

CHAPTER 4

The nature, characteristics, development and appraisal of cognitive competencies in middle adolescents within the school context.

"It is thinking style that determines resilience, more than genetics, more than intelligence, more than any other single factor"
(Kordich-Hall & Pearson, 2003:1).

4.1. Introduction

The research of the human mind, intelligence, aptitude and ability to learn and reason has been a topic of investigation for various disciplines over the years. A detailed discussion of the full body of prior knowledge related to these above-mentioned aspects is beyond the purview of this chapter. The focus of this chapter will therefore only be on the role cognitive competence plays regarding the middle adolescents' resilient functioning within the school context.

The demands of the twenty-first century require middle adolescents to analyze and integrate complex and varying forms of information (for example the content in the school curriculum) and to utilise them in novel ways to solve problems and make decisions that impact on their future. Schools can create a culture in which learners can establish resilience by fostering higher cognitive skills, which will enable them to think critically, creatively and reflectively about the world they live in and apply these principals to real-life adverse situations. Fry (1992:vii) state that it is the role of Educational psychologists and teachers to provide cognitive instruction that promote cognitive competence in all children by cultivating a disposition for higher order thinking skills and teaching thinking and problem solving skills. Introducing learners to cognitive competencies in schools that promote pliable and self-regulating flexible thinking can prepare them to deal with

inevitable adversities and inoculate them to manage stressors and changes in life. Resilience enables the middle adolescent to make tough decisions and to solve problems, which will allow them to defuse and manage the moments of chaos in their lives. *"Cognitive flexibility strengthens our ability to maintain resilience because it allows for the consideration of a number of different alternatives, one of which might solve the problem"* (Joseph, 1994:37). This implies that resilient middle adolescents are able to reframe their thinking, which allows them to see adverse situations from different perspectives that equip them to focus on how to overcome the barriers to wellbeing. Joseph (1994:28) stresses that resilient middle adolescents are able to interpret their experiences in positive and constructive ways even when those experiences are painful or negative. This chapter will explore cognitive competence as a modality of resilience with regard to the nature and theory underlying the concept, the development and appraisal thereof as well as the role it plays in school functioning.

4.2. Defining terms related to cognitive competence

Mwamwenda (1995:89) views cognition as a middle adolescents' mental capacity to engage in thinking, reasoning, interpretation, understanding, knowledge acquisition, remembering, organising information, analysis and solving of problems. The way in which middle adolescents think, reason and understand the world around them evolve from concrete thinking to more abstract thinking in this developmental phase. In the school context cognitive competencies enable the middle adolescent to interact and engage with the teachers, psychologists, peers and curriculum content in order to effectively learn, develop skills and mature to reach his or her full potential. *"During cognitive development, it is important to bear in mind that performance does not necessarily reflect competence. It is possible that a child may have the necessary cognitive structure (competence) and yet may not be in a position to translate it into a required observable behaviour (performance)"* (Mwamwenda, 1995:143). This

implies that although the middle adolescent might have some of the cognitive competencies acquired through learning they might not know how to actualize it to help them rebound against adversity and that is why it is important for the school to empower the middle adolescent to know how to develop and apply their cognitive competence.

At school and in the education discipline, cognitive competence is seen as a fundamental element that middle adolescents need to master. The generally accepted scholastic indicators of cognitive competence are the academic skills in the domains of language (reading, writing and comprehension) and mathematics (arithmetic). Although these skills are critically important, cognitive competence consists of more than just academic skills. *"Cognitive competence includes two overlapping but distinct sub-constructs. Cognitive competence is the ability to develop and apply the cognitive skills of self-talk, the reading and interpretation of social cues, using steps for problem solving and decision-making, understanding the perspective of others, understanding behavioural norms, a positive attitude towards life and self awareness. The second aspect of cognitive competence is related to the development of core capacities, which includes the ability to use logic, analytic thinking and abstract reasoning"* (Catlano et al., 1998:3)". This view suggests that cognitive competence is interrelated with emotional- and social competencies and they interact with each other to fortify a middle adolescent against the onslaughts and demands of life. Traditionally South African schools have not taught middle adolescents to think critically and creatively and have not included the emotional and social competencies in learning but relied on prescribed rote learning of content to gain mastery of subjects.

However, the current South African education system aims to enable middle adolescents to become more independent and contribute to their own learning. Fry (1992:10) stresses the importance of schools to foster cognitive competence in middle adolescents. She suggests that there needs to be an integration

between facilitating higher order cognitive skills such as knowledge acquisitions and problem solving as well as self-evaluations and meta-cognitive skills that will have an impact on middle adolescents' sense of personal competence, self-efficacy and personal self-worth. The higher order thinking skills (meta-cognition) enables the middle adolescent to evaluate alternatives to problematic situations and to reframe the way that they think about problems and to make appropriate decisions. Effective decision-making requires that the middle adolescents have to execute the applicable cognitive competencies that will help them deal with stressors of life. Fry (1992:xi) describe cognitive competence that needs to be fostered in schools as the middle adolescents' capabilities to obtain, analyze and apply composite information; to locate, communicate and generate information successfully; to solve problems swiftly and resourcefully; make informed decisions and be committed to self-regulated learning.

Most problems and decisions middle adolescents that have to be deal with especially in the school context requires consideration of different people's points of view as well as their own. The way that middle adolescents will manage adverse situations will depend upon how they think about what has happened, because their thoughts will govern their behaviour. Joseph (1994:192) agrees with this view and state that learning to identify pessimistic thought patterns and substituting them with realistic, constructive thoughts reduces negative emotions and improves school performance. The way the middle adolescent thinks about life, wants out of life (future perception) and personal goals they want to achieve will provide motivation and a sense of purpose to persevere when things get tough. To understand the cognitive competence as a modality of resilience the nature thereof must be taken into consideration.

4.3. Nature and origin of cognitive competence

Cognitive competence involves the capacity of the human brain to think, reason and regulate all forms of cognitive operations in learning and interacting with the environment. It is important for teachers and psychologists to know the biological

functioning in the brain in order to assist and understand the middle adolescents' needs and ways of learning and coping. Geake (2003:8) propose that differences in preferred learning styles support that the brain functioning is as unique as faces or even fingerprints. He contends that reinforced neural pathways created by learning tend to stay that way and therefore the curriculum should be structured for integration of knowledge, skills and understanding by providing for individual differences in learning needs. This implies that every middle adolescent's brain is unique and develops at its own pace. Middle adolescents have a collection of life experiences that differ from person to person and their brain development may affect their ability to utilize these areas in their brain that help manage negative life experiences. In stimulating and enriching environments where there is active mental engagement with learning materials the teacher and psychologist can strengthen the areas in the brain involved with resilient functioning.

Wilson and Horch (2005:4) are strong advocates for the continuation of teachers to gain knowledge of brain research and the implications thereof for classroom instruction. They concur with previous authors' views in chapters 2 and 3 that the middle adolescents' brain is still developing and that sensorimotor stimulation creates stronger synaptic connections therefore teachers should create a diverse stimulating and arousing classroom that will foster cognitive competence. The brain inputs information through the senses and seeks, creates and retains patterns of meaning as it stores new information. Due to the technological age in which the middle adolescents find themselves they tend to be visually orientated which can be seen in the many hours spent watching television, playing playstation games, computer games and working on the internet. The middle adolescents' attention is held with activities that draw upon their all their senses.

However, in the classroom situation, the teaching method is still predominantly auditory and as a result, the attention of the middle adolescent can be lost within a few minutes. Wilson and Horch (2005:2) concurs with this statement and refer

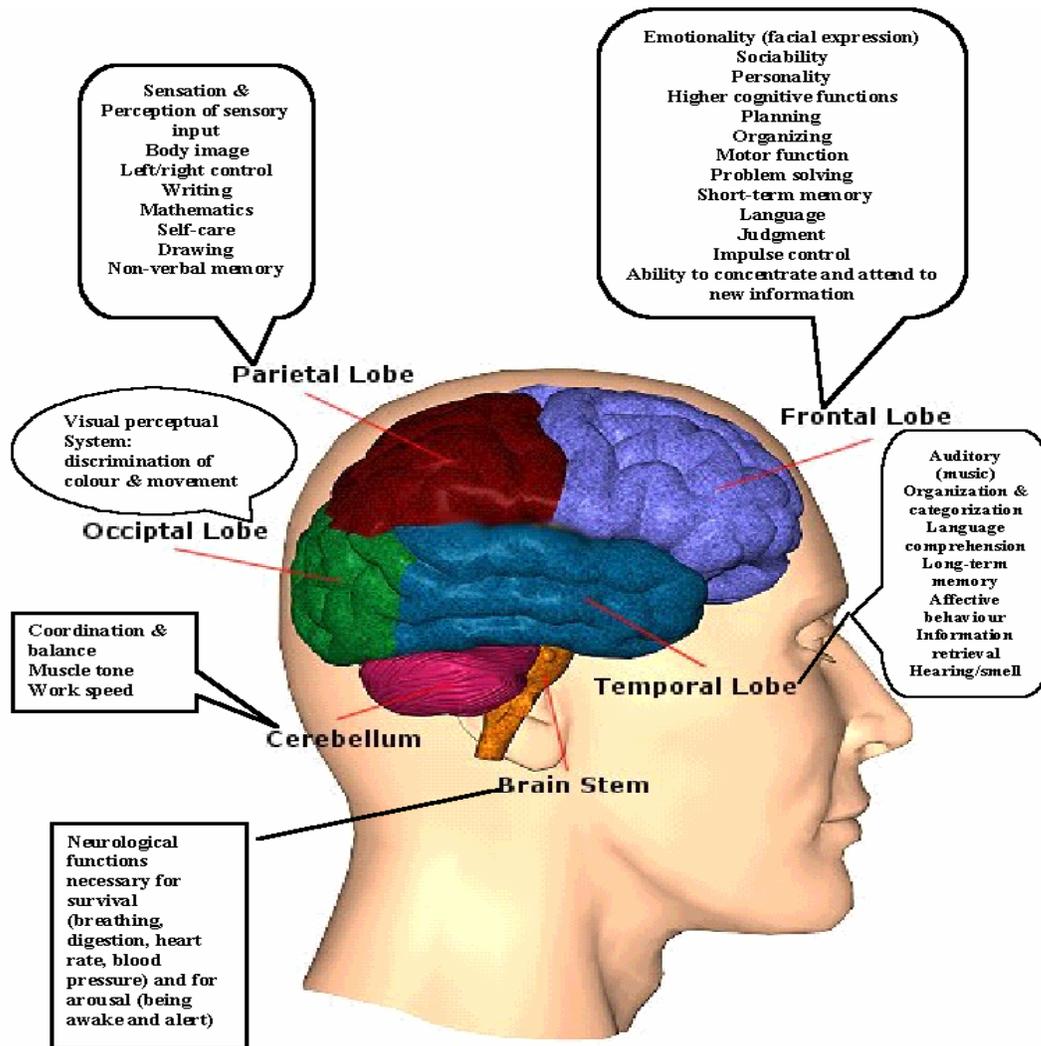
to neuropsychologists who promote the idea that attention can be retained through sensorimotor experiences such as music, smell, touch and emotion eliciting situations that focus middle adolescents on learning. Wilson and Horch also propose that teachers could use questions to frame units of study, incorporating the senses and emotions to focus learning for middle adolescents and then facilitating them in finding multiple ways to solve problems which can build complex neuron connections within the brain.

For these reasons the activities that can be developed for the Resilience Enhancement Kit should focus on incorporating all the senses in developing cognitive competence. These activities might include teaching the resiliency competencies through the use of visual mind maps with different shapes and colors, posters, music, building objects and solving puzzles. The brain requires time to build and enhance the network of connections between neurons that are necessary to process input and transfer information from short-term memory to permanent long-term memory and therefore the competencies learnt by the middle adolescent should be reinforced on a continuous basis in the classroom. The middle adolescent initiates learning of cognitive competencies by drawing upon his or her affection, cognition and prior conation. Each of these areas affects how the middle adolescents think, feel and respond to new situations as well as using prior knowledge and skills to effectively manage problem situations or make decisions that could affect their future. Although the brain in its entirety is involved with cognitive functioning the areas involved with higher order thinking skills include frontal cortex, pariental and temporal lobes, also called the Cerebral Cortex.

4.3.1. Areas in the brain involved with cognitive competence

A brief discussion and overview of the amalgamated functions of the brain according to Lehr (2001:1-5) and Johnson (2002:1-7) is presented in the following illustration after which the areas of the brain involved specifically with cognitive competence will be discussed:

Illustration 5: (With permission: Appendix B)



4.3.1.1. Cerebral Cortex

The area of the brain involved with higher order thinking skills (meta-cognition) includes the frontal, parietal and temporal lobes, also called the Cerebral Cortex. The Cerebral Cortex is asymmetrical and consists of two hemispheres (gray matter). Both hemispheres are able involved in analyzing sensory data, performing memory functions, learning new information, forming thoughts and making decisions. Johnson (2002:2) and Lehr (2001:3) describe the left hemisphere as an area capable of sequential analysis of information which

includes the systematic, logical interpretation of information. The left hemisphere is involved in interpretation and production of symbolic information presented in language, mathematics, abstraction and reasoning. Johnson (2002:2) and Lehr (2001:3) describe the right hemisphere as having a holistic function which includes processing multi-sensory input simultaneously to provide a holistic picture of the environment by utilizing visual, auditory and spatial skills. Knowledge regarding the Cerebral Cortex enables the teacher and psychologist to create activities that will include both the left and right hemisphere style of learning to ensure that all the middle adolescents will be able to integrate the cognitive competencies by drawing upon their unique style of processing information.

4.3.1.2. Frontal lobe

The frontal lobe of the brain is involved with the regulating of the information received from the senses and the pre-frontal cortex with synthesis of the information. The frontal and pre-frontal parts of the brain as discussed in previous chapters are still developing within middle adolescents. *"The frontal lobe is often called the CEO, or the executive of the brain. It's involved with planning and strategizing and organizing, initiating attention and regulating attention. As the prefrontal cortex matures, teenagers can reason better, develop more control over impulses and make judgements better. In fact, this part of the brain has been dubbed 'the area of sober second thought' (Spinks, 2002: 2-3).* Brain research can contribute to education because it adds new understanding of the middle adolescents' functioning based on the areas involved within the brain necessary to assimilate and integrate resilience competencies and can guide the teacher and psychologist to choose activities linked to those areas in the brain that might strengthen the neural pathways associated with resilience.

The authors Wilson and Horch (2005:3) propose the following classroom activities that develop the neurological pathways in the brain that can foster cognitive competence:

- ❖ Planning project-based units of research where learners ask critical questions and then develop their own projects to find the answers, such as interviewing people. The Resilience Enhancement Kit can incorporate this suggestion by asking the middle adolescents to identify problems they experience in their school context and think of creative ways to solve the problems by identifying and utilizing resources available to them which may include interviewing significant role players for their advice, opinions or help.
- ❖ Using simulations to involve learners in understanding various points of view or discussing complex ethical issues. The Resilience Enhancement Kit can include activities such as role play, interviews and discussions related to the resilience topics such as empathy and how to work effectively in a group to solve problems.
- ❖ *"Playing music that links memory to specific learning tasks. Rhythmic patterns are effective memory tools for learning and music is a great medium for facilitating adolescents to make sensorimotor connections."* In the emotional- and social competency development in the Resilience Enhancement Kit music is an activity that is utilized to convey concepts such as empathy and friendship. Middle adolescents can also be asked to create their own form of music to convey their understanding of the concept taught.
- ❖ Having learners write reflectively every day to reiterate and consolidate learning. The Resilience Enhancement Kit can require the middle adolescent to reflect after each session on what they have learnt and how they can apply it to their lives which will enable them to understand the relevance of the resilience competencies to help them rebound. The Resiliency Scale can also include questions that relate to the middle

- adolescent's ability to think reflectively and can be stated as follows: "I am aware of how I solve problems to get to the answers and I am able to retrace my steps".
- ❖ Visual and word problems or puzzles to challenge thinking so that learners understand that there are many ways to solve problems. This type of thinking strengthens the neural connections and gives learners more confidence in their abilities to address problems. The Resilience Enhancement Kit can include an activity such as solving a riddle (mystery) by analyzing the clues that are written on cards and placing them in the correct order to obtain the answers for the set questions which will focus on the middle adolescent's cognitive competencies. The Resiliency Scale could measure the middle adolescent's perspective on how he or she solves problems by the following: "I find answers to problems by finding different solutions and thinking about the possible results" and "I learn from previous mistakes and disappointments".
 - ❖ Using physical challenges to solve problems and enhance teamwork. An activity in the Resilience Enhancement Kit that requires the middle adolescents to utilize their ability to solve problems and work together in a team can be to construct an object using only limited material in a specific timeframe.
 - ❖ Involving learners in real-life apprenticeships. The Resilience Enhancement Kit could include activities such as asking the middle adolescents to plan and execute a school function where they get the opportunity to apply the competencies they have learnt in a real-life setting. The Resiliency Scale can measure the middle adolescent's willingness to engage in new learning experiences by stating the question as: "I am willing to try new ideas and experiences".
 - ❖ Using peer cooperation helps expand middle adolescents' understanding of issues and promotes group problem solving. Due to the nature of the South African school population where there can be up to 40-60 learners

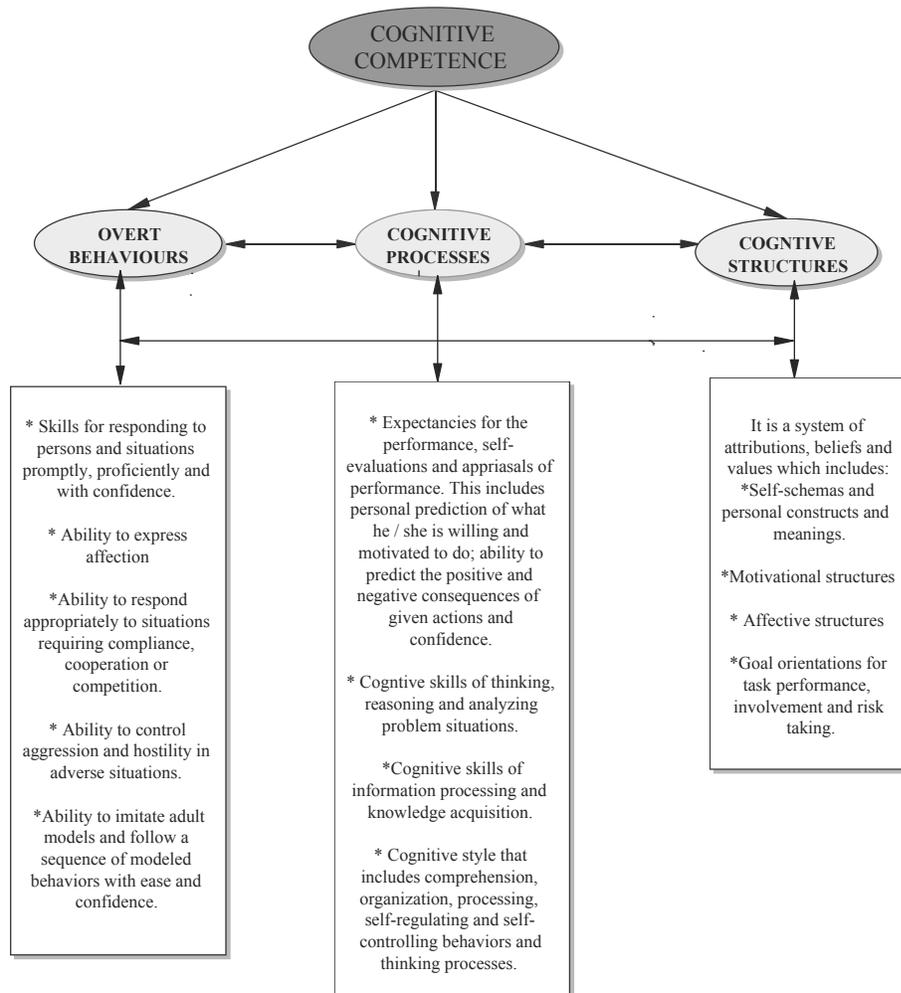
in a classroom, the activities in the Resilience Enhancement Kit should be structured to be implemented within groups as well as working in pairs which will also foster social learning. The Resiliency Scale can also inform on how middle adolescents utilize significant others to help them as part of their application of cognitive competencies and might be stated as follows: "When I need help, I find someone to talk to like teachers, family and friends" and "I have a role model whose good example I would like to follow".

The Resilience Enhancement Kit can enable the middle adolescent to learn the skills and attitudes that are necessary to solve problems and analyze situations in order to make informed decisions that will influence the way that they might rebound against the stressors of life. It is important to identify the theory underlying cognitive competencies of resilient functioning.

4.4. Theory of cognitive competence

Fry (1992:4-5) proposes the following conceptual framework for cognitive competence:

Diagram 8: (With permission: Appendix B).



This framework indicates that cognitive competence consists of cognitive structures, processes and overt behaviours that are interactive and interdependent. The cognitive structures incorporate the middle adolescent's system of meaning attribution to what he or she experiences. These meaning attributions is based on learned behaviour and influenced by the direct and indirect feedback a middle adolescent receives from parents, peers, teachers, psychologists and significant others regarding expected ways of thinking and behaving (schemas). Middle adolescent boys and girls seem to differ in their confidence, motivational and performance levels regarding the cognitive competencies that society expects these genders to excel in. The middle adolescent boys for example tend to be more confident about their mathematical

ability and solving mechanical related problems than females, while the middle adolescent girls on the other hand are more confident regarding their reading and organizational abilities. The gender roles and beliefs (schemas) attributed by society can limit the middle adolescents in the way that they approach novel tasks and problems in their lives. Conforming to gender stereotypes can affect the middle adolescent's confidence and motivational levels.

The socially constructed meaning a middle adolescent attaches to an activity, situation or future goal determines the degree to which he or she will participate in challenging situations as well as what aspects he or she will respond to, the level of involvement and motivation to persevere against all odds. Therefore, it is important that the middle adolescents are empowered to discover, develop and enhance their cognitive competencies and are socially unrestricted in the way that they utilize and apply them to adverse situations and stressors. This is where the Resilience Enhancement Kit could be of great value. In the Resilience Enhancement Kit the middle adolescents can explore different ways in managing and utilizing their cognitive competencies without being prescriptive of the way in which they should solve problems, make decisions or even express their creativity.

The second element of cognitive competence is cognitive processes, which refer to the higher order processes necessary to address the challenges in life. Fry (1992:8) describe the cognitive processes as "*the skills for self-appraisals, goal expectancies, metacognitive knowledge of problem solving skills and other cognitive skills such as learning strategies and information-processing style.*" The middle adolescent phase is characterised by self-centeredness and a focus on the present moment without always anticipating future implications. This has an effect on the way they evaluate and appraise their actions, process information as well as their willingness to think and respond differently during difficult times in their lives. It is the middle adolescents' ability to utilize their

meta-cognitive skills that can assist them in approaching stressors and adversities in an effective way. Meta-cognition is the wisdom of hindsight that serves as a mirror to the middle adolescent on his or her own knowledge, abilities and thinking. Metcalfe and Shimamura (1994:xii) describe the importance of meta-cognition as follows: *"its the ability of a human being to reflect on his or her conscious awareness of the world represents an evolved skill. The ability to reflect upon our thoughts and behaviours help us to learn, change and adapt to the events and contingencies in the social and physical environment. Humans can therefore monitor what is perceived, judge what is learned or what requires learning, problem solve and predict the consequences of future actions (decision-making)"*.

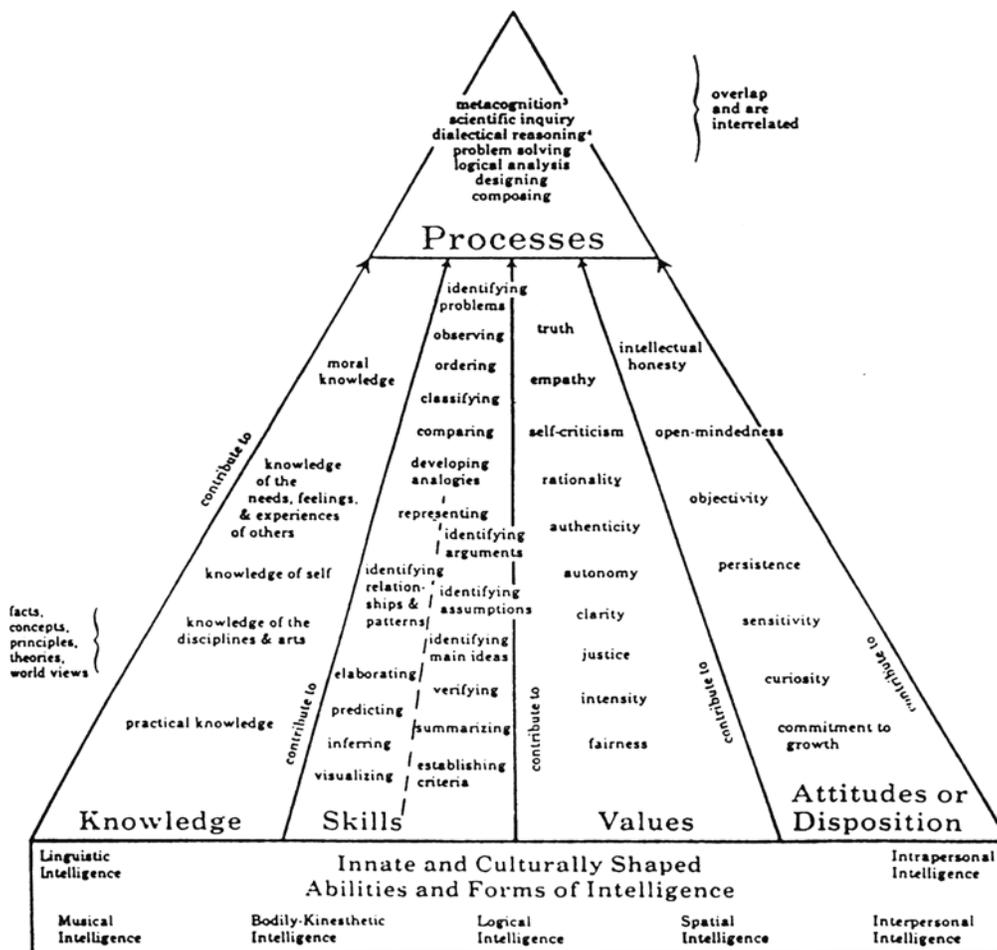
Middle adolescents however find it difficult to think about their thinking or why they respond the way they do. They tend to be overly dramatic by exaggerating their opinions and behaviours that reflect their self-centeredness for example that their opinion or views are more important to that of others or if they are reprimanded about what they said or did they do not always see any fault in how they reacted. Therefore, it is important that the teachers and psychologist in the school context focus on developing meta-cognition that forms part of cognitive competencies.

According to the model provided by Fry (1992:277), meta-cognition incorporates aspects such as reasoning, problem solving, decision-making and analyzing of information in order to know how to respond to it. The aspects that contribute to the middle adolescent utilizing the process of meta-cognition include drawing upon their attitudes, values, skills and knowledge that are shaped by their innate multiple intelligences as outlined by the theory of Howard Gardner and culturally shaped abilities. The attitudes that foster meta-cognition include objectivity in processing information, persistence, sensitivity towards others and curiosity. The

values that underlie meta-cognition as well as cognitive competence include autonomy, self-criticism, empathy and rationality.

The skills involved in meta-cognition that can be incorporated in the Resilience Enhancement Kit to enhance and develop cognitive competence include visualizing, identifying problems, observing, classifying and comparing, identifying relationships and patterns. The elements regarding knowledge that contribute to meta-cognition as well as cognitive competence include knowledge of the needs, feelings and experiences of others as well as knowledge of self. Fry (1992:277) illustrate all the aspects that contribute to the development of meta-cognition in the following diagram:

Diagram 9: (With permission: Appendix B)



3. Metacognition refers to knowledge of one's own thinking processes and products or anything related to them. It is "thinking about one's own thinking."
 4. Dialectical reasoning involves metacognition and also includes thinking about the reasoning, motives and arguments of others. It includes seeing all sides of a question and analyzing the strengths and weaknesses of opposing points of view.

According to Fry (1992:151) enhancing meta-cognitive skills enables middle adolescents to use a variety of strategies to monitor their own performance and revise their executive strategies to become resourceful at remediating their own problems and self-managing their own thinking as well as enhancing the competencies necessary to accomplish the art of schooling (reading, writing, learning, thinking). Meta-cognition assists the middle adolescent in predicting positive and negative outcomes of events that lead to a sense of control over thoughts and feelings. Metcalfe and Shimamura (1994:xii) describe meta-cognition as a way to describe knowledge regarding what is perceived, remembered, thought and acted upon. Therefore, meta-cognition is an essential part of cognitive competence because it allows the middle adolescent to monitor, evaluate and control or regulate the acquisition of new information and retrieving the information to apply it to new situations. Fry (1992:193) provides some suggestions on how meta-cognition can be enhanced in the school context:

- ❖ *"Predicting the consequences of an action, activity or event;*
- ❖ *checking the results of one's actions and determine whether they had the desired effect or if necessary to be altered;*
- ❖ *monitoring one's ongoing activity with a view to assessing how one is doing;*
- ❖ *reality-testing with a view to determining if the activity is meaningful to self and others in the immediate environment;*
- ❖ *coordinating and controlling deliberate attempts to learn and solve problems."*

The middle adolescents are given the opportunity in the Resilience Enhancement Kit to actively participate and engage in the activities that requires the utilization of higher order thinking skills like the ones just discussed in a non threatening environment for example through game playing and structured board games. Reid (2001:8 and 17) reiterates the important cognitive competencies involved in participating in games that includes memory, concentration, anticipation of consequences, logical thinking and creative problem solving. He also states that

middle adolescents develop the capability to evaluate information and make realistic perceptions as well as develop skills regarding organizing and classifying of information. Consequently, games create an opportunity to learn new behaviours, self-reflection and self-understanding, which are cognitive processes that are essential to development. The Resiliency Scale could also include questions related to the cognitive processes that Fry considers an aspect of cognitive competence and can be stated as follows: "I feel I can handle many difficult situations at a time"; "when I make plans, I follow through with them" and "I can motivate myself to obtain my goals in life in order to succeed".

The cognitive structures and processes lead to overt behaviours according to the conceptual framework of Fry (1992:4-5). The overt behaviours are directly observable and are the manifestation of the application of the cognitive skills and processes preceding the behaviour. The overt behaviours are exhibited in the way the middle adolescent responds to significant people and situations in his or her life. If the middle adolescent responds in an appropriate way for example cooperating with others, complying with the rules and regulations of the school context and are able to model the appropriate behaviours then the middle adolescent is applying cognitive competence. The overt behaviours also relate to interpersonal (solving problems and making decisions) and intrapersonal (self-management, control, regulation and future goal setting) behaviours. *"Resilient children take a proactive rather than a reactive or passive approach to problem solving and decision making. This proactive approach requires children to be self-reliant and independent while at the same time socially adept enough to get appropriate help from adults and peers"* (Joseph, 1994:28).

The behaviour of the middle adolescent does not always reflect that they are utilizing their cognitive competence to solve problems, make decisions and regulate their own thinking or behaviour. They often do not think things through and will argue for the sake of arguing, jump to conclusions or find fault in what adults say or do. Middle adolescents seem to argue about issues for no apparent

reason and only do so to see how far adults will allow them to argue their point (also referred to as 'testing the borders') which can be highly frustrating to adults. Along with arguing middle adolescents also tend to jump to conclusions about what is being said and their faulty logic can lead to arguments between them, teachers and parents. The middle adolescents' ability to think critically (Piaget developmental stage) guides them to look for discrepancies, contradictions or ambiguities in what adults say which might even lead them to question adult's rules and boundaries. Middle adolescents can also provide solutions for problems that seem unrealistic to adults, which can be an indication that middle adolescents are not applying cognitive competencies in an appropriate manner. *"Adolescents see the world as it really is but they also envisage the world's possibilities, reality is therefore often lost sight of and utopian solutions are proposed for the world's problems. Adolescents may rebel against existing norms and values if their educators fail to empathize with their idealism"* (Gouws et al., 1994:54).

In order for teachers and psychologist to guide middle adolescents in changing the way that they think which will allow them to modify their behaviour, they have to be taught to think aloud. Thinking aloud will enable the teacher and psychologist to monitor the process of thinking to remediate any errors in the thought processes, construct meaning and to ascertain the underlying reasons why middle adolescents came to that specific solution for problems or decision. Middle adolescents are also able to interact and learn from each other's ways of thinking if they verbalize their thought processes. It is necessary for middle adolescents to start their thinking process audibly, later internalize it, and apply the principals through private dialogue and self-appraisals. In the Resilience Enhancement Kit the middle adolescents should be asked to verbalize and write down the process they followed in activities such as solving problems (mystery) or planning an event and answer questions that will guide them to think about their thinking and how it affected their behaviour.

Another concept of importance in understanding the theory of cognitive competence that affects resilient functioning is thinking style. Thinking styles are the preferences that middle adolescents have for thinking, relating to others within various learning environments and during social experiences. Reivich and Shatte (2002:3) describe thinking style as the way in which a middle adolescent respond and compare it to a lens through which the world is viewed and interpreted. Thinking style is the way middle adolescents perceive and understand the world around them and how they then translate that perception of the external world into an internal representation within their minds. Beddoes-Jones (2004:1) concurs with the views held by the previous authors and believe that a preferences for different styles of thinking guide behaviours. The middle adolescents' thinking style is the characteristic way of processing information. It is the way they acquire their knowledge, organize thoughts, form views and opinions, apply values, solve problems, make decisions, plan and express themselves to others. *"Non-resilient thinking styles can lead us to cling to inaccurate beliefs about the world and to inappropriate problem-solving strategies that burn through emotional energy and valuable resilience resources"* (Kordich-Hall et al., 2003:2).

Therefore, the way middle adolescents think about the negative events and experiences in their lives will influence the way in which they respond to the adversities of life. If middle adolescents think that an external force over which they have no control and subsequently can do nothing about causes the negative situation or event they will most likely succumb to the situation and will not be able to rebound. However, if they think about the negative situation or event in a positive frame of mind where the situation or event is seen as an opportunity to learn from and overcome then the middle adolescent will be able to rebound. Joseph (1994:192) is of opinion that if middle adolescents can learn to identify negative thought patterns and substitute them with realistic, constructive thoughts, school performance will be enhanced and emotions regulated that will have a positive effect on mental health.

Common thinking errors as identified by Joseph (1994:204) include overgeneralization, selective abstraction, arbitrary inference, minimization, dichotomous thinking and personalization that can influence the middle adolescent's ability to rebound. Overgeneralization refers to when the middle adolescent might think that a weakness in one area of their lives mean that he or she is weak in all the other areas of their lives, which leads to a defeatist attitude. Selective abstraction means that the middle adolescent might only focus on a single negative event that happened in their lives and as a result, they are unable to identify other positive experiences that will allow them to adapt and move on with their lives. Arbitrary inference refers to a thinking error where middle adolescents might come up with an evaluation of a situation or event that is not supported by fact and as a result, they are troubled by this presumption and might react in an inappropriate manner. Minimization refers to when a middle adolescent plays down the importance of positive event or situation in their lives because they have a lack in their belief of themselves. Dichotomous thinking are related to thoughts where events and situations are viewed as either right or wrong without considering the merits or context of the situation and as a result decisions are made that might not be in the most effective and productive. Personalization refers to when middle adolescents assume personal responsibility for situations and events that go wrong even when it is unrelated to them and as a result they develop a negative self-concept and they are unable to see the value their lives bring to others. Another thinking error that is common with middle adolescents are their presumption that everyone thinks as they do and should 'know' what is on their minds and what they need. This thinking error may cause disappointment and disillusionment when middle adolescents discover that adults and even peers do not necessarily view the world and events as they do.

Teachers and psychologists can utilize the Resilience Enhancement Kit to teach middle adolescents to change their negative thought patterns as discussed previously by using positive self-talk phrases that can help them reframe

negative thoughts and provide activities where the middle adolescent can practice different thinking skills through problem solving and decision-making steps with real-life scenarios. *"There are any numbers of forms for coping: wrestling the good out of a bad situation (e.g., recognizing that losing something frees you to do something you like better); finding a diversion (e.g., going to a movie as a break from a stressful task); reappraising the negative situation so that it does not appear as bad ('I decided it was not as bad as I thought or I know I can handle this'); making positive comparisons to another situation ('It could have been worse') and selectively attending to one part of the problem and putting the rest of the problem on hold. Problem-focused coping attacks the problem directly"* (Joseph, 1994: 37). These ways of coping can be taught to the middle adolescents in the Resilience Enhancement Kit as ways of reframing thinking. To understand how cognitive competencies might be enhanced the development thereof in middle adolescents must also be explored.

4.5. Development of cognitive competence

Kordich-Hall and Pearson (2003:2) affirm that resilient thinking patterns can be learned and the skills that support the consistent use of more accurate and flexible thinking can be gained from an early age which will increase resilient cognitive functioning. Cognitive competencies, consisting of a repertoire of competencies and procedures that enable learners to interact effectively within their ecosystemic context, develop through natural maturation as well as interaction with parents, peers, teachers, psychologists and significant others and mediated learning experiences.

Piaget (Donald et al., 1997:46) indicated that middle adolescents should be in the formal operational stage of their development, which implies that through processes of assimilation, accommodation and equilibration learners are able to think critically about the world around them and are able to find relationships between abstract information and situations. The formal operations stage described by Piaget (Mwamwenda, 1995:97) has its onset after the age of 12

years. *"A person capable of formal operations is able to engage in a high level of thinking without basing it on concrete evidence. He or she can make hypotheses, generalize and make conclusions that are scientifically sound. Only a few people attain the stage of formal operations, partly because successful performance at this level calls for abstraction and a fairly sound knowledge of basic concepts"* (Mwamwenda, 1995: 103). This developmental phase is characterised by a growing ability to communicate thoughts, utilize higher cognitive skills and make use of self-assertion to solve problems, make decisions and set future goals.

Middle adolescents however, often still function on the concrete operational stage because according to Mwamwenda (1995:103) they still see things from their own point of view without engaging in logical thinking on the basis of past experience and they make conclusions on the basis of insufficient evidence. This implies that the middle adolescents are still prone to think concretely and still have difficulty with foreseeing the logical consequences of their actions and as a result, they still need the guidance from adults to develop aspects such as problem solving, decision making and forming future goals. The level of a middle adolescents' maturity is an important predictor of whether they will engage in risky behaviours or make more responsible choices and decisions that will have an effect on resilient behaviour. *"Adolescents are capable of the following thought process: they think and reason about such concepts as love and hate, justice and injustice; they begin to display a sensitive attunement to the intentions and behaviour of other people; they are able to project into the past and the future and they are much more critical about themselves and constantly measure themselves against ideal models or against the peer group"* (Gouws et al., 1994:49). This implies that the middle adolescents are influenced by how their peers behave and think because they might fear being ostracized from a social group or being made fun of if they do not choose to conform to the peer group's way of thinking and behaving.

It is therefore important that the Resilience Enhancement Kit should focus on groups where the appropriate competencies can be reinforced and positive peer pressure be utilized under the guidance of a teacher or psychologist in the school context. Vygotsky is a theorist who provided a framework that teachers and psychologists can utilize to mediate the cognitive learning experiences of middle adolescents. The framework of drawing upon learners prior knowledge and skills and assisted guidance from teachers and psychologists can be utilized in the Resilience Enhancement Kit.

Fry (1992:53) is of opinion that Vygotsky's socio-instructional approach to cognitive competence examines the middle adolescents' cognitive functioning such as thinking, reasoning, problem solving not only in terms of individual development and independent functioning but also potential for growth in collaboration with other proficient adults and peers. Learners develop their cognitive competence (taking into account their zone of proximal development) through guidance and mediation to reach a level of independent functioning and internalization of the skills necessary. Once the cognitive skills, attitudes and values (competencies) are internalized, they become part of the middle adolescent's independent repertoire of appropriate behaviours that can be transferred to other situations.

The teacher and psychologist aid the middle adolescent to enhance present skills and develop new ones through support (instructional scaffolding). The psychologist, counsellor or teacher can structure the content of the activities according to the needs of the middle adolescent and the skills they need to master. The cultural and interpersonal relationships play an important part in learning from each other's socially constructed shared experiences an example of an activity is role-play. Fry (1992:11) supports the teaching of cognitive competence that includes self-monitoring, self-management and self-regulating skills. The value of cognitive competence in resilient functioning is the ability of middle adolescents to apply higher cognitive skills in managing and regulating

their thoughts to become active participants in solving problems, making decisions and setting goals in order to assist them in rebounding. Joseph (1994:31) state that a resilient middle adolescent will understand that he or she has some control over what happens to them by taking responsibility for decisions and the consequences thereof. The example set by significant others on how to execute these above-mentioned skills in everyday life can guide middle adolescents in modelling the same behaviours by including it in their cognitive schemas. The Resilience Enhancement Kit can teach the middle adolescents the cognitive competencies that include flexible thinking, solving problems, making realistic decisions and making future plans and goals through modelling, solving case scenarios and active participation in organizing activities in the school context.

Resilient thinking implies that the middle adolescent can utilize his or her cognitive competence to be flexible in applying different thinking strategies to gain a multi-perspective and objective approach to any situation or event. "*The pragmatics behind constructive thinking is largely geared to instructing children how to be mentally resilient. There are two major objective associated with this goal: (1) understanding how thoughts, feelings and behaviours influence each other and (2) taking charge of a destructive thought-feeling-behaviour cycle by changing thoughts*" (Joseph, 1994:212). Thus, in assisting middle adolescents to identify how they think and how to manage their thoughts so that it does not interfere with the decisions they make in life will empower them to become more resilient.

Joseph (1994:212) provided the following suggestions to break a destructive thought-feeling-behaviour cycle:

- ❖ Identify destructive thoughts;
- ❖ redefine situations by altering verbal labels and beliefs;
- ❖ create realistic and constructive thoughts and self-statements;

- ❖ redefine situations by creating solutions by focusing on a single aspect of the problem at a time, finding objective information of the problem, thinking about the worst thing that could happen as a way of objectively ranking the harmful impact of the situation and thinking of how the unfavourable situation can be turned into a benefit;
- ❖ redefine situations by creating alternative perspectives.

These steps can be included in the Resilience Enhancement Kit as part of the development and enhancement of cognitive competencies. Teachers and psychologists should look for patterns in middle adolescent's thinking. Being aware of the thinking patterns help teachers and psychologists to anticipate if the middle adolescents' thinking style will hinder resilient functioning. Therefore, it is important that teachers and psychologists who administer the Resilience Enhancement Kit should verbally express and model appropriate ways of how to think about adversities in life in order for middle adolescents to learn from example.

Joseph (1994: 195) suggests that teachers can utilize language to reinforce those attitudes and beliefs compatible with resilient thinking by using expressions that connote resilience. Teachers and psychologists should also know their own cognitive thinking style because it influences their preferred teaching methodologies. Understanding their own thinking style gives them an idea of how middle adolescents' thinking style is triggered by teaching patterns and how to present information to them in a way and at a pace which will allow the middle adolescents to think more effectively. By asking guiding questions as part of the activities in the Resilience Enhancement Kit, teachers and psychologists can scaffold middle adolescents thinking. Middle adolescents can be guided from their habitual thinking style to one that incorporates thinking critically, reflectively and creatively. Asking middle adolescents to analyze problems and stressors according to information available (facts) and then looking for the positives in the situation that could be of benefit and value in rebounding. Seeking the

possibilities and alternatives (new ideas and perspectives) and keeping in touch with their feelings, intuitions and goals middle adolescents might be directed to approach adversities as challenges to be overcome.

The Resiliency Scale should also include questions which relate to the middle adolescent's thinking style and can be stated as: "I am in control of my thinking, tend not to worry and think positively and keep negative events in perspective" and "I see change as a chance for personal growth". Joseph (1994:226) summarizes the importance of thinking style in cognitive resilience when he says, *"to a large degree we are what we think. When we think constructively, we make better decisions and consequently are more productive. Constructive thinking contributes to the effective management of change and adversity."* Thinking style is also an important aspect in how a middle adolescent solves problems, makes decisions and plan for the future.

Killen (2000:128) propose that problem solving can engage middle adolescents in seeking knowledge, processing information and applying ideas to real-world situations as well as motivating them and demonstrating practical means of applying existing knowledge to a new or unfamiliar situation. The circumstances that the middle adolescents find themselves everyday is infused with problems, stressors and challenges of a rapidly developing society which forge resilience. Problem solving engages middle adolescents to utilize their higher order thinking skills and including this skill as part of cognitive competencies empowers them to be able to adapt to new circumstances which also allows them to transfer their knowledge of how to rebound to other adverse situations. *"The sense of challenge, a characteristic of hardiness, is the ability to see the positive aspects of change and to minimize or get beyond the negative aspects of a situation. A person who sees life as a challenge is not only positive about life in general but also able to defuse the threat behind misfortune and extract opportunity from the change"* (Joseph, 1994: 31).

However, if the middle adolescent does not have the necessary competencies to solve problems they will be prone to either be overwhelmed by the situation or choose inappropriate ways of trying to escape the situation for example participating in risky behaviour such as underage drinking or abusing drugs. It is therefore the responsibility of teachers and psychologists to empower the middle adolescent with knowledge and skills to know how to solve problems in an appropriate way to help them rebound. Killen (2000:136) suggested the following ways in which teachers and psychologists can develop problem-solving skills in the school context:

- ❖ Identify what prior knowledge the learners have to solve problems;
- ❖ guide learners to resources that will help them to solve the problem;
- ❖ help the learners to discuss the problem in a small group form;
- ❖ encourage learners to use their own strategies for solving the problem. Praise their initiative, original ideas, resourcefulness and willingness to explore different approaches;
- ❖ challenge learner's logic and beliefs, perhaps by asking questions such as 'how can you justify your conclusion?';
- ❖ provide constructive feedback to correct erroneous reasoning;
- ❖ encourage learners to record their problem-solving processes and their conclusions;
- ❖ participate in problem solving with the learners so that you can model problems solving approaches.

These suggestions can be a guideline for teachers and psychologists administering the Resilience Enhancement Kit when the middle adolescents are asked to apply their problem solving skills in an activity where they can solve a mystery and identify problems in the school context as well as provide some suggestions on how the problems can be addressed. The middle adolescents' perceptions regarding their problem solving ability can also be measured in the Resiliency Scale through the questions: "I am aware of how I solve problems to get the answers"; "I find answers to problems by finding different solutions and

thinking about the possible results" and "if I am confronted with a difficult problem I will not give up, I will keep trying my best". Skills that are closely related to problem solving and are crucial aspects of cognitive competence is making decisions and setting future goals.

Decisions and choices are basic thinking skills, which start at an early age. As children grow older, they are forced to make decisions that are more independent and during middle adolescents, the choices they make will have an effect on their success to adapt to changing situations. Decision-making is the process of choosing what to do by considering the possible consequences of different choices. *"These decision-making processes mature with age and experience and are influenced by an adolescent's brain development and acquisition of knowledge. The issue of decision-making becomes increasingly important during adolescence because teens are developing greater autonomy and encountering more choices independent of adults"* (Brockman & Russell, 2002:1). Middle adolescents often make impulsive decisions without considering all the relevant information to make informed decisions.

The strain of taking on more responsibilities and addressing increasing challenges related to their developmental phase and academic expectations can cause strained relations with parents, teachers and peers that can cause the middle adolescents to make decisions intended to prove their maturity or to assert their independence. Undesirable decisions that middle adolescents make could also be caused by trying to avoid a situation or even to obtain a goal regardless of the possible risks involved for example a girl who chooses to become sexually active to gain the approval and acceptance of a boy she likes irregardless the threat of disease or teenage pregnancy. Brockman and Russell (2002:1) are of opinion that resilience in schools improves and problems prevented when programs teach middle adolescents decision-making; problem solving; social and self-regulation skills; refusal, resistance and coping strategies. Middle adolescents must be provided the opportunity in the school context to

practice using decision-making skills and be made aware of the consequences of the decisions they make especially related to their long-term wellbeing.

Brockman and Russell (2002:3) further suggests the following ways in which teachers and psychologists can develop and enhance decision-making skills in middle adolescents:

- ❖ *"Encouraging young people to search for new information when making decisions and helping them to avoid overestimating their knowledge and capabilities;*
- ❖ *using a general heuristic framework to help teenagers learn how to think critically about decision problems (e.g., "GOFER"-goals, options, facts, effects, and review; "going through the GOOP"-goals, options, outcomes, and probabilities);*
- ❖ *providing adolescents with opportunities to practice and rehearse decision-making skills;*
- ❖ *having teenagers work in pairs or small groups on relevant decision problems;*
- ❖ *teaching teens to identify potential consequences of each choice, assessing the likelihood of each consequence actually occurring and determining the importance of these consequences."*

These decision-making skills can be incorporated in the activities of the Resilience Enhancement Kit that can be structured that middle adolescents learn how the choices and decisions they make can influence them either negatively or positively. It is important that the teacher or psychologist who administers the Resilience Enhancement Kit explain the steps in the decision making process that can be illustrated in the form of a mind map. The teacher or psychologist who is administering the activities can ask the middle adolescents to choose between two unknown aspects for example two envelopes that contain activities that the middle adolescents have to perform that will have specific consequences.

Furthermore, the middle adolescents could exercise their decision-making skills in planning of a school event in a group that is related to a real-life experience. The Resiliency Scale should also include questions related to decision making and might be stated as follows: "I take responsibility for decisions I make, even if it was the wrong ones" and "my values guide the choices and plans I make". Decision-making is guided by the goals the middle adolescent wants to achieve. Having a sense of purpose and goals that can direct behaviour will empower the middle adolescent to look towards the future and not just focus on past failures or disappointments. A positive future orientation can be motivating to the middle adolescent and create a sense of purpose which is described by Joseph (1994:32) as a hardy personality.

The Resilience Enhancement Kit should focus on fostering a sense of future mindedness where the middle adolescents can set goals not only to make decisions but which can also serve as a motivation to persevere when life is tough. Activities could include setting long- and short-term goals in a school related project and discussions regarding future expectations. The Resiliency Scale should also include questions related to future orientated goals and can be stated as: "I am positive and hopeful about the future"; "I have several goals and plans for the future after I matriculate" and "I can motivate myself to obtain my goals in life in order to succeed". It is important for the teacher and psychologist to have knowledge regarding the middle adolescent's cognitive competence and this knowledge can be obtained through assessment instruments.

4.6. Psychological appraisal of cognitive competence

The level of cognitive competence is often measured by a middle adolescent's level of proficiency in academic subjects, aptitude scores or intelligence scores as reflected through the Senior South-African Intelligence Scale. Few assessment instruments encompass the cognitive competencies necessary for resilient functioning. Harter and Pike (2002:1) developed the following

assessment instrument to ascertain the middle adolescents' level of cognitive competence namely the "*Perceived Competence Scale for Children*." This assessment scale was developed for adolescents aged 8-18 years and consists of a 24-item instrument that is made up of subscales comprising of six items each that include cognitive competence, physical competence and peer acceptance.

The second assessment instrument that could be located related to cognitive competence is the PASS+S Dynamic Assessment instrument. Luria (Kline, 2003:2) developed a model of cognition that included four types of cognitive processing: planning (P), attention (A), and information coding through sequential (S) and simultaneous (S) processing. The PASS+S Dynamic Assessment was constructed to measure these four types of cognitive processing plus the speed of processing (+S), hence the acronym PASS+S. The PASS+S subtests were also devised to match Luria's descriptions of these processes and to represent the cognitive demands of the classroom context. Kline (2003) has not indicated the applicable age group for this assessment instrument. It must be reiterated that these above mentioned assessment instruments is normed according for the American population and are therefore not always applicable in the South African context.

The assessment instruments discussed also focuses on the processing part of cognitive competence and does not include the cognitive structures or overt behaviours related to cognitive competence as described in the theory thereof. This implies that the need remains for an assessment instrument that incorporates all the elements of cognitive competence for resilient functioning. The Resilience Enhancement Kit contains a resiliency scale for learners and teachers that might address this need and assist the teachers and Educational psychologists in identifying the learner's level of cognitive competence for use in the school context.

4.7. Cognitive resilience and school context

The teacher's role in facilitating cognitive competence includes structuring and planning activities, assignments and lessons that incorporate meta-cognition and foster positive future expectations and goals. The middle adolescents' development should be kept in mind when developing activities to ensure that the content is optimally integrated in their frame of reference. *"The educator should be aware that the middle adolescent may be capable of formal-operational thought on one day, only to laps back to the concrete-operational phase the very next day. Therefore, teaching should start from concrete considerations, building up where applicable to more abstract reasoning. It is important to expose adolescents to a variety of experiences in order to promote their development of a capacity for flexible, versatile thinking"* (Gouws, et.al., 1994: 71). Teachers and psychologists should attempt to integrate the middle adolescent's innate abilities, interest, experiences and background knowledge when designing activities.

It is for this reason that the activities in the Resilience Enhancement Kit should appeal to the interest of the middle adolescent as well as incorporate all their senses in developing resilient competencies. Mwamwenda (1995:104) restates that teachers should facilitate and instruct in a manner that will incorporate the middle adolescents' use of their senses and provide concrete material to consolidate concepts being taught. The middle adolescents should be actively involved in applying the cognitive competencies to ensure that it is internalized. Fry (1992:269) is of opinion that most schools have a superficial understanding of how problem solving and decision-making skills should be taught. *"Educators and psychologists are in agreement that educational reform is necessary in our schools if cognitive competence is to be fostered. These educators promote developing innovative programs of teaching, instruction and interventions of behalf of children and have argued that new ground needs to be broken in an effort to put children in control of their own learning and cognitive competence"* (Fry, 1992:301). Teachers should provide learners with real-life materials and opportunities to apply their higher order thought processes and increase their

motivation to think reflectively about the world around them. Higher order thinking is the ability to integrate learning, thinking, reflective reasoning and problem solving. A lack of meta-cognitive skills and a rigid thinking style make middle adolescents vulnerable to succumbing to stressors and adversities. Cognitive competence allows the learner to become an active participant in his or her own learning in order to face the challenges posed in their life world. The school play an important role in fostering citizens who are able to solve problems, think critically and creatively and thereby contribute to an ever-changing society.

4.8. Conclusion

In this chapter the nature, origin, theories and development of cognitive competence was discussed. It became apparent that the middle adolescent is still developing in the areas associated with cognitive competence as outlined by Piaget's stages of cognitive development as well as the brain areas associated with higher order thinking. The importance of the school as a vehicle to promote cognitive competence was highlighted. The significant adults working with the middle adolescent in the school context (teacher and psychologists) should be aware of how the middle adolescent think about their life world and how they approach problems and decisions in their lives. It became clear that the teacher and psychologist should also be aware of how their thinking style affects the way they model behaviour to rebound.

The activities in the classroom should be structured that the middle adolescent is given the opportunity to practice their cognitive competencies and learn from interaction with others how to apply their resilience competencies to rebound. It was found that cognitive competence comprises of more than just cognitive processes but is an amalgamation of a flexible thinking style, problem solving and decision-making competencies and a positive future-orientated mindset where goal setting can be a motivator to persevere against life's onslaughts.

The middle adolescent gives meaning to what has been experienced and utilizes the necessary skills, knowledge and values to solve problems, make informed decisions and plan future goals. In becoming active participants in managing their thought processes, middle adolescents can self-regulate their thoughts and competencies to manage life's stressors. In the exploration of the chapter it also became clear that there is a need for assessment instruments that encompass all the elements of cognitive competence.

The next chapter gives a detailed outline of the Resilience Enhancement Kit as well as the Resiliency scale that can be utilized in developing, enhancing and appraising the resilience modalities within the school context.