

## CHAPTER TWO

### SELF-REGULATED ACADEMIC LEARNING

#### 2.1 INTRODUCTION

Self-regulated learning is an important variable that influences academic achievement. Self-regulated academic learning is defined and reviewed in this chapter, followed by a discussion of the social cognitive assumptions underlying self-regulated learning in paragraph 2.3. Triadic reciprocity is discussed in paragraph 2.3.1, self-efficacy in paragraph 2.3.2, and the subprocesses of self-regulated learning in paragraph 2.3.3. The relationship between self-observation, self-judgment, and self-reaction is discussed in paragraph 2.3.3.4, and the determinants of self-regulated learning in paragraph 2.4. The self-regulated learning strategies are discussed in paragraph 2.5.

#### 2.2 A DEFINITION OF SELF-REGULATED LEARNING

*Example: 2.2.2*  
Students can be described as self-regulated to the degree that they are metacognitively, motivationally and behaviourally active participants in their own learning process (Zimmerman, 1986:308; 1988:3; 1989:329; 1990:5; Schunk, 1990:71). Metacognitively, self-regulated learners are persons who plan, set goals, organize, self-instruct, self-monitor, and self-evaluate at various stages during the process of learning (Zimmerman, 1986:308). This process enables the learners to be self-aware, knowledgeable, and decisive in their approach to learning (Zimmerman, 1990:5). Motivationally self-regulated learners perceive themselves as competent, self-efficacious, and autonomous. Self-regulated learners are self-starters who display an extraordinary effort and persistence in learning (Zimmerman, 1990:5). Behaviourally, self-regulated learners select, structure, and create environments that optimize learning, they seek out advice and information, they self-instruct during acquisition and self-reinforce during performance enactments (Zimmerman and Martinez-Pons, 1992:186; Rohrkemper, 1989:144).

Zimmerman (1990:5) discusses several features that characterize definitions of self-regulated learning. According to Zimmerman (1990:5), the first step in defining self-regulated learning is to distinguish between self-regulation processes such as perceptions of self-efficacy and strategies designed to optimize these processes, such as intermediate goal-setting. Self-regulated learning strategies refer to actions and processes directed

towards the acquisition of information or skills that involve agency, purpose, and instrumental perceptions by learners (Zimmerman, 1990:5). All learners use regulatory processes to some degree, but self-regulated learners are distinguished by their awareness of the strategic relations between regulatory processes and learning outcomes, and their use of these strategies to achieve their academic goals (Rohrkemper, 1989:145; Zimmerman, 1990:5).

According to Zimmerman (1990:5), the second feature in defining self-regulated learning is a self-oriented feedback loop. This loop entails a cyclic process in which students monitor the effectiveness of their learning strategies and react to this feedback in a variety of ways. The cybernetic feedback loop involves the process of behavioural self-regulation implemented through the use of strategies to acquire knowledge and skill, which is also true of personal and environmental self-regulation (Carver and Scheier, 1982:238).

Carver and Scheier (1985:238) explain the self-regulation of behaviour in terms of the principles of cybernetic control. They (Carver and Scheier, 1985:239) assume that the self-regulatory efforts of the human being reflect an ongoing comparison of behaviour against salient behavioural standards and the attempt to bring the one into correspondence with the other. These activities illustrate the functions of a negative, or a discrepancy-reducing feedback loop, the basic unit of cybernetic control.

A precondition for the self-regulation of behaviour is the inward focussing of attention to the self (Carver and Scheier, 1985:242). This inward focussing of attention causes a person to compare his or her ongoing behaviour or state to a specific standard (Carver and Scheier, 1982:158). If a discrepancy is perceived between ongoing behaviour and the standard, action is taken to bring the ongoing behaviour into closer correspondence with the standard (Carver and Scheier, 1982:158). Self-attention seems to produce a closer match between behaviour and the standard associated with it (Carver and Scheier, 1982:158). Self-focus is thus a prerequisite for the feedback loop to be activated (Carver and Scheier, 1982:161).

Although Carver and Scheier (1982:159) describe the feedback loop as a negative feedback loop, Zimmerman (1990:5) stresses that it (the feedback loop) can also be viewed as positive when it seeks to reduce differences between one's goals and observed outcomes. The feedback loop thus reports a positive feedback effect as well, and seeks to raise one's goals based on observed outcomes (Zimmerman, 1990:5).

A third feature of definitions of self-regulated learning is an indication of how and why students choose to use a particular strategy (Zimmerman, 1990:6). Self-regulated

learning also involves temporally delimited strategies, therefore students' efforts to initiate and regulate them proactively require preparation time, vigilance and effort (Zimmerman, 1990:6). Unless the outcomes of these efforts are sufficiently attractive to students, the students will not be motivated to self-regulate their learning.

### 2.3 SOCIAL COGNITIVE ASSUMPTIONS UNDERLYING SELF-REGULATED LEARNING

Social cognitive theorists postulate three assumptions that underlie student self-regulated learning (Bandura, 1985:267; 1986:23; Schunk, 1989b:84; Zimmerman, 1989:330) i.e., triadic reciprocity (among personal, environmental, and behavioural variables), self-efficacy and the existence of the subprocesses of self-observation, self-judgment and self-reaction.

#### 2.3.1 TRIADIC RECIPROCALITY

The social cognitive view of student's self-regulated learning (Bandura, 1978:346; 1986:23; Zimmerman, 1989:30; Schunk, 1989b:84) assumes the reciprocal causation or determinism among three sets of variables: viz., personal, environmental, and behavioural variables. (See figure 2.1). Bandura (1982:749; 1985:268; 1986:24) contends that determinism means that human personality and behaviour are influenced by the internal state of cognition, that determines which environmental events will be perceived, evaluated, and acted upon. The term reciprocal determinism is used to suggest a multiple interaction of environment, behaviour, and personal variables (Bandura, 1986:23). With reciprocal determinism (Bandura, 1986:23), personal self-regulation, environmental self-regulation and behavioural self-regulation operate interactively as determinants of each other (Bandura, 1985:267).

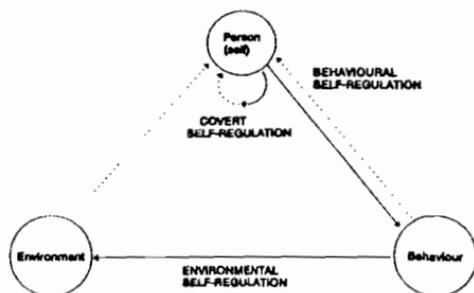


FIGURE 2.1: A triadic analysis of self-regulated functioning (Zimmerman, 1989:330).

### **2.3.1.1 Personal self-regulation**

Self-regulated learning occurs to the degree that a student can use personal (i.e., self-) processes to strategically regulate his/her behaviour and the immediate learning environment (Zimmerman, 1989:330; Bandura, 1986:454). Self-regulated learning is not only influenced or determined by personal processes, but also by environmental and behavioural variables in a reciprocal fashion. Reciprocity though, does not mean equality in strength. Environmental influence may be stronger than behavioural or personal influences at certain points during behavioural interaction sequences or vice versa (Zimmerman, 1989:330). In schools with a highly structured curriculum, for example, many forms of self-regulated learning such as student planning may be stifled by teachers who are very directive. Conversely, in classes in which situational constraints are limited, such as less directive teachers, personal or behavioural factors may be the dominant influence regulating functioning (Zimmerman, 1989:330). Self-regulated learning thus occurs to the degree that a student can use personal processes to strategically regulate his learning behaviour and the immediate learning environment (Zimmerman, 1989:330).

There are three general classes of strategies for increasing personal self-regulation viz., strategies designed to control personal (paragraph 2.4.1), behaviour (paragraph 2.4.2) and the environment (2.4.3) processes (Zimmerman, 1989:330).

### **2.3.1.2 Behavioural self-regulation**

Behavioural self-regulation involves a student's proactive use of learning strategies such as a self-evaluation strategy (Zimmerman, 1989:330). For example, checking math homework, etc., will provide information about accuracy and whether checking must continue through enactive feedback or not. (see paragraph 4.3.1.1). The process of behavioural self-regulation is personally (self-) implemented through the use of strategies to acquire knowledge and skill through a cybernetic feedback loop (see paragraph 2.2).

### **2.3.1.3 Environmental self-regulation**

Environmental self-regulation involves a student's proactive use of a strategy to manipulate the environment to make it more conducive for task completion (Zimmerman, 1989:330). The process would involve, for example, eliminating noise by turning down a radio or asking other people in the room to keep quiet to improve concentration or moving from a noisy house to a quiet environment, and arranging adequate lighting to promote effective studying (Zimmerman, 1989:330; Bandura,

1986:25). The continued use of this structured setting for learning would depend on the perception of its effectiveness in assisting learning, for example, if a student can concentrate better on his academic task because of less noise, such a strategy would be continued.

### 2.3.2 SELF-EFFICACY

Self-regulated learning is dependent upon students' self-efficacy beliefs. Self-efficacy (see paragraph 4.2, for a more complete discussion of self-efficacy) is defined as a student's expectations that he/she is capable of performing the behaviour that will produce desired outcomes in a particular situation (Bandura, 1977a:193; 1985:275).

According to Schunk (1988:4), a sense of self-efficacy for learning can help to explain students' self-regulated learning efforts. For example, high self-efficacy stimulates efforts and persistence when problems are encountered, while low self-efficacy leads to doubts, avoidance techniques and a lack of effort (Schunk, 1991:121). Students with high self-efficacy may also choose difficult courses, such as mathematics and physics while those with low self-efficacy may avoid them (Schunk, 1988:5). High self-efficacy students believe that they can learn effectively while those with low self-efficacy regard themselves as poor learners (Bandura, 1977a:193; 1985:275). Thus students with strong self-efficacy beliefs will be more self-regulated than students who feel less self-efficacious because self-regulated learning requires students who believe in their own abilities.

### 2.3.3 THE SUBPROCESSES OF SELF-REGULATED LEARNING

Social cognitive theorists assume that self-regulation involves and is dependent on three classes of cognitive subprocesses: viz., self-observation, self-judgment, and self-reaction (Bandura, 1986:34; Zimmerman, 1989:331; Schunk, 1989b:88). These performance-related subprocesses are assumed to interact with each other in a reciprocal fashion (Schunk, 1989b:88).

#### 2.3.3.1 Self-observation

Self-observation refers to students' systematically monitoring their own performance. While performing a task, observing oneself can provide information about how well one is progressing towards one's goals (Zimmerman, 1989:333). For example, when writing an essay, students can test themselves on how long it takes them to complete the task and assess whether they have covered all the aspects or points they have to put in the essay.

Self-observation is assumed to affect self-judgment of one's progress towards one's learning goals. These instances of self-judgment are expected to determine one's subsequent willingness to continue this self-observation practice (Zimmerman, 1989:331).

#### *2.3.3.2 Self-judgment*

Merely observing oneself while performing a task has no value. Self-observation only has value if it is followed by self-judgment. Self-judgment refers to students' responses that involve systematically comparing their performance with a standard or goal (Zimmerman, 1989:333). This view assumes that students must also self-judge or evaluate their performance if there is any progress. For example, as a learner completes a comprehension test, he/she can judge his/her understanding by answering the questions given and comparing the answers with those given by the teacher or those of his fellow students.

#### *2.3.3.3 Self-reaction*

According to Zimmerman (1989:334), self-reaction occurs when a learner reacts to the outcome of self-judgment by changing his learning strategies such as rehearsing and memorizing because these strategies do not prove to be appropriate for the comprehension required by the specific task.

Self-reaction is achieved by responding evaluatively to the results or outcomes of one's own actions (Bandura, 1977a:123). The development of evaluative standards and judgemental skills establishes the capability for self-reactive influence, and conveys a sense of progress to learners. Students pursue courses of action that produce positive self-reactions and refrain from behaving in ways that result in self-censure (Bandura, 1986:350).

#### *2.3.3.4 The relationship between self-observation, self-judgment and self-reaction*

There is a direct relationship between self-observation, self-judgment, and self-reaction. Self-observation alone does not provide a sufficient basis for regulating a student's behaviour, it also requires judging the effectiveness of one's learning on the basis of progress towards attaining the goals one has set (Bandura, 1985:270). Self-observation, self-judgment, and self-reaction thus interact with one another (Zimmerman, 1989:331).

Schunk (1994:2) points out that at the start of a learning activity such as completing an academic task, students may set certain goals such as acquiring skills and knowledge, finishing the task, and making good grades. During the learning activity, students observe, judge, and react to their perceptions in goal progress (Zimmerman, 1989:331). Thus as students observe their progress towards their learning goal, they judge their progress against some standards. If students judge that their strategies are effective and will ensure the successful attainment of their goal, they will continue with such strategies. If however, students judge that they are going to fail in attaining their goal, they may change their strategies to more effective ones (Schunk, 1989b:85; Bandura, 1986:394).

Students react positively or negatively to the outcome of their self-judgment. When students react positively and believe they are capable of improvement, they set higher goals and perform with greater effort and persistence in academic tasks (Schunk, 1991:91). When students react negatively, their motivation will decrease and they will believe that they are not capable of improving, but if they believe that enhanced effort will promote progress, they are apt to feel efficacious and sustain motivation (Schunk, 1994a:2).

### ***2.3.4 SELF-REGULATED LEARNING IS NEVER ABSOLUTE***

Zimmerman (1989:332) assumes that self-regulated learning is never an absolute state of functioning but that it varies in degree, depending on the degree to which the student can exert strategic control over each of the personal, environmental and behavioural determinants or variables that influence learning. Only when a student can exert sufficient control over these variables can his learning be described as self-regulated. If a student can't control one or more of these variables when, for example, his learning is regulated by a teacher who prescribes what, how and when he should learn, such learning can't be described as self-regulated. Self-regulated learning thus requires sufficient freedom to regulate one's own learning.

## ***2.4 THE DETERMINANTS OF SELF-REGULATED LEARNING***

Self-regulated learning is determined by personal, behavioural and environmental influences.

### **2.4.1 PERSONAL INFLUENCES**

In accordance with social cognitive theory, self-regulated learning depends on a variety of personal influences that can change with teaching or development, such as one's level of knowledge and metacognitive skills (Zimmerman, 1989:332; Bandura, 1986:231). Personal influences involve each of four types of variables: viz., students' knowledge e.g. declarative or propositional knowledge, self-regulative knowledge, e.g., procedural and conditional knowledge, metacognitive processes and goals (Zimmerman, 1989:332).

#### **2.4.1.1 Declarative knowledge**

Declarative knowledge involves a student's knowledge about things, facts, beliefs, and events (McKeachie, Pintrich and Lin, 1985:154; Weinert and Kluwe, 1987:245). A student might know that topic familiarity and prior knowledge influence reading speed and comprehension or that rereading facilitates long-term memory (LTM) (Jacobs and Paris, 1987:259).

#### **2.4.1.2 Self-regulative knowledge**

Self-regulative knowledge is assumed to have both procedural and conditional qualities (Zimmerman, 1989:332). Procedural knowledge refers to a student's knowledge of the process of learning (Jacobs and Paris, 1987:259). A student can know how to skim, how to use context, how to underline, and how to summarize, or how to find the main idea while reading (Weinstein *et al.*, 1988:134; also see paragraph 3.5.1.2).

Conditional knowledge is defined as the knowledge to know when and why to use learning strategies (McKeachie *et al.*, 1985:154). Students will be more likely to use a particular strategy in an appropriate situation if they have the conditional knowledge of why it works. For example, students can become aware of the value of periodic paraphrasing as a means for monitoring comprehension when, after having used the strategy they can observe some progress in their task (Shuell, 1990:537; Jacobs and Paris, 1987:259; see paragraph, 3.5.1.3).

#### **2.4.1.3 Metacognitive processes**

Metacognitive processes involve, amongst others, planning strategies (Zimmerman, 1989:332). Planning refers to the cognitive processes that function in the control of information processing (Schmitt and Newby, 1986:29). Planning is goal related. If a student plans to attain a goal he needs knowledge of the task and of himself as a learner.

Planning also involves the initial selection of relevant learning strategies to accomplish the learning task (Jacobs and Paris, 1987:259). For example, students who must prepare an oral report can choose to use outlining and summarizing as appropriate strategies for organizing and remembering the information. The students can also adjust their rate of reading speed and standards of comprehension according to the purpose of the task and the constraints that are imposed (Cross and Paris, 1988:132; Andrews and Goodson, 1980:8).

#### **2.4.1.4 Goals**

Goals are differentiated into distant and proximal goals by distinguishing between their projections into the future (Bandura, 1986:474; also paragraph 4.3.2.9). Distant goals serve a general directive function, while proximal goals determine students' immediate choice of learning activities and how hard they will work on them and how self-regulated they will be (Ames, 1992:263). The effects of proximal goals are impressive because they enhance higher self-efficacy in comparison with distant goals (Zimmerman, 1989:333).

Manderlink and Harackiewicz (1984:920), for example, gave students normative information on word puzzles, and asked them to set a proximal goal (such as completing a specific puzzle) or a distant goal (to complete all puzzles). Expectations for goal attainment were assessed during a pretest and twice during trials. Following the experiment Manderlink and Harackiewicz (1984:920) concluded that when students had to judge perceived competence, proximal goal students judged expectation of goal attainment and perceived a higher competence than distant goal students.

According to Zaleski (1988:563), goals have a regulatory power over behaviour. Setting goals lead to improved performance in academic tasks. Goals influence action by directing attention, fostering strategy development, mobilizing effort, and by increasing persistence (Locke, Shaw, Saari and Latham, 1981:127). As learners pursue goals, they are apt to engage in appropriate activities, attend to strategies or instructions, persist and expend effort. These motivational effects increase in task achievement and behaviours (Schunk, 1991:91).

#### **2.4.2 BEHAVIOURAL INFLUENCES**

Zimmerman (1989:333) asserts that self-observation, self-judgment, and self-reaction (paragraph 2.3.3) are regarded as behavioural influences that determine self-regulated learning.

#### *2.4.2.1 Self-observation*

Self-regulated learning is influenced by behavioural or self-observational processes such as the verbal and quantitative recording of one's actions and reactions (Zimmerman, 1989:333). For example, after reading a novel/text, a student could relate all that he has been reading to his teacher orally or in writing. Another example is when a learner reads a text aloud, or softly, fast or slowly, and tapes his reading to check the fluency of reading.

Self-observation motivates students to maintain a sense of self-efficacy for goal attainment by recording what they do while completing an academic task and evaluating the effectiveness of what they do (Zimmerman, 1989:333). According to Bandura (1986:338), self-observation serves an important function in the process of self-regulation by providing the information necessary for setting realistic performance standards and for evaluating ongoing changes in behaviour (Bandura, 1985:270).

#### *2.4.2.2 Self-judgment*

Students' self-judgment of their academic achievement affects their learning, motivation and self-efficacy (Zimmerman, 1989:334). The common example of students' self-evaluation is when they check the quality of their academic work while writing an essay; i.e. whether they have stated important ideas, and whether they have integrated ideas in an unusual fashion.

Learners are capable of judging the progress of their action on the basis of goals they have set for themselves as they progress to attain that goal (Bandura, 1985:270). The goals become the standards which are used as criteria to determine whether they are making progress or not. The discrepancy between the level of achievement and the goal set gives an indication whether progress is being made and how much progress has been made or what should be done to make progress.

#### *2.4.2.3 Self-reaction*

If a student judges that no progress has been made because of an unsuitable learning strategy, such as rehearsal when an organizational strategy should have been used, the student self-reacts by changing to the organizational strategy. Self-reaction to goal progress motivates behaviour (Schunk, 1990:73).

### 2.4.3 ENVIRONMENTAL INFLUENCES

Environmental influences refer to the influence of the social and physical context on students' behaviour (Zimmerman, 1989:335).

#### 2.4.3.1 *The social context*

In general, the social context includes people such as teachers, parents, other adults, fellow students, brothers and sisters who encourage/stimulate learning (Anderson, Wilson and Fielding, 1988:286). Specifically, the social context involves modeling; direct assistance from teachers, other students and adults; verbal persuasion by teachers and students themselves, and other symbolic forms of information such as diagrams, pictures and formulas (Zimmerman, 1988:22; 1989:336). If learning occurs in a school setting, it is in a learning group and occurs between teacher and students (Armbruster, Anderson and Ostertag, 1987:332).

##### 2.4.3.1.1 *Modeling*

Modeling is an important means of acquiring skills, beliefs, and novel behaviour (Schunk, 1987:149). The modeling of effective self-regulated strategies, for example, can improve the self-efficacy of even deficient learners, because by seeing their equals performing a task successfully, they may feel that they could perform it as well. This could motivate them to try harder (Zimmerman, 1988:21; 1989:335; Bandura, 1986:400). Much of the learning in classroom situations occurs by observing the actual performances of others and the consequences of such performances (Bandura, 1986:48).

Schunk (1987:162) discusses the influence of mastery and coping models. Mastery models demonstrate faultless performance from the outset, whereas coping models demonstrate the typical fears and deficiencies of observers (e.g., inability to approach a difficult task), and how they (the models) gradually improve their performances and gain self-confidence for an academic task. Coping models may be especially beneficial for children who have previously encountered difficulties in the learning or performance of academic tasks. As they (children) see their peers perform a task well they may feel they could also perform it well (Schunk, 1987:162). Coping models are better examples than mastery models of how determined effort and positive self-thought can overcome learning difficulties (Vernon, 1974:795; also see paragraph 4.3.2.1).

#### *2.4.3.1.2 Verbal persuasion*

According to Bandura (1986:400), verbal persuasion involves talking students into believing that they possess the capabilities which will enable them to achieve their goals (also see paragraph 4.3.2.2). Verbal persuasion can facilitate learning because it directs students' attention to important academic tasks (Schunk, 1988:10). Students who are persuaded verbally that they possess the capabilities to master given tasks, are likely to mobilize a greater sustained effort than if they harbour self-doubts and are not persuaded (Bandura, 1986:400). Verbal persuasion is an important strategy to motivate students to try harder to succeed, and promotes the development of skills and a sense of personal efficacy (Schunk, 1988:11).

#### *2.4.3.1.3 Direct assistance*

Direct assistance involves direct support from teachers, other students or adults to complete academic tasks (Zimmerman and Martinez-Pons, 1986:615). Teachers, for example, are a very important part of the social context that determines how students approach writing tasks (Bond and Hayes, 1984:148). Teachers who show that they care about the quality of the student's writing, perhaps by requiring drafts and talks or discussions, or perhaps demonstrate in other ways that they pay attention to the quality of a student's texts, elicit far more productive effort from students than lazy teachers at some secondary schools in black townships, who instigate their students to boycott classess. Teachers, can provide positive social support for students' achievements by indicating plainly and frequently that they care very much about their students' achievements. Teachers, for example, can help students complete assignments by advising them to reread after writing, and reviewing information from literature sources by reading and understanding (Zimmerman and Martinez-Pons, 1986:615-616). Teachers can also teach students the value of self-regulated strategies such as creating a conducive area for study. Students can also get direct assistance from other students by means of discussions and comparing their learning tasks. Parents should also assist by checking their children's classwork and homework to make them (children) realize the importance of learning and to encourage them to work hard.

#### *2.4.3.1.4 Symbolic information*

Symbolic information involves information such as diagrams, pictures and formulae (Zimmerman, 1988:22; 1989:336). Students can put diagrams and pictures in the classroom on the chalk board, or on the wall and discuss them in a group. Students, for

example, who see a diagram of the lungs and heart will find it easier to recall and label the names of the different veins that should appear on the diagram. This will enable each one of them to have a chance to participate in the process of learning. The picture of a ball under or on the table, can teach students how to use prepositions. Students will see the ball "under" and "on" the table without the interference of a teacher or any other person. Students can achieve better results in using prepositions if they work together and correct one another's mistakes from the picture. Lastly, the diagrams of theorems in mathematics can also help students to solve or calculate the distance between lines or to prove that the two opposite sides of a rectangle are equal. A student, for example, can be given a rectangle "ABCD" with the two opposite sides equal, that is, side "AB=CD", and side "AC=BD" etc. A student will look at the diagram and see that the two long opposite sides "AB" and "CD" are equal and that the two short opposite sides "AC" and "BD" are equal without the teacher or any other person's explanations.

#### 2.4.3.2 *The physical context*

According to Hayes (1990:249) and Zimmerman (1988:23; 1989:336), the physical context determines the structure of the learning environment. An adequate physical environment is an important variable that influences learning. The inadequate housing and overcrowding characteristic of poor people cause a child to have little privacy or room to study (Booyse, Derbyshire, Pauw, Smith and Van Wyk, 1991:126). The child's homework is done against a background of noisy children, radios or television. Such a background is common where the environmentally-deprived child is often found (Booyse *et al.*, 1991:126), and is detrimental to self-regulated learning because of overcrowding, excessive noise and the lack of facilities. To promote self-regulated learning, the child should be advised to study when other occupants are sleeping or absent or to find a place more conducive to studying, such as school which provides study facilities after formal school hours, a condition found in many black communities.

Students can also change the academic setting from overcrowding to an organized place for studying by delimiting distracting stimuli, for example, children playing outside the window, or a blaring radio which promotes insufficient concentration (Wang and Peverly, 1986:372; Zimmerman, 1989:336; Henderson, 1986:406).

##### 2.4.3.2.1 *The structure of the learning task*

The structure of the learning task refers to the complexity of the academic task and to the academic setting (Zimmerman, 1989:336). When a student, for example, changes an

academic task to increase its level of difficulty by supplying information that only very bright students would be able to solve, e.g., a maths problem, he is expected to effect self-regulated learning. The same problem (task) can be made easier by giving more information so that all the students in a class may solve it (also see paragraph 4.3.2.7 where the learning or academic task is discussed more in details).

## 2.5 SELF-REGULATED LEARNING STRATEGIES

Self-regulated learning strategies are defined as actions and covert processes directed at acquiring information or skills that involve agency, purpose and instrumental perceptions by learners (Zimmerman, 1988:4; 1989:329; Schunk, 1989b:84). This definition of self-regulated learning strategies includes methods such as organizing, self-consequencing, seeking information, rehearsal or using memory aids (Zimmerman and Martinez-Pons, 1986:614; Zimmerman, 1989:329).

Bandura (1986:454) and Kuhl (1985:101) ascribe a lot of importance to the learners' use of self-regulation strategies. For example, strategy applications provide a learner with valuable self-efficacy knowledge. This knowledge in turn, is assumed to determine subsequent selections of strategies and enactments when learners are working on academic tasks. Zimmerman (1989:337) has identified the following categories of self-regulated learning strategies.

### 2.5.1 SELF-EVALUATION

Self-evaluating strategies (Zimmerman, 1989:337) refer to students' evaluation of the quality or progress of their work. After completing an academic task, for example, a student can check over his or her work to make sure that it has been well done, i.e., after writing a composition a student can check the spelling mistakes, punctuation, the use of prepositions, past and present tenses, and the presentation of information.

### 2.5.2 ORGANIZING AND TRANSFORMING

Organizing and transforming strategies refer to the student-arrangement of instructional materials to improve learning (Zimmerman, 1989:337; Weinstein and Mayer, 1986:321). For example, when studying for a test or exam a student can make an outline of the main points from the material to be studied to know exactly what he/she is going to write in preparation for an exam or by developing mindmaps of the material to be studied.

### **2.5.3 GOAL-SETTING AND PLANNING**

Goal-setting and planning strategies refer to students' setting of educational goals and planning for sequencing, timing, and completing their learning activities related to those goals (Weinstein and Underwood, 1985:243; Zimmerman, 1989:337; Pintrich, 1989:132). A student can set his/her goals for completing an academic task two or three weeks in advance to allow time for completing other tasks. A student can also plan the pace at which he has to study in preparation for an exam, as well as how long his study sessions should be per day to complete his preparations in time.

### **2.5.4 SEEKING INFORMATION**

Seeking-information strategies (Zimmerman, 1989:337) refer to student-initiated efforts to secure further information from related materials or sources when undertaking an assignment (Pintrich, 1989:134; Weinstein and Mayer, 1986:324). Students may prepare for an examination, for example, by studying previous examination papers to determine what is considered to be important questions and to determine the evaluation requirements of a specific teacher.

### **2.5.5 KEEPING RECORDS AND MONITORING**

Keeping records and monitoring strategies refer to student-initiated efforts to record events or results (Zimmerman, 1989:337; Weinstein and Mayer, 1986:317; Pintrich, 1989:133; Shuell, 1988:292). For example, students can make notes on what they discuss with their teacher in the class and be able to check/monitor their own performance. Students can make corrections, and keep a list of the words they have spelled incorrectly in an English dictation: for example, students could check if their spelling of words such as "Wednesday" and "honest" are correct and "Wensday" and "Onest" are incorrect.

### **2.5.6 ENVIRONMENTAL STRUCTURING**

Environmental-structuring strategies (Zimmerman, 1989:337; also see paragraph 2.4.3.2) refer to creating environments more conducive or favourable to learning (Pintrich, 1989:133; Weinstein, 1987:593). Students can isolate themselves from other people when studying. They can study in a quiet room and make sure that they have all the necessary materials for study such as writing materials and textbooks.

Environmental strategies help students to adapt to the environment and to change the environment to fit their needs.

### **2.5.7 SELF-CONSEQUENTING**

Self-consequencing strategies refer to a student's arrangement for or imagination of rewards or punishment for success or failure (Ghatala, 1986:435; Zimmerman, 1989:337). When a student is performing well on a test, he or she can reward himself or herself by going to a movie, soccer game in the stadium, or to read a book for leisure in order to refresh his or her mind. Subsequently, when a student performs badly, he or she can expend more effort and energy by making corrections on what he or she got wrong, prolonging the study period, improving punctuality or by missing out on a social session with his/her friends.

### **2.5.8 REHEARSING AND MEMORIZING**

Rehearsing and memorizing strategies (Zimmerman, 1989:337; Weinstein and Mayer, 1986:317; Pintrich, 1989:130) refer to student-initiated efforts to actively reciting or naming the presented items during learning and by memorizing material by overt practice. Rehearsal and memorising strategies include strategies such as taking notes as one reads, and underlining important facts in a textbook.

### **2.5.9 SEEKING SOCIAL ASSISTANCE**

Seeking-social-assistance strategies refer to student-initiated efforts to seek help from peers, teachers, and adults (Shapiro, 1984:149; Zimmerman, 1989:337; Pintrich, 1989:134). Students can seek help from their teacher or peers when they have problems in reading and understanding a comprehension text. They can also discuss topics in groups and seek help from their teacher when they experience more problems. Students need to know when and how to seek and obtain help and also whom to ask for assistance.

### **2.5.10 REVIEWING RECORDS**

Reviewing strategies refer to student-initiated efforts to reread notes, tests, or textbooks to prepare for class or tests (Diener and Dweck, 1978:452; Zimmerman, 1989:337). Students need to study their notes and textbooks time and again. They can check or

recheck the previous test and corrections for further testing in order to prepare themselves for a class, a test or examination.

### **2.5.11 OTHER STRATEGIES**

Other strategies (Zimmerman, 1989:337) refer to the student's-learning behaviour initiated by the student himself. For example, the student can approach a difficult task by trying his utmost to use all the necessary strategies such as viewing etc.

According to Zimmerman (1989:337), the effectiveness of each of the self-regulated learning strategies can be explained on the basis of the proposed triadic model. For example, the strategies of organizing, transforming, rehearsing, memorizing, goal setting and planning, focus on optimizing personal regulation (Zimmerman, 1989:337). Strategies such as self-evaluation and self-consequences are designed to enhance behavioural functioning. The strategies of environment structuring, seeking information, reviewing, and seeking assistance are intended to optimize the students' immediate learning environment (Zimmerman, 1989:337).

## **2.6 CONCLUSION**

This chapter has focussed on self-regulated academic learning and the self-regulated learning strategies that students use to improve their academic achievement.

The literature review has revealed that self-regulated learning is determined by personal, behavioural and environmental influences in a reciprocal fashion. Environmental influence may be stronger than behavioural or personal influences at certain points during behavioural interaction sequences or vice versa. With relation to self-regulated learning strategies, the literature review also revealed that the application of these strategies provide the learner with valuable self-efficacy knowledge, which determines strategy selections and enactments.

A more detailed discussion of the relationship between behavioural variables (chapter 3, personal variables (chapter 4), environmental variables (chapter 5) and academic achievement is given in the following chapters.