Weinstein, C.E. & Palmer, D.R. 1990a. Learning and Study Strategies Inventory - high school version (LASSI-HS). Clearwater, FL: H & H Publishing Company, Inc.
- Weinstein, C.E. & Palmer, D.R. 1990b. Learning and Study Strategies Inventory - High School Version (LASSI-HS): User manual. Clearwater, Florida: H & H Publishing Company, Inc.
- Weinstein, C.E., Schulte, A.C. & Palmer, D.R. 2002. Learning and Study Strategies Inventory. (2<sup>nd</sup> ed.). Clearwater, Florida: H& H Publishing.
- Wigfield, A., Eccles, J.S., Schiefele, U., Roeser, R.W. & Davis-Kean, P. 2006. Development of achievement motivation. In: W. Damon & M. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.). *Handbook of child psychology*. Vol. 3. Social, emotional and personality development. New Jersey: John Wiley & Sons, 933-1002.

Wigfield, A., Tonks, S. & Klauda S.L. 2009. Expectancy-value theory. In: K.R. Wentzel & A. Wigfield. (Eds.). *Handbook of motivation at school*. New York: Routledge, 55-75.

Winne, P.H. & Hadwin, A.F. 2011. Self-regulated learning and socio-cognitive theory. In: V.G Aukrust. (E.). *Learning and cognition in education*. Oxford: Elsevier, Academic Press, 34-39.

Winne, P.H. & Perry, N.E. 2005. Measuring self-regulated learning. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 531-566.

Wirth, J. & Leutner, D. 2008. Self-regulated learning as a competence: Implications of theoretical models for assessment methods. *Journal of Psychology*, 216(2):102-110.

Witkow, M.R. 2009. Academic achievement in adolescents' daily time-use in the social and academic domains. *Journal of Research on Adolescence*, 19(1):151-172.

Wolters, C.A. 2003. Regulation of motivation: Evaluating an underemphasized aspect of self-regulated learning. *Educational Psychologist*, 38(4):189-205.

Wolters, C.A. 2010. Self-regulated learning and the 21<sup>st</sup> century competencies. Educational Department of Psychology, University of Houston. Available at: <http://www.hewlett.org/uploads/self-regulated-learning-2>. Accessed on 18 November 2010.

Wolters, C.A., Pintrich, P.R. & Karabenick, S. 2005. Assessing academic self-regulated learning. In: K. Moore & L. Lippman. (Eds). *What do children need to flourish? Conceptualizing and measuring indicators of positive development*. New York, NY: Springer, 251-270.

Woolfolk, A. 2010. *Educational psychology*. (11<sup>th</sup> ed.). Upper Saddle: NJ: Pearson Education Inc.

Zeidner, M., Boekaerts, M. & Pintrich, P.H. 2005. Self-regulation: Directions and challenges for future research. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 749-768.

Ziegler, A., Stoeger, H. & Grassinger, R. 2011. Actiotope model and self-regulated learning. *Psychological Test and Assessment Modeling*, 53 (1):161-179.

Zimmerman, B.J. 1986. Becoming a self-regulated learner: Which are the key sub-processes? *Contemporary Educational Psychology*, 11:307-313.

Zimmerman, B.J. 1989. Models of self-regulated learning and academic achievement. In: B.J. Zimmerman & D.H. Schunk. (Eds.). *Self-regulated learning and academic achievement: Theory, research and practice*. New York: Springer-Verlag, 1-25.

Zimmerman, B.J. 1998. Academic studying and the development of personal skills: a self-regulatory perspective. *Educational Psychologist*, 33:73-86.

Zimmerman, B.J. 1999. Commentary: Towards a cyclically interactive view of self-regulated learning. *International Journal of Educational Research*, 31:545-551.

Zimmerman, B.J. 2002. Becoming a self-regulated learner: An overview. *Theory into Practice*, 41(2):64-80.

Zimmerman, B.J. 2005. Attaining self-regulation: A social-cognitive perspective. In: M. Boekaerts, P.R. Pintrich & M. Zeidner. (Eds.). *Handbook of self-regulation*. San Diego, CA: Academic Press, 13-35.

Zimmerman, B.J. 2008. Investigating self-regulation and motivation: Historical background, methodological developments and future prospects. *American Educational Research Journal*, 45(1):166-183.

Zimmerman, B.J. & Cleary, T.J. 2006. Adolescents' development of personal agency: The role of self-efficacy belief and self-regulatory skills. In: F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents: A volume in Adolescence and education*. Greenwich, CT: Information Age Publishing, 45-69.

Zimmerman, B.J. & Cleary, T.J. 2009. Motives to self-regulate learning: A social cognitive account. In: K.R. Wentzel & A. Wigfield. (Eds.). *Handbook of motivation at school*. New York: Routledge, 247-264.

Zimmerman, B.J. & Martinez-Pons, M. 1986. Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal*, 23(4):618-648.

Zumbrunn, S., Tadlock, J. & Roberts, E.D. 2011. Encouraging self-regulated learning in the classroom: A review of the literature. Metropolitan Educational Research Consortium (MERC), Virginia Commonwealth University. Available at: <http://www.merc.soe.vcu.edu/reports/self-regulatedLearning.pdf>. Accessed on 25 October 2012.

## APPENDIX A:

## PERMISSION FROM THE DEPARTMENT OF EDUCATION



### GAUTENG PROVINCE

Department of Education  
REPUBLIC OF SOUTH AFRICA

For administrative use:  
Reference no. D2013/261

### GDE RESEARCH APPROVAL LETTER

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Fax Number:	012 382 9445
Email address:	mosekimm@tut.ac.za
Research Topic:	Adolescent self-regulatory learning development in a school in Gauteng: A psycho-educational perspective
Number and type of schools:	ONE Secondary School
Districts/HQ	Tshwane North OR Tshwane West

#### ***Re: Approval in Respect of Request to Conduct Research***

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

*Making education a societal priority*

#### **Office of the Director: Knowledge Management and Research**

9<sup>th</sup> Floor, 111 Commissioner Street, Johannesburg, 2001  
P.O. Box 7710, Johannesburg, 2000 Tel: (011) 555 0506  
Email: [kmr@education.gauteng.gov.za](mailto:kmr@education.gauteng.gov.za)  
Website: [www.education.gauteng.gov.za](http://www.education.gauteng.gov.za)

## APPENDIX B: PERMISSION FROM H & H PUBLISHING

**Monkie Moseki**

---

**From:** Priscilla Trimmier [trimmierp@hhpublishing.com]  
**Sent:** Tuesday, December 11, 2012 9:05 PM  
**To:** Monkie Moseki  
**Subject:** Re: D Ed studies using LASSI-HS  
**Importance:** High

Dear Monkie,

Beth, in our accounting department, has forwarded you a quote. If you have any questions about that quote, you can reply to her email. It would save you a great deal on shipping charges if you used the web version of the assessment. Is that a possibility?

H&H gives you permission to produce one copy of our LASSI-HS assessment for your research project for you as indicated in this email. Please be sure that our copyright information appears on each page.

Please let me know if I may be of further assistance.

Best Regards,  
Priscilla Trimmier  
H&H Publishing  
(727) 442-7760

Dear Pricilla

I am busy with my D Ed studies at UNISA under the supervision of Prof Salome Schulze. I intend to use LASSI-high school version( paper & pencil) for data collection during the first term of 2013. I would be conducting a pre-post test and implement some classroom intervention in one school. Kindly send me a quote for 100 students.

I also wish to get a written permission to produce 1 copy( scanned/photocopy) of the LASSI-HS version in order submit to the Gauteng Department of Education(GDE), which is one of documents that I am required to attach when requesting permission to conduct research at any of the institutions within Gauteng Province. A copy of the GDE request form is attached for your information( see 3.5).

Kind regards

**Monkie Moseki**  
Lecturer: Department of Educational Studies  
Faculty of Humanities, Soshanguve North Campus  
Tshwane university of Technology  
Pretoria  
South Africa  
Tel:(012)382 9448  
Fax:(012)382 9445  
E-mail:[mosekimm@tut.ac.za](mailto:mosekimm@tut.ac.za)

*Please reply to my vodamail address as well: [monkiemoseki@vodamail.co.za](mailto:monkiemoseki@vodamail.co.za)*

## APPENDIX C: THE LASSI-HS QUESTIONNAIRE

by C.E Weinstein & D.R Palmer, Department of Educational Psychology,

<b>LASSI-HS</b>	Learning and Strategies Inventory-High school Version ©1990, H&H Publishing Company, Inc. 1231 Kapp Drive Clearwater, Florida 33765
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University of Texas at Austin

### Directions

The Learning and Study Strategies Inventory – High School Version (LASSI-HS) is designed to find out how you learn, how you study, and how you feel about learning and studying. On these pages you will find 76 statements about learning and studying. Read each statement and then mark one of these choices:

- a. **NOT AT ALL LIKE ME**
- b. **NOT VERY MUCH LIKE ME**
- c. **SOMEWHAT LIKE ME**
- d. **FAIRLY MUCH LIKE ME**
- e. **VERY MUCH LIKE ME**

To help you decide which choice to mark, we will explain what is meant by each one

By **NOT AT ALL LIKE ME**, we do not necessarily mean that the statement would never describe you, but that it would be true of you only rarely. Darken the letter **a** for this choice.

By **NOT VERY MUCH LIKE ME**, we mean that the statement generally would not be true of you. Darken the letter **b** for this choice.

By **SOMEWHAT LIKE ME**, we mean that the statement would be true of you about half of time. Darken the letter **c** for this choice.

By **FAIRLY MUCH LIKE ME**, we mean that the statement would generally be true of you. Darken the letter **d** for this choice

By **VERY MUCH LIKE ME**, we do not necessarily mean that the statement would always describe you, but that it would be true of you almost all the time. Darken the letter **e** for this choice.

Please be sure to completely darken the letter you choose. Try to answer according to *how well the statement describes you*, not how you think you should be or what others do. There are no right or wrong answers to these statements. Please work as quickly as you can without being careless and please answer all the items. Use a pencil or a ballpoint pen to darken the letters.

# Unique ID number: \_\_\_\_\_

Very much like me = e  
 Fairly much like me = d  
 Somewhat like me = c  
 Not very much like me = b  
 Not at all like me = a

1.	I worry that I will fail my classes.	a	b	c	d	e
2.	I can tell the difference between more important and less important information my teacher tells me.	a	b	c	d	e
3.	I find it hard to stick to a study schedule.	a	b	c	d	e
4.	After a class, I look over my notes to help me understand the information.	a	b	c	d	e
5.	I don't care if I finish high school as long as I can get a job.	a	b	c	d	e
6.	I find that when my teacher is teaching I think of other things and don't really listen to what is being said.	a	b	c	d	e
7.	I use special study helps, such as italics and headings that are in my textbooks.	a	b	c	d	e
8.	I try to identify the main ideas when I listen to my teacher teaching	a	b	c	d	e
9.	I get discouraged because of low grades.	a	b	c	d	e
10.	I am up-to-date in my class assignments.	a	b	c	d	e
11.	Problems outside of school – dating conflict with parents, etc – cause me to not do my school work.	a	b	c	d	e
12.	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 school work.	a	b	c	d	e
13.	Even when study materials are dull and not interesting, I manage to keep working until I finish.	a	b	c	d	e
14.	I feel confused and undecided as to what my educational goals should be	a	b	c	d	e
15.	I learn new words or ideas by imagining a situation in which they occur	a	b	c	d	e
16.	I come to class unprepared.	a	b	c	d	e
17.	When studying for an exam, I think of questions that might be on the test.	a	b	c	d	e
18.	I would rather be not in school.	a	b	c	d	e
19.	The notes I take as I read my textbooks are helpful when I review the textbook material.	a	b	c	d	e
20.	I do poorly on test because I find it hard to plan my work within a short period of time.	a	b	c	d	e
21.	I try to think of possible test questions when studying my class material.	a	b	c	d	e
22.	I only study when there is the pressure of a test.	a	b	c	d	e
23.	I change the material I am studying into my own words.	a	b	c	d	e
24.	I compare class notes with other students to make sure my notes are correct.	a	b	c	d	e

**APPENDIX D:  
THE BIOGRAPHICAL QUESTIONNAIRE FOR STUDENTS**

<p>Thank you for your willingness to complete this questionnaire. The purpose of this questionnaire is to get information about certain aspects of you as a grade 10 student, the beliefs that you hold about your academic capability as well as your knowledge of study methods. Please be as honest as possible, answer all questions and note that your answers will be treated confidentially.</p>	<p><b>For office use</b></p>								
<p>A. Respondent number</p>	<p>V1</p>								
<p>1. Gender</p>	<p>1-3 <input type="text"/> <input type="text"/> <input type="text"/></p>								
<table border="1"> <tr> <td>Male</td> <td>1</td> </tr> <tr> <td>Female</td> <td>2</td> </tr> </table>	Male	1	Female	2	<p>V2 <input type="checkbox"/> 4</p>				
Male	1								
Female	2								
<p>2. Age</p>	<p>V3 <input type="checkbox"/> 5</p>								
<table border="1"> <tr> <td>15 years</td> <td>1</td> </tr> <tr> <td>16 years</td> <td>2</td> </tr> <tr> <td>17 years</td> <td>3</td> </tr> <tr> <td>18 years</td> <td>4</td> </tr> </table>	15 years	1	16 years	2	17 years	3	18 years	4	<p>V4 <input type="checkbox"/> 6</p>
15 years	1								
16 years	2								
17 years	3								
18 years	4								
<p>3. Are you doing the current grade for the first time?</p>	<p>V5 <input type="checkbox"/> 7</p>								
<table border="1"> <tr> <td>Yes</td> <td>1</td> </tr> <tr> <td>No</td> <td>2</td> </tr> </table>	Yes	1	No	2	<p>V6 <input type="checkbox"/> 8</p>				
Yes	1								
No	2								
<p><b>PART B: Study methods</b></p>									
<p>4. Do you know the different methods on how to study effectively?</p>									
<table border="1"> <tr> <td>Yes</td> <td>1</td> </tr> <tr> <td>No</td> <td>2</td> </tr> </table>	Yes	1	No	2					
Yes	1								
No	2								
<p>5. Have you been taught methods on how to study in the past year at the present school?</p>									
<table border="1"> <tr> <td>Yes</td> <td>1</td> </tr> <tr> <td>No</td> <td>2</td> </tr> </table>	Yes	1	No	2					
Yes	1								
No	2								

PART C: What beliefs do you have about your capability to do well in Grade 10 this year? Please use the following codes:

1= strongly disagree

2= Disagree

3= Agree

4= Strongly agree

a. I believe I will receive excellent results in Grade 10 this year

V7  9

1	2	3	4
---	---	---	---

b. I am confident I can understand the basic material taught in Grade 10 this year

V8  10

1	2	3	4
---	---	---	---

c. I am confident I can understand the most difficult material taught in Grade 10 this year

V9  11

1	2	3	4
---	---	---	---

d. I am confident I can do an excellent job on the class work and tests in Grade 10 this year

V10  12

1	2	3	4
---	---	---	---

e. I expect to do well in Grade 10 this year

V11  13

1	2	3	4
---	---	---	---

Thank you once more.

## **APPENDIX E:**

### **THE SEMI-STRUCTURED INDIVIDUAL INTERVIEW SCHEDULE (ADOLESCENT SELF-REGULATED LEARNING DEVELOPMENT IN SCHOOLS)**

Thank you for having been involved in the SRL development programme. The purpose of the interview is to gather detailed information about your overall impressions regarding the intervention programme. Since a lot of time is required for getting such detailed information, only a small number of students are being interviewed. I regard you as someone who can provide such detailed information. However, please note that although you are regarded as someone who is likely to provide detailed information, you are under no obligation to participate in the interview and can therefore choose not to be interviewed. Kindly note that even though I will be making notes in a book, the voice recorder will be switched on during the interview to ensure that as much information as possible is captured. Also note that all information will be treated confidentially. Please do not hesitate to ask any question regarding what I have just explained. Do you agree/disagree to be interviewed?

Thank you for agreeing/disagreeing to be interviewed.

If you are willing to participate in the interview kindly note and remember the following:

- You are allowed to ask me to repeat or rephrase a question, where necessary.
- Please answer questions as honestly as possible, and note that there is no right or wrong answer but only your honest opinion will be appreciated.

Please tell me about your experience of the programme by answering the following questions:

1. What worked well? Why?

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---

---

2. What did not work well? Why

---

---

---

3. What do you recommend?

---

---

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4. Any other comments?

---

---

---

Thank you for participating in the interview.

## **APPENDIX F:**

### **INFORMED ASSENT FOR THE STUDENT**

#### **Dear Student**

I am a student at UNISA currently pursuing my studies towards D Ed in Psychology of Education. I am interested in adolescents' learning and study strategies and wish to learn more about how high school students can be taught learning and study skills that make them to become self-regulated learners. The Gauteng Department of Education has given permission for the research which involves Grade 10 students in two classes. I would like to invite you to participate in the research.

All students in the two classes will complete a biographical questionnaire and the pre and post LASSI-HS (Learning and Study Strategies Inventory-High School Version). All students from one of the two classes will participate in a 1 hour skills development programme over a period of seven (7) weeks. The first four sessions will be conducted during school hours while the rest will be continued after school hours on the days and times that would be agreed upon with all concerned. Student from the skill development class will also be expected to use 5-10 minutes of their free time to write (i.e. write a diary) about how they use what they learnt on daily basis. Furthermore, the selected eight (8) students from the skill development class will be interviewed individually in order to get their views of the programme. Diaries of the eight selected students will also be studied in detail.

Participating in the research will enable you to gain more self-knowledge regarding what and how to change your learning and study strategies in order to improve your academic performance. The results of the study will further enable teachers to have a better understanding of the type of skills that should be emphasized when teaching skills on how to study.

There are no known risks involved. All information about your name and school will be kept confidential. Participation is voluntary and there will be no monetary rewards given. You are free to withdraw from the study at any point without being

penalized. The results of the study may be published in a scientific journal or presented at a scientific meeting.

This study is conducted under the supervision of Prof Salomé Schulze at UNISA (Department of Psychology of Education). Please feel free to contact me and Prof Schulze on [Schuls@unisa.ac.za](mailto:Schuls@unisa.ac.za) for any queries regarding the research as well as any other related matter.

Please discuss your involvement with your parent/guardian before completing the form below which indicates that you agree to participate in the study. Kindly note that a parent/guardian will be asked to give permission for participation on behalf of a student who is below 18 years old, and receive a copy of the signed form. The completed form must be returned it to me as soon as possible.

I appreciate your participation in this research.

Monkie M Moseki      Signature: \_\_\_\_\_

Date: \_\_\_\_\_

E-mail: [mosekimm@tut.ac.za](mailto:mosekimm@tut.ac.za)      Tel: (012) 549 0498(H)

Cell: 0827448593

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### **STUDENT'S CONSENT TO PARTICIPATE IN THE STUDY**

I, \_\_\_\_\_ the undersigned Grade 10 student herewith confirm that I understand the above terms and conditions of the research which have been explained to me and that I agree/disagree to participate in the above-mentioned research/study.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## **APPENDIX G:**

### **THE GRADE-10 PARENT INFORMED CONSENT FORM**

I am a student at UNISA currently pursuing my studies towards D Ed in Psychology of Education. I have special interest in adolescents' learning and study strategies and wish to learn more about the Grade 10 students can be developed to become self-regulated learners. I would like to invite your child to participate in the research and request you to read the following information that will help you to decide whether to agree or disagree to that:-

- There are no known risks involved.
- All information about the student's and school's name will be kept confidential.
- Participation is voluntary and there will be no monetary rewards given. Students are free to withdraw from the study at any point without being penalized.
- Grade 10 students in two (2) randomly selected classrooms will complete a biographical questionnaire and the pre and post LASSI-HS (Learning and Study Strategies Inventory-High School Version). That is, there will be one intervention and one comparison class.
- All students from one of the two classes will participate in a 1 hour skills development intervention programme over a period of seven (7) weeks and be requested to write their daily reflection about the program. The skills development sessions will be conducted both during school hours and after school, and students will be requested to write daily reflection on how they implement the skills learnt.
- Individual interviews will be conducted with eight (8) students who will be selected from the intervention class on the basis of the LASSI-HS results. The diary entries of the same students will be studied in depth.
- Request for permission to conduct the research was approved by Gauteng Department of Education
- The results of the study will be shared with the may be published in a scientific journal or presented at a scientific meetings

This study is conducted under the supervision of Prof Salomé Schulze at UNISA (Department of Psychology of Education) who can be contacted on

[Schuls@unisa.ac.za](mailto:Schuls@unisa.ac.za). Please feel free to contact me on [mosekimm@tut.ac.za](mailto:mosekimm@tut.ac.za) for any queries regarding the research as well as any other related matter.

I would appreciate your support in this research. Please complete the form below to show that you agree to give consent for your child's participation.

Yours faithfully

Monkie M Moseki

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

-----

**PARENT'S/GUARDIAN'S CONSENT**

I, \_\_\_\_\_ the undersigned parent/guardian of \_\_\_\_\_, herewith agree/disagree that she/he should participate in the above mentioned research/study.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**APPENDIX H:**

**LETTER OF APPROVAL FROM THE ETHICS COMMITTEE**



**Research Ethics Clearance Certificate**

This is to certify that the application for ethical clearance submitted by

**M Moseki [8012547]**

for a D Ed study entitled

**Adolescent self-regulated learning development in school: a  
psycho-educational perspective**

has met the ethical requirements as specified by the University of South Africa  
College of Education Research Ethics Committee. This certificate is valid for two  
years from the date of issue.

A handwritten signature in black ink, appearing to read "CS le Roux".

Prof CS le Roux  
CEDU REC (Chairperson)  
[lrouxcs@unisa.ac.za](mailto:lrouxcs@unisa.ac.za)

18 February 2013

Reference number: 2013 FEB/ 8012547/CSLR

**APPENDIX I:**

**THE SRL INTERVENTION PROGRAMME**

**(THE DAILY MONITORING TOOL (STUDENT’S JOURNAL))**

**A. ADOLESCENTS - SRL STUDY STRATEGIES (A-SRLSS)**

<b>Week</b>	<b>SRL strategy</b>	<b>Session content activities., students’ task</b>
X (1)	1.Getting to know myself as a learner	Pre-intervention data collection (the biographical questionnaire and administering the pre- LASSI-HS)
1	2. What strategies for learning and studying do I use currently use (SRL competencies through the LASSI-HS)	2.1.Understanding my strengths and weaknesses in terms of the LASSI-HS scores 2.2. Give homework assignment on goal setting and drawing up a time table
2-3	3.Introduction to SRL concepts and the use of diary: <i>3.1.1 Goal setting</i> <i>3.1.2 Performance and Self monitoring</i> <i>3.1.3 Self-evaluation</i>	3.1. Introducing the purpose of the intervention contact sessions and the three components of the SRL cycle: <ul style="list-style-type: none"> <li>• <b>Goal-setting&amp;Planning</b> before the learning task/ action: Explain long-term and short-term goal, and used acronym SMART goal to stress the important of setting Specific, Measurable, Realistic and proximal goals, which should be acted upon and has a Time-frame. E.g. time-table, work schedule</li> <li>• <b>Self-monitoring</b> while performing the action or implementing/using the strategies during learning: explain self-monitoring as a way of checking whether I am still on track and keeping a record thereof; introduce the use of diary and how it links with self-monitoring and help with self-evaluation</li> <li>• <b>Self-evaluation</b> after the action/implementing and learning to check how you achieved your goal and whether you need to change plans or actions in</li> </ul>

		<p>order to improve in future.</p> <p>3.2. Review: improving strategy on goal setting and recording goals in diaries</p> <p>3.3. Give homework assignment on time planning for students to record in their diaries. Hand out A5 exercise books that will be used as dairies</p>
<b>4</b>	<b>4.</b> Looking back/reflecting on my academic goals and time use	<p>4.1. Ask students to reflect(look back ) on their use of time and how helpful/unhelpful it is in helping towards achieving self-set goals</p> <p>4.2. Identifying familiar persons with similar characteristic of SR learner: the case of Caster Semenya</p> <p>4.3. Prioritisation and drawing up a study time-table: Listing daily activities that most students engage in, allocating reasonable time that students could spend on each.</p> <p>4.4. Give homework assignment on time planning in terms of drawing up a weekly study time-table/work schedule</p> <p>4.5. Students commence with the implementation of the study time-table/work schedule and self-monitoring of their learning and studying by recording in their diaries.</p>
<b>5</b>	<b>5.</b> Learning strategies: how memory works	How information is processed and stored: short and long-term memory; the importance of focusing attention (concentration), organising information to be stored, rehearsing and review
<b>6-7</b>	<b>6.</b> Learning strategies: how to enhance memory	<p>a. Organisation : mind-map, the SOAR technique</p> <p>b. Retrieving information from long-term memory: mnemonics(acronyms &amp; acrostics)</p> <p>c. Reviewing: 5 stages of self-testing</p>
<b>8</b>	<b>7.</b> Self-efficacy	Identifying causes for achieving/not achieving the

	enhancing strategies improving self-belief	goals that you set for yourself: <ul style="list-style-type: none"> <li>• Students are asked to think and look back at their past performance, list subjects they have done well in (passed), the subjects they did not do well in (not achieved/failed) and write reasons/causes for the kind of performance in each case.</li> <li>• The reasons are classified/categorized into things/events that you can change and control (controllable) and those that you cannot change and control (uncontrollable). For example, doing your homework/studying (controllable); luck(uncontrollable), belief like “ I cannot achieve anything”</li> <li>• Changing the statements: what I say and belief about myself (academic achievement).</li> </ul>
<b>9</b>	8.Test preparation strategies: before	What to do and not do before writing a test and exam
<b>10</b>	9.Test taking strategies: during and after	What I need to do during (on the day of the test) and after a test and exam
<b>X(2)</b>	Self-monitoring continues:	Getting there, going further: reflection Review, Independent study and further implementation during classroom learning
<b>X(3)</b>		Post test: LASSI-HS
<b>X(4)</b>	How do I develop myself further as a lifelong learner	Feedback on post-test LASSI : What SRL and study strategies did I develop, where do I need further improvement and way forward

**APPENDIX J:**  
**THE DAILY SELF-MONITORING TOOL**  
**(FOR THE STUDENT'S JOURNAL)**

DATE: \_\_\_\_\_ Name & Surname: \_\_\_\_\_(optional)

1. I studied

\_\_\_\_\_ for \_\_\_\_\_minutes/hours.

2. I did homework in

\_\_\_\_\_ for \_\_\_\_\_minutes/hours.

3. The study skill(s)/learning and study strategy I used was

\_\_\_\_\_.

4. What worked well for me is

\_\_\_\_\_ because I \_\_\_\_\_ (reason).

5. What did not work well for me is

\_\_\_\_\_ because I \_\_\_\_\_ (reason).

6. I plan to improve next time by

\_\_\_\_\_  
\_\_\_\_\_

**APPENDIX K:**

**THE LASSI-HS SCORES OF EIGHT STUDENTS**

ID		ATT	MOT	TMT	ANX	CON	INP	SMI	STA	SFT	TST
B1H	Pre	75	75	85	85	95	85	75	95	95	75
	Post	99	90	95	99	95	99	99	99	95	90
B2H	Pre	35	85	75	40	80	90	45	99	85	50
	Post	50	55	90	60	75	95	90	95	90	65
B3L	Pre	25	50	20	35	35	95	20	40	40	20
	Post	75	55	95	50	85	99	70	99	80	75
B4L	Pre	40	5	25	25	25	1	10	15	15	20
	Post	20	30	75	35	55	40	60	40	35	30
G1H	Pre	55	65	75	45	70	80	50	70	85	60
	Post	85	60	60	50	60	99	99	80	95	75
G2H	Pre	50	30	25	60	65	60	50	55	40	50
	Post	95	85	85	45	80	95	90	85	90	99
G3L	Pre	15	30	65	30	25	30	1	45	75	1
	Post	80	55	25	40	25	60	45	20	20	25
G4L	Pre	1	1	15	25	15	20	1	35	20	5
	Post	55	65	65	50	95	85	90	75	70	85

Key:

- Below 50<sup>th</sup> percentile
- 50<sup>th</sup>- 75th percentile
- Above 75<sup>th</sup> percentile

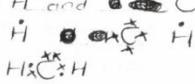
**APPENDIX L:**

**RECORD FORM FOR INDIVIDUAL SRL SUPPORT AND INTERVENTION SESSIONS**

STUDENT IDENTITY	SELF-REGULATED LEARNING SPECIFIC AREA IN NEED OF DEVELOPMENT		SELF-REGULATED LEARNING SPECIFIC AREA OF DEVELOPMENT SUPPORT	
	Identified areas of weakness according to LASSI-HS pre-test percentile scores	No. of sessions proposed	Type of support (to be) offered	No. of sessions at
B1H	Self-recording, motivation(implicit theory of intelligence (> 50 <sup>th</sup> = All areas)	4	Questioning about fixed vs growth mindset; goal time scheduling	1
B2H	on task analysis and time allocation, sleeping, peer pressure. (> 50 <sup>th</sup> percentile = ATT, ANX, SMI)	4	motivation(implicit theory of intelligence, peer pressure	4
B3L	Time allocation time for Studies, to be realistic (< 50 <sup>th</sup> percentile = ATT, TMT, ANX, CON,SMI, STA, SFT, TST)	4	Goals setting & career goals( short-term, long term and career goals	1
B4L	Knowledge of learning strategies & Goal setting, time management (< 50 <sup>th</sup> percentile = All areas)	4	Motivation, Linking goals to school; how to mind map; self-testing	1
G1H	task analysis and time allocation	4	How to allocate time according to task	1
G2H	Boredom (< 50 <sup>th</sup> percentile = MOT, TMT, SFT)	4	motivation(implicit theory of intelligence,	3
G3L	Peer pressure, concentration, goal setting (< 50 <sup>th</sup> percentile = ATT, TMT, ANX, CON,INP, SMI, STA, TST)	4	How to deal with peer pressure( assertiveness) and stay focused on goals, goal setting	1
G4L	Concentration, knowledge of strategies (< 50 <sup>th</sup> percentile = All areas)	4	Motivation, linking goals to school; how to mind map; self-testing	4

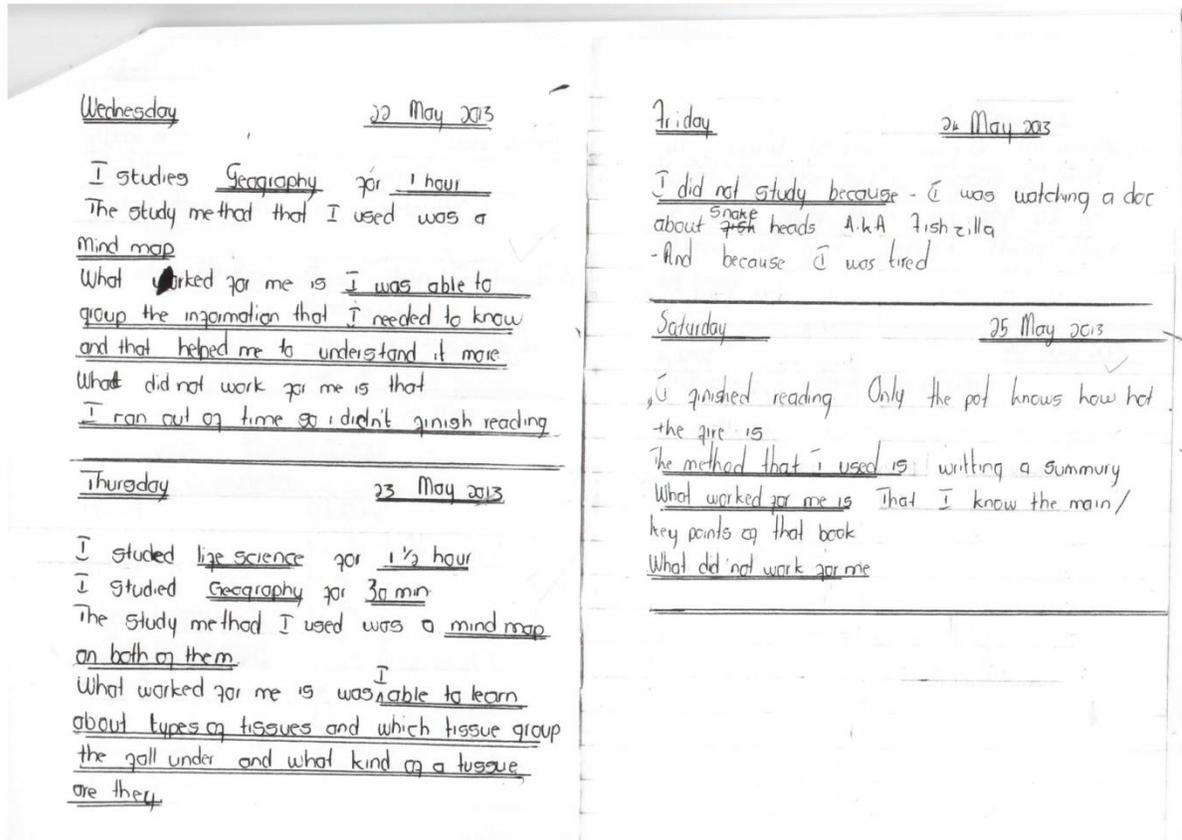
## APPENDIX M:

### EXAMPLE OF A JOURNAL/DIARY ENTRY (STUDENT B2H)

<p>① What is Covalent Bond</p> <p>② Give three types of covalent bond</p> <p>③ Explain each type of covalent bond</p> <p>④ Where does it occur</p> <p>⑤ A diagram</p>	<p style="text-align: center;"><math>\frac{x}{y}</math></p> <p>① It is a chemical bond where pairs of electrons are shared ✓</p> <p>② a) Single ✓ b) Double ✓ c) Triple ✓</p> <p>③ a) Single → 2 electrons are shared one from each atom ✓ b) Double → 4 electrons are shared 2 from each atom ✓ c) Triple → 6 electrons are shared 3 from each atom ✓</p> <p>④ It occurs in non-metals</p> <p>⑤ H and C</p> <p style="text-align: center;">  </p> <p style="text-align: center;">Hydrogen Carbon H<sub>4</sub>C</p>	<p style="text-align: right;"><u>28 May 2013</u></p> <p>I did homework in Physical Sciences for 15 minutes. The time was not enough for so I didn't complete it that means next time I have to increase my time or homework time.</p> <p>I did homework Life Science for 30 minutes. Everything worked well for me.</p>
		<p style="text-align: right;"><u>29 May 2013</u></p> <p>I studied <sup>practiced</sup> Mathematics for 30 minutes. I did home Life Science for 30 minutes. I used <del>the</del> mind mapping strategy. Everything worked well for me.</p>

## APPENDIX N:

### EXAMPLE OF A JOURNAL/DIARY ENTRY (STUDENT G2H)



APPENDIX O:

EXAMPLE OF A JOURNAL/DIARY ENTRY (STUDENT G3L)

<u>Questions</u>	<u>Answer</u>
<u>Covalent bonding</u>	
1) What is covalent bonding	- A bond where pairs of electrons are shared ✓
2) What does it occur in	- non-metals ✓
3) What are the types	- Single, double and tripple Covalent bonding ✓
4) Explain	- two e- can be in the 1 <sup>st</sup> orbital ✗

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25 May 2013

Calculations Physical Science

Formula for calculating

- Speed  $v = D \times t$
- Time  $t = \frac{v}{D}$  or  $t = \frac{1}{f}$
- Frequency  $f = \frac{1}{t}$
- Wave length  $\lambda = D \times t$

Sign that represent

- Speed = v
- Time = t
- Frequency = f
- Wave length =  $\lambda$

30 May 2013

it could be more fun or the methods could be like sort of a game so that we could apply them more. and as we all know we don't forget things that we enjoy.

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25 July 2013

\* lowest score?  
Anxiety - I don't know why

## APPENDIX P:

### Summary of the Psycho-educational Intervention Programme for Adolescents inSchool - Self-Regulated Learning (PIP AS- SRL) PIP AS- SRL Model

PIP-AS modules, SRL process & strategies	Sessions in weeks (2x60 min per week )	Aim	Major activities	
			PIP-AS facilitator	SRL Student
Getting to know myself as a learner (assessment of my learning and study strategy strengths and weaknesses).	2	To identify students' self-knowledge and make them understand their learning and study strategy deficits.	Give students 3-5 minutes to think, reflect about the scores results of their formal informal assessment of their learning and study strategies  Introduce the purpose of the intervention and contact sessions. Refer students to their contracts to check if it is aligned to the intervention and invite them to seek help in this regard. Move around to give individual feedback and guidance.	Individually reflect on your SRL profile and in write two to three lines/point on what you plan to do to improve your learning and study strategies (A contract to and with myself).  Align yourplan (contract to myself) to the purpose of the intervention.
Introductory orientation to the PIP AS- SRL programme concepts :  • <b>Goal setting,</b>	3-4	To introduce the three components of the SRL cycle: <b>Before</b> task: goal setting; planning( use	Ask students to discuss the characteristics/ attributes of an expert in soccer, athletic, academic subject.	Name any familiar person that excels in their field of expertise (soccer, athletics, academic). Mention the persons' attributes 9 (behaviour, beliefs, emotions) which make

<p><i>planning &amp; time management</i> (before performance)</p> <ul style="list-style-type: none"> <li>• <b>Learning strategy</b> (Implement/used during task performance)</li> <li>• <b>Self-monitoring</b> (during task performance)</li> <li>• <b>Self-evaluation</b> (after performance)</li> </ul>		<p>time management strategy</p> <p><b>During</b> task: self-monitoring; implement learning strategies</p> <p><b>After</b> the task: self-evaluation</p>	<p>Be alert of the students' implicit theories about ability and briefly mention research findings by C Dweck's research: growth vs fixed mind set.</p> <p>Use the person that students named as an expert to explain the concepts in the 3 phase SRL model by means of a diagramme.</p> <p>Show the drawing of the three cyclical phases of SRL to explain the process that occur as a person engage in expert performance in sports, music, academics.</p> <p>Explain the purpose of the programme and expectations relating to each of the processes and that each student is expected to do some tasks related to the SRL concepts</p>	<p>them to excel as well as reason why they feel each of the given attribute apply.</p> <p>Read and study the notes on concepts and ask for clarity when needed.</p> <p>Students observe how the drawing is done and copy it on the books</p>
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My goals: (Where to now?What is my target)	5-6	To explain the difference between long and short term (proximal) goals and how to use the journal/diary	<p>Group work on Activity 1: Give students 5 minutes to read the case study: Thabo and then discuss answers to the questions in group.</p> <p>Explain and demonstrate how an athlete like Caster Semenya would set long and short-term goals e.g  Long-term: to be in the team that will compete in the 2015 Olympic (target)  Short-term: to increase my 800m running speed at the end of this week by 10min.</p> <p>Let students do activity 2 under your guidance.</p> <p>Demonstrate how to write goal by using an acronym SMART goal to stress the important of setting Specific, Measurable,</p>	<p>Read the case study, discuss answers in groups of 5 and then report to the large group discussion as requested.</p> <p>Do activity 2</p> <p>Refer to your plan on how to improve your learning and study strategy deficit and to write SMART goals</p> <p>Record the homework task in journal/diary and ask for clarity, if necessary.</p>

			<p>Realistic and proximal goals, which should be acted upon and has a Time-frame. E.g. time-table, work schedule</p> <p>Assign the homework task and explain the expectations</p>	
<p>Goal setting &amp; Planning: Prioritisation and drawing up a study time-table</p>	7-8	<p>To teach students about the SRL processes of first phase of the cycle: <b>Before task</b> Goal-setting &amp; planning time use: Teach how to use goal to prioritize task and use time frame to schedule academic activities</p>	<p><b>Goal-setting&amp;Planning</b> before the learning task/ action. What is my target? Let students check how their daily activities help them or not to achieve their long and short-term goal. Teach students how to use goals to prioritize, e.g. -obtain 80% pass in Maths in the June exam in 2014 - study Maths daily for 45 min; revise all the work at least 5 days before the test/exam. -explain that they need to keep</p>	<p>List activities that you engage in on daily basis in order of priority. Tick those that relate to self-set goals (Activity 4 and goal setting tool) and consider them as priorities.</p> <p>Adapt the list by deleting those that do not help you achieve your goals (i.e. reprioritize or review your goals).</p> <p>Emulate what has been demonstrated regarding checking goals that have been achieved.</p> <p>Set-short term goal and enter the information in the journal/diary while the facilitator is assisting where necessary.</p>

			<p>checking how far they are from achieving their long-term and short term goal by “self-talk”= am I still on track, e.g. marathon runner will look at the watch to see how he is doing; soccer striker will keep the ball in position before scoring it during penalty kick</p> <p>Show students how to complete the goal-setting activity in the journal/diary</p>	
<p>Self-efficacy :(Do I believe or not that I can get there or be able to get there?)</p>	9-10	<p>To teach students to identify causes for achieving/not achieving the goals that you set for themselves.</p>	<p>Let the students list on a scale of 1-5 their belief about achieving the listed goals, and explain why they hold the belief.</p> <p>Ask students to think and look back at their past performance, list subjects they have done well in (passed), the subjects they did not do well in (not achieved/failed)</p>	<p>Complete the task on self-efficacy scale regarding personal goals and explanations for the efficacy beliefs (e.g. I do not believe that I will be able to complete the 800m race today because I did not train well enough).</p> <p>Individually change the negative self-statements, write them down and in pairs share with your neighbour to assist where possible.</p>

		<p>and write reasons/ causes for the kind of performance in each case.</p> <p>Classroom discussion classify/ categorize the reasons into things/ events that you can change and control (controllable) and those that you cannot change and control (uncontrollable). For example, doing your homework/ studying (controllable); luck (uncontrollable), belief like "I cannot achieve anything"</p> <p>Changing the statements: what I say and belief about myself (academic achievement).</p> <p>Stress the need for using effective strategies.</p> <p>Teach the students to change negative self statement, include use of song.</p>	
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			<p>Inform and demonstrate how to include information on self-belief when recording in journal/diaries.</p>	
<p>Motivational strategies (I want to get there)</p>	<p>11-12</p>	<p>To teach strategies that help to enhance students' motivation</p>	<p>Teach and demonstrate about how to make boring task interesting by using imagery and self-talk (taking the self- set goals create an image of you being where you want to be).</p> <p>Ask students to state other possible strategies (e.g. change the place where you study and time schedule)</p> <p>Show how to use self-talk like "Why do I engage in the task?" Use the acronym: "WIN for me!" for What's IN for me as well as an answer to the question.</p> <p>Encourage students to use the above strategies always when they</p>	<p>Emulate the facilitator's self talk.</p> <p>Imagine yourself having achieved your goal; think of what your WIN (prize, outcome) would be, feel as if you are there!</p> <p>List and discuss other possible strategies with each other and then with the facilitator.</p> <p>Use the suggested strategies, including their own when they are about to feel disinterested or discouraged about the learning task during learning and keep a record in the journal</p>

			are about to feel disinterested or discouraged about the learning task, and remember to include a record of how they implement the motivational strategies in the journals/diaries.	
Planning and time management (What resources do I need?)	13-15	To show students how to use time frame to draw up an academic schedule,	<p>Discuss where planning and time management fit in with the SRL cycle and relate to other SRL process like goal setting.</p> <p>Lead the discussion on how to do a list of daily and weekly activities that most students engage in and reasonable time allocation for completing the different tasks. Stress that the appropriate to call it a work/ activity schedule instead of study schedule since it involves all activities</p> <p>Demonstrate and guide students on</p>	<p>Examine the list of daily activities, select those that apply to you and plan a time schedule according to your priorities that are determined by your long term and short term goals.</p> <p>List all daily, weekly activities and time that you spend on each. Arrange the list according to order of priority</p> <p>Homework application: Relook at the list and monitor how you spent time over a week. Evaluate yourself and adapt the time allocation according to the actual time spend.</p> <p>Draw up a weekly time schedule that include all activities ( studying, household chores, leisure, etc</p>

			<p>how to plan and develop a weekly learning and study time schedule.</p> <p>Assign homework task on time planning in terms of drawing up a weekly study time-table/ work schedule and explain the expectations.</p> <p>Check student' homework at random and give individual and group feedback to the things that need to be improved. Show students how to monitor their time use and record in the journal/diaries.</p> <p>Discuss time planning relating to test and exams. Review the prioritization list of activities in order to include monthly; quarterly activities like tests and exams.</p> <p>Demonstrate on</p>	<p>Effect the suggested changes on the original study time schedule and implement it continuously and accordingly as required (self monitor, self-evaluate and keep record in the journal /diary).</p> <p>Practice on how to draw the exam study schedule in groups.</p> <p>Submit homework and adapt as the feedback suggested.</p>
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			<p>how to draw a study schedule that includes study time for tests and examinations.</p> <p>Assign homework task on time planning in terms of drawing up exam study timetable/work schedule. Check homework task and give group feedback</p>	
Self- monitoring: (How am I doing so far?)	16-17	Teach about what, how and when to engage in self-monitoring long and short goals	<p>Explain self-monitoring as an approach that people use to check whether they are still on track and keeping a record thereof.</p> <p>Introduce the use of diary and how it links with self-monitoring and help with self-evaluation</p> <p>Demonstrate to students on how to complete the journal/diary</p>	<p>Engage in self-monitoring while performing academic tasks or implementing/using the strategies during learning.</p> <p>Keep a record by completing the daily self-monitoring too land submit it to the facilitator to give you feedback when required.</p>
Learning strategies: (What, how and when	18	To teach about some of the effective	Explain that like experts, SRL people have a	

<p>should I use which method?)</p>		<p>learning and study methods that the students need to use to be effective and strategic like people in other fields of expertise.</p>	<p>repertoire of learning and study strategies and therefore use effective methods to learn and study, they have knowledge of what to use (declarative) how to use (procedural) and when to use which strategy (conditional), and this is what they will learn through the programme.</p> <p>Refer students to their SRL profiles and goals, explain how strategies would assessment scores/ prior knowledge of SRL skills</p>	
<p>Learning strategies How memory works; how to enhance memory and strategies for review</p>	<p>19</p>	<p>Explain how information is processed and stored: short and long-term memory and the important/key processes</p>	<p>Give a brief demonstration of how short-term memory works, e.g. remembering telephone numbers Use diagram to explain the memory process and the importance of focusing attention (concentration),</p>	<p>Exercise on short term memory</p>

			organising information to be stored, rehearsing and review	
	20-23	Teach about the what, how and when to use organisation strategies : (mind-map, the SOAR technique)	<p>Explain the strategy.</p> <p>Model how to use the strategy.</p> <p>Let the student practice how to use the strategy in class while you randomly give feedback to individuals.</p> <p>Provide group feedback of your classroom observation on the use of the strategy.</p> <p>Ask students to use the strategy independently, monitor and evaluate the use</p>	<p>Create a rhyme or rap the SOAR stages to make it easier for you to remember it.</p> <p>Use the strategy at least twice and ask for clarification when necessary. Record your implementation in the journal/diary.</p>
	24-25	Teach about the what, how and when to use Strategies for retrieving information from long-term memory: (mnemonics- acronyms & acrostics)	<p>Explain the strategy.</p> <p>Model how to use the strategy.</p> <p>Let the student practice how to use the strategy in class while you randomly give feedback to individuals.</p>	<p>Create a rhyme or song to make it easier for you to remember he strategy.</p> <p>Use the strategy at least twice and ask for clarification when necessary. Record your implementation in the journal/diary.</p>

			<p>Provide group feedback of your classroom observation on the use of the strategy.</p> <p>Ask students to use the strategy independently, monitor and evaluate the use</p>	
	26	Teach about the what, how and when to use Strategies for reviewing: 5 stages of self-testing	<p>Explain the strategy.</p> <p>Model how to use the strategy.</p> <p>Let the student practice how to use the strategy in class while you randomly give feedback to individuals.</p> <p>Provide group feedback of your classroom observation on the use of the strategy.</p> <p>Ask students to use the strategy independently, monitor and evaluate the use</p>	<p>Create a rhyme or song to make it easier for you to remember he strategy.</p> <p>Use the strategy at least twice a week, and ask for clarification when necessary. Record your implementation in the journal/diary.</p>
Test taking strategies: before, during and after taking	27-28	Teach about the what, how and when to use strategies	What to do before writing a test and exam: Check for your negative belief	Implement the strategies and record results of your self-observation in the journal/diary.

<p>the test</p>		<p>on how to prepare and write test in line with long and short goals</p>	<p>about your capacity to do well and change accordingly, reflect on your long-term goal, plan your study time and review schedule, anticipate possible questions and ask for help on the work that you are unclear about, etc.</p> <p>Don'ts before writing a test and exam: do not study throughout the night, do not discuss possible questions and answers or what you know/don't know with peers to avoid excessive anxiety etc</p> <p>What I need to do during: Be calm and use imagery and breathing exercises to relax; read question carefully, use and monitor your time well, etc</p> <p>Don'ts after a test and exam: do not</p>	
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			discuss how you answered questions and or what you wrote with peers to avoid excessive anxiety etc	
Self-evaluation :( How will I know that I am getting closer or have arrived?)	29	Teach about self-evaluation, what it is, how and when to use self-evaluation in line with long and short goals	Explain that SR learners engage in self-evaluation after every week/month/term to check how they achieved their goal and to see if there is any need to change future plans or actions in order to improve performance.	Engage in self-evaluation at the end of every week, month term to check your progress against your achievement and your goal. See whether you need to change plans or actions in order to improve in future.
Getting there, going further  Post-intervention evaluation of the students' SRL	30	Encourage students to continue using and reflecting on their actions.	Observe how student implement the strategies and offer feedback and encourage them to review goals and revise plans when necessary	Reflection Review, Independent study and further implementation during classroom learning

Note for the facilitator:

- The sessions should preferably be held after school on consecutive weeks. Students need to be allowed sufficient time for practice during and after school.
- The sessions 1-4 should be compulsory to all students to help them gain valuable information about the characteristic or attributes that are linked to experts. Information on session 3-4 are key to SR process and should always be referred to and mentioned when introducing learning strategies.

- The session on motivational strategies and test-taking strategies can be offered separately to student at-risk of failure.

## **APPENDIX Q:**

### **CASE STUDY FOR PIP AS-SRL PROGRAMME**

#### **Activity 1:**

Thabo is in Grade 10 at a school where his eldest brother attended. He lives with his parents and three siblings (one brother and two sisters). His home is far from school uses the bus to travel to school which is available for free to students who lives far. Like his sibling, Thabo is expected help with household chores like cleaning everyday before he goes to play with friends. He loves soccer and played in the team at primary school. He wishes to be selected for the junior team at high/secondary school and eventually, one of the national team. Therefore, has to undergo a rigorous training to become fit and meet the requirements for selection. Thabo is much disciplined when it comes to soccer because he attends practice regularly after school and never missed any session. However, he is very reluctant when it comes to school work. He likes to socialize with friends and watch soccer TV instead of doing his school work. He always has to be reminded to do homework which is often incomplete. He does not study but do last minute (day before) cramming during test and exam time. Thabo's wish is to continue with soccer at the tertiary institution and study sport science at the University of Pretoria in order to get access to its excellent sports facilities at the high performance centre. Thabo does not only have to be good in soccer to reach his dream but also need to obtain good results in Matriculation in order to be accepted at the university.

Questions:

1. Identify Thabo's strengths and weaknesses

Strengths	weaknesses

2. Where would Thabo like to be in 4 years time? To what is his belief about his capacity to get there? What must he do now in order to get there?
3. You need to assist Thabo to fulfil his dream by listing the things that he needs to do and provide a reason ( what's in it for him) in each case to make him understand how that will help.

### **Activity 2: Goal-setting:**

Help Thabo to set long-term and short-term goals

Long- term goal	Short-term goals

### **Activity 3: Writing SMART goals (Class discussion)**

### **Activity 4: Homework (individual)**

Use the score/results of your assessment on learning and study strategies to set your long and short- term goals and bring the task to the next session/group meeting. Please do not hesitate to ask your teacher/peer to help you or to show you what to do.