A MODEL FOR CHANGING TEACHERS' ATTITUDES TOWARDS THE VALUE OF TEACHING CRITICAL THINKING SKILLS: A SCHOOL MANAGEMENT PERSPECTIVE

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<Diploma in Education, BA Education, BEd, MEd>

Research submitted in fulfilment of the requirements for the degree

PHILOSOPHIAE DOCTOR

in the

Faculty of Humanities

North-West University

Vanderbijlpark

Promoter: Prof E Fourie

2009

DEDICATION

This work is dedicated to my immediate family, my loving parents and my late mother-in-law.

This work is finally and most especially dedicated to my loving and first grandson, DEYANTÉ LAUREDINE SOULS.

Above all I give thanks to God Almighty for guidance and wisdom and for surrounding me with family members and a circle of friends.

TO WHOM IT MAY CONCERN

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ACKNOWLEDGEMENTS

My sincere gratitude to the following people who immensely contributed to the successful completion of this study:

- My promoter, Prof. J.E. Fourie for her patience, encouragement and guidance as well as her PA, Maureen Meiring for her hospitality and effective communication.
- The University's research advisory committee, Prof. B.J.J. Lombard and Dr. M.M. Grosser for their advice and contribution to this study.
- The research unit of the Gauteng Department of Education for permission granted to access primary and secondary schools to conduct this research.
- To school principals and senior phase (grades 7, 8 and 9) educators for voluntary participation and purposive responses to the questionnaires.
- Mrs. Pamela More for typing the first drafts of this research project and for communicating timeously with my promoter on my behalf.
- Ms. Miranda Cooper for her support, motivation and typing of part of the manuscript and assisting with communication via e-mail.
- Mrs. Ronelle Roskin for her availability, humanness and willingness for typing the last part of the thesis so excellently and at times under tremendous pressure.
- Baby and Fortunate at Vlakfontein Secondary School for their contribution in assisting with some of the typing.
- The two librarians, Martie and Hendra at the Vaal Triangle Campus for their patience, commitment and dedication in retrieving requested sources.
- Aldine, an expert and professional in formatting manuscripts at the Vaal Triangle Campus.

- My eldest son, Enver Souls for communicating timeously and effectively via e-mail on my behalf.

Finally and most importantly, I thank God the Almighty for giving me strength and good health to pursue this challenging study.

ABSTRACT

Key words / terms

Change management, teachers' attitudes, critical thinking skills, planning, goal setting, policy making, decision making, problem solving, organising, delegating, responsibility, authority, coordination, leading, guiding, motivation, effective communication, quality control, exercising quality control, evaluating work, corrective behaviour.

The primary aim of the study was to design a model for changing teachers' attitudes towards the value of teaching critical thinking skills. Currently, information regarding the conceptualisation of this topic is inadequate and vague. In this study the nature of the complexities involved in the management and implementation of the teaching of critical thinking skills were researched through a literature study and an empirical investigation. A model was then designed for the effective management of the implementation thereof.

The findings from the research indicated that teachers' attitudes towards the value of teaching critical thinking skills to learners are negative. It also became evident that the school principal should manage the implementation of the teaching of critical thinking skills to learners. The focus of the proposed model is on how teachers' attitudes towards the value of teaching critical thinking skills can be changed to ensure quality educative teaching and learning in and outside of the classroom.

The study therefore serves to present a useable model for the management of the implementation of teaching critical thinking skills to learners. The study is further based on a well balanced opinion as experiences of teachers in the senior phase (grades 7, 8, & 9) were investigated by means of structured questionnaires. Recommendations regarding research findings were made for stakeholders and education departmental officials to note.

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CHAPTER ONE

INTRODUCTION AND PROBLEM STATEMENT

1.1 INTRODUCTION

Many learners are exposed to environments that help them to develop specific cognitive skills, which in turn allow them to become independent learners (Feuerstein & Feuerstein, 1991:10). These learners continue to learn throughout their lives using direct exposure to stimuli as opportunities for learning. This is done through the mechanisms of assimilation and accommodation which Piaget described and which have become known as the "constructivist theory" (Feuerstein & Feuerstein, 1991:9; Ormrod, 1995:36).

During the last decades more evidence has accumulated suggesting that thinking skills and processes and cognitive functions can be mediated and developed in learners with a wide range of abilities (Costa, 1991; Costa, 2004; De Bono, 1993; Gindis, 1995). As a result, more cognitive intervention programmes to develop thinking skills and processes started to emerge. Increasingly more educators believe that something should be done to increase learners' cognitive functions and that thinking should be taught and developed intentionally. Studies that evaluated cognitive intervention programmes were conducted which provides evidence for possible changes in learners' ability to solve problems and apply thinking skills (Cotton, 2000; Stemberg & Bhama, 1996). What characterized most of these cognitive intervention programmes was the need for special effort, high levels of motivation and focused intention on the educator's part so as to help learners to develop their thinking skills in order to fulfil their cognitive potential Shayer & Adey, 1992; 1992).

This study intends to investigate the attitudes of teachers towards the value of teaching critical thinking skills to learners in order that a model can be developed for effectively changing these attitudes.

1.2 LITERATURE REVIEW

1.2.1 Critical thinking defined

According to Epstein and Kernberger, (2006:1) critical thinking involves evaluating whether some claims are true or some argument is good, as well as formulating good arguments and making judgements. They also state that critical thinking is more than definitions and rules and examples as it involves abilities such as identifying a problem, analyzing, understanding and making use of inferences, inductive and deductive logic, giving meaning and judging the validity of assumptions, sources of data and information.

Critical thinking is something we need to do every day. In this regard, Brookfield (1987:1) states that critical thinking can be valuable in the context of personal relationships, work (classroom) activities and political involvements. Being a critical thinker is also part of what it means to be a developing person, and fostering (or teaching) critical thinking is crucial to creating and maintaining a healthy democracy.

Critical thinking involves evaluating information or arguments in terms of accuracy and worth (Beyer, 1985:34). Critical thinking may take a variety of forms, depending on the context. For instance, it may involve any one or more of the following:

Verbal reasoning: Understanding and evaluating the persuasive techniques found in oral and written language.

Argument analysis: Discriminating between reasons that do and do not support a particular conclusion.

Decision- making: Identifying and judging several alternatives and selecting the best alternative.

Critical analysis of prior research: Evaluating the value of data and research results in terms of the methods used to obtain it and its potential relevance to particular conclusions. Such critical analysis involves considering questions such as:

- Was a method used to measure a particular outcome appropriate?
- Were the data and results derived from a relatively large number of people, objects or events?
- Have other possible explanations or conclusions been eliminated?
- Can the results obtained in one situation be reasonably generalized to other situations?

Critical thinking sometimes takes different forms in different content areas. In History, it might involve scrutinizing various historical documents and looking for clues as to whether things *definitely* happened in a particular way or only *maybe* happened in that way. In Psychology it might involve critically evaluating the way in which a particular psychological characteristic (e.g. intelligence, personality) is being measured. In Anthropology it might involve observing peoples' behaviours over extended periods of time and speculating about what those behaviours indicate about the society being studied (Beyer, 1985:35).

Learners are confronted daily with argumentative raw material which requires that they put their critical thinking skills into practice. It seems that the value of critical thinking then requires judgement to convince others that some arguments are good or bad. Critical thinking also contributes to healthy personal relationships between main stakeholders within the educative teaching and learning environment. Decision-making requires critical thinking for evaluation of data gathered to ensure accuracy at all times (Leedy & Ormrod, 2005:58).

Based on the above discussion, it can be concluded that critical thinking involves:

- the ability to collect and utilize information effectively through a combination of specific actions;
- a strategy that should be taught to all learners, because critical thinking is not something that develops automatically with maturity;

- focusing on the construction of knowledge and thinking strategies;
- cognitive strategies;
- how to teach thinking strategies and how to evaluate them;
- at least a basic knowledge of the thinking strategies; and
- the understanding of reflection, assumption and what it means to reason with intellectual discipline within a learning field.

All the above elements are necessary for a comprehensive understanding of effective teaching and learning. The manner in which teachers handle these complex issues depends on their personal knowledge, abilities, dispositions, critical thinking ability and skills. According to Woods (1990:21), opportunities to learn are contingent. In the classroom critical thinking adds value to productive and positive activity as learners are actively engaged in creating and re-creating aspects of their personal lives. They appreciate creativity, they are innovators, they have the ability to be critical and analytical concerning assumptions and they exude a sense that life is full of possibilities. Brookfield (1987:5) states that critical thinkers see the future as open and not as closed and fixed. They are self-confident about their potential for changing aspects of their world, both as individuals and through collective action. Furthermore, being a critical thinker entails a continual questioning of assumptions. This contributes to the continuous and holistic development of learners and makes them confident critical thinkers in and outside the classroom.

Brookfield (1987:43) concludes by stating that critically reflective learners are likely to be fostered in classrooms in which challenges and excitement are found. According to Perrott (1982:30-31), teachers may employ three main types of interaction in a class:

- **Teacher- group interaction**

This is a teacher-centred type of interaction, where the teacher lectures or demonstrates to the class as a whole. Questions are directed to a group

rather than to individuals, e.g. the teacher demonstrates a method for extracting chlorophyll from a leaf, so that it may be tested for the presence of starch and learners must then answer questions based on the demonstration.

- **Teacher-learner interaction**

This involves a teacher-directed rather than a teacher-centred type of interaction. In this situation the teacher questions specific learners by name in order to promote learner exposition and/or discussion, e.g. learners have completed a series of lessons on a given topic and the teacher has prepared a series of questions based on this topic which ranges in difficulty from requiring and recall of factual information to requiring application of knowledge acquired to a new situation.

- **Learner-learner interaction**

Some examples of such interactions are:

(a) Class discussion in which the teacher plays a management role directing learners' questions to other learners for comment and clarification, e.g. "How would you answer John's question, Sipho?"

(b) A class working in small groups on a project or experimentation, which is discussed among learners themselves. Here the teacher plays a classroom management role.

(c) A situation where learners go to the writing board to show the steps they have used to solve a problem.

(d) Learners engage in role-playing or acting.

A teaching approach that focuses on teaching critical thinking skills to learners should explicitly enable learners to cope well in thinking critically at all times. It is, however, true that many teachers still prefer to teach in the traditional teacher-centred manner. This implies that the attitudes of many teachers are that there is more value in teaching in a traditional manner than to focus on

teaching critical thinking skills to learners. These attitudes of teachers must therefore change.

1.2.2 Changing teachers' attitudes regarding the value of teaching critical thinking skill to learners

The current attitudes of teachers concerning the teaching of critical thinking skills are that learners should produce knowledge as given to them (Epstein & Kemberger, 2006:11). It is the experience of the researcher that teachers feel that teaching critical thinking skills to learners is too time consuming. This implies that the attitudes of teachers regarding the teaching of critical thinking skills to learners must be properly and effectively changed. The challenge, though, is that this must be done by the school management team (SMT). The SMT should manage the attitudes of teachers regarding the teaching of critical thinking skills and should further provide opportunities through which teachers can be empowered to be able to teach learners the skills of critical thinking.

Based on the review of relevant literature, the problem of this research seems to be vested in the following questions:

- What are the attitudes of teachers regarding the value of teaching critical thinking skills to learners?
- How can teachers' attitudes regarding the value of teaching critical thinking skills to learners be changed effectively?
- Can a model be designed for changing the attitudes of teachers regarding the value of teaching critical thinking skills to their learners?

1.3 RESEARCH AIMS AND OBJECTIVES

1.3.1 Aim

The aim of this research is to design a model for changing the attitudes of teachers regarding the value of teaching critical thinking skills to learners.

1.3.2 Objectives

The research aim can be operationalized into the following research objectives:

- To determine the attitudes of teachers regarding the value of teaching critical thinking skills to learners
- To determine how teachers' attitudes regarding the value of teaching critical thinking skills to learners can be effectively changed
- To design a model for changing the attitudes of teachers regarding the value of teaching critical thinking skills to their learners

1.4 METHOD OF RESEARCH

The research will be a "mixed-method" approach – the researcher included open-ended questions and descriptions. However, a quantitative approach is also applicable. This approach is used to answer questions about relationships among measured variables with the purpose of explaining phenomena (Leedy & Ormrod, 2005:94). Quantitative research presents statistical results represented with numbers. It is usually based on what is called a "logical positivist" philosophy, which assumes there are social facts with a single objective reality, separated from the feelings and beliefs of individuals. Quantitative research seeks to establish relationships and explain causes of changes in measured social facts. In this method of research, there is an established set of procedures and steps that guide the researcher. The quantitative researcher employs experimental or correlation designs to reduce error, bias and extraneous variables. The researcher is detached from the study to avoid bias. Quantitative research therefore attempts to establish universal context-free generalizations. This method of research qualifies the fact that numbers will be used in the form of a population, which will be reduced to a sample. This will assist the researcher to present statistical results with numbers. This method will work for this research because there is an established set of procedures and steps that guide the researcher. The

researcher has also chosen this method as it will provide a pre-established design for data collection.

1.4.1 The review of the literature

The literature study includes relevant sources like books and the internet. For this study an EBSCO-Host and ERIC search of primary and secondary information sources will be conducted to gain information with the aid of the following key words:

Critical thinking, teaching critical thinking skills, development of critical thinking skills, effective directing, thinking skills, attitudes of teachers, change management, school management, resistance to change.

1.4.2 Empirical research

1.4.2.1 Research population and sample

1.4.2.1.1 Population

According to Leedy and Ormrod (2005:204), a research population refers to a larger group of people with respect to their characteristics of interests. The population may contain strata that may be roughly equal in size and that occupy varying proportions of the overall population. The population may also consist of clusters whose characteristics are similar, but the individual (e.g. people) within each cluster shows variability in characteristics that is similar to the variability in the overall population.

The population of this research comprises all senior phase teachers (N=3000) of secondary and primary schools in the Johannesburg South and Central Districts of the Gauteng Province. The Revised National Curriculum Statement (RNCS) is being implemented in the above grades and therefore focuses on critical thinking.

1.4.2.1.2 Sample

According to Leedy and Ormrod (2005:207), a sample of 20% is well representative. The sample of this research will therefore consist of teachers

selected from the population. The basic rule is: the larger the sample, the better. In other words, one needs a representative sample. To some extent the size of an adequate sample depends on how homogeneous or heterogeneous the population is – how alike or different its members are with regard to the characteristics of research interest. A sample of 10% (n = 300) of teachers will be drawn from the Johannesburg-South and Central Districts. The intention of the researcher is therefore to ensure that the study includes a diverse South African society. The research will be conducted in twenty randomly selected secondary and primary schools.

Sampling technique

The researcher used the cluster sampling technique in which the researcher identifies convenient, naturally occurring group areas, namely Eldorado Park in the Central District and Ennerdale in the Johannesburg South District in the Gauteng Province. Some of these schools were randomly selected for the study. Once the schools have been selected, teachers will be selected from each one (Schumacher & McMillan, 1993:163).

1.4.2.2 Research instrument

The empirical research was done through the questionnaire survey technique. Information regarding the value of teaching critical thinking skills to learners will be gathered through the literature study and will be used to design a questionnaire that will be administered to senior phase teachers (grades 7, 8 and 9) in the Johannesburg South Mega District in the Gauteng Province.

Questionnaires are relatively economical, have standardized questions, can ensure anonymity and questions can be written for specific purposes (Schumacher & McMillan, 1993:238). Questionnaires are also the best widely used technique for obtaining information.

1.4.2.2.1 General format of the questionnaire

According to Schumacher and McMillan (1993:242), the general layout and organization of the questionnaire is very important. This means that the

researcher has to ensure that the questionnaire does not appear to be carelessly done or confusing so that respondents not set it aside and do not respond. Clearly a well-done format and appearance provides a favourable first impression and will result in cooperation and serious conscientious responses.

Schumacher and McMillan (1993:242) suggest the following rules to be adhered to carefully:

- Carefully check grammar, spelling, punctuation and other details.
- Make sure printing is clear and easy to read.
- Make instructions brief and easy to understand.
- Avoid cluttering the questionnaire by trying to squeeze too many items onto each page.
- Avoid abbreviated items.
- Keep the questionnaire as short as possible.
- Provide adequate space for answering open-ended questions.
- Use a logical sequence, and group related items together.
- Number the pages and items.
- Use examples if the items may be difficult to understand.
- Put important items near the beginning of a long questionnaire.
- Be aware of the way the positioning and sequence of the questions may affect the responses.
- Print response scales on each new page.

The above rules were adhered to in the construction of this questionnaire.

1.4.2.2.2 Types of items

There are many ways in which a question or statement can be worded, and a number of ways in which the response can be made. The types of items should be based on the advantages, uses and limitations of these options (Schumacher & McMillan, 1993:242-243). The researcher will use **closed form items** (also called structured or closed-ended). This type of item is the best for obtaining demographic information and data that can be categorized easily (Schumacher & McMillan, 1993:243). Closed form items will work for this research because it will be much easier to score and the teachers can answer the items more quickly (Schumacher & McMillan, 1993:243). It is therefore best to use closed form items with large numbers of teachers. It is very time-consuming for the researcher to categorize several hundreds of open-ended responses, not to mention the subjectivity involved.

1.4.2.2.3 Length of the questionnaire

According to Schumacher and McMillan (1993:241), long and complicated items should be avoided because they are more difficult to understand and respondents may be unwilling to try to understand them. The researcher therefore assumes that respondents will read and answer items quickly and that it is necessary to write items that are simple, easy to understand and easy to respond to. In other words, the questionnaire should be relatively economical.

1.4.2.2.4 Validity and reliability of the questionnaire

The questionnaire is one of many ways in which information can be obtained (Schumacher & McMillan, 1993:239). The researcher should be sure that, given the constraints of the situation, there is no other more reliable and valid technique that could be used. The decision is based on the strength of the technique. Much thought should be given by the researcher to justify the technique while the questionnaire is developed. The researcher will strive to design an exciting questionnaire that will save time and money and will ensure that the instrument is reliable and valid.

Leedy and Ormrod (2005:190-192) provide the following twelve guidelines for developing questionnaires:

- To be kept short and as brief as possible
- Simple clear and unambiguous language to be used
- To check for unwarranted assumptions and implicit questions
- Questions to be worded in ways that do not give clues about preferred or more desirable responses
- To be checked for consistency
- To determine in advance how responses will be coded
- The task of the respondents to be kept simple
- Clear instructions to be provided
- A rationale to be given for any items whose purpose may be unclear
- The questionnaire to be made attractive and professional looking
- All pilot tests to be conducted
- The almost-final product to be scrutinized carefully to ensure that it addresses the needs

The above guidelines will be applied in the construction of the questionnaire for this research.

1.4.2.3 Pilot survey

The questionnaire will be pre-tested with a selected number of respondents from the target population regarding its qualities of measurement, appropriateness and clarity. Respondents were selected from the schools in the mentioned areas in the senior phase. Sound information was collected

from this small sample to be generalized to the large population. This ensured reliability and validity and adequate representation of the population.

1.4.2.4 Statistical techniques

The collected data was analysed and interpreted by employing the SAS-programme with the help of a statistician associated with the North-West University. Statistics were used in the study, which will represent numerical results. The relationship between descriptive and inferential statistics will be used for the data analysis. This indicated how the researcher would first take the sample from the population, using descriptive statistics to describe the sample and then use inferential statistics to estimate the true value of the test score for the population (Schumacher & McMillan, 1993:192).

1.4.2.5 Ethical aspects

The study was conducted after permission has been obtained from the relevant role players. This included the Gauteng Department of Education as well as the participating teachers. The data, as well as the names of the participants who were taken part in the completion of the questionnaires, will be treated as confidential. Although participants will be encouraged to be available throughout the study, they reserve the right to withdraw from the research. This constraint will be dealt with based on the great number of participants. As a token of gratitude and appreciation, results emanating from the research were shared with the participants.

1.4.2.6 Procedure

The study was conducted at randomly selected schools from some of the areas in the Central and Johannesburg South Districts within the Gauteng Department of Education. Teachers were contacted to participate voluntarily in the research. All data obtained from respondents were treated in confidence and the objectives and aims of the research were explained to them before they were asked to complete the questionnaires.

1.5 CONTRIBUTION OF THE STUDY

This study contributed to the effective changing of teachers' attitudes towards the value of teaching critical thinking skills to learners.

1.6 STRUCTURE OF RESEARCH

Chapter 1: Introductory orientation

Chapter 2: The value of teaching critical thinking skills to learners

Chapter 3: Research design and methodology

Chapter 4: Data analysis, interpretation and discussion of findings

Chapter 5: A model for changing teachers' attitudes towards the value of critical thinking skills: a school management perspective

Chapter 6: Summary, findings and recommendations

CHAPTER TWO

THE VALUE OF TEACHING CRITICAL THINKING SKILLS TO LEARNERS

2.1 INTRODUCTION

Critical thinking skills involve judgement to convince others that some arguments are good or bad. Learners are confronted daily with argumentative raw material which requires that they put their critical thinking skills into practice. Critical thinking also contributes to healthy personal relationships between main stakeholders within the teaching and learning environment. Decision-making requires critical thinking for evaluation of data gathered to ensure accuracy at all times (Lipman, 2003:6).

Critical thinking allows one to decide which solution is the most reasonable under the specific circumstances, taking into consideration how the end result will be affected. If one can only see one solution to a problem, one is setting oneself up for failure (Nicoteri, 1998:64-65). In most settings decisions must be made quickly and rational conclusions must be drawn. However, critical thinking doesn't come naturally: practice is essential to its development and refinement (Nicoteri, 1998:65).

Bassham, Irwin, Nardone and Wallace (2005:8-11) identify three places, namely in the classroom, in the workplace and in life itself where the benefits of critical thinking skills can be seen:

2.1.1 Critical thinking in the classroom

According to the researcher, the focus of teaching and learning at secondary school level (especially senior phase) should be on higher-order thinking: the active evaluation of ideas and information. For this reason Bassham *et al.* (2005: 8) argue that critical thinking plays a vtal rol e throughout the school curriculum because learners learn a variety of skills that can greatly improve their classroom performance:

- understanding the arguments and beliefs of others;
- critically evaluating those arguments and beliefs; and
- developing and defending one's own arguments and beliefs (Bassham *et al.*, 2005: 8).

2.1.2 Critical thinking in the workplace

Surveys indicate that fewer than half of today's school graduates can expect to be working in their major field of study within five years of graduation. According to Bassham *et al.* (2005:10), employers are looking for employees with not only highly specialized career skills, but also with good thinking and communication skills — learners who can solve problems, think creatively, gather and analyse information, draw appropriate conclusions from data and communicate their ideas clearly and effectively. These are exactly the kinds of generalized thinking and problem-solving skills that a course in critical thinking aims to improve (Bassham *et al.*, 2005: 10).

2.1.3 Critical thinking in real- life situations

Critical thinking is valuable in many contexts outside the classroom and the workplace.

Firstly, critical thinking can help one avoid making foolish personal decisions (Bassham *et al.*, 2005: 10) and can help one to avoid mistakes by teaching one to think about important life decisions more carefully, clearly and logically (Bassham *et al.*, 2005: 10). Secondly, critical thinking plays a vital role in promoting democratic processes. It is important that citizens' decisions be as informed and as deliberate as possible (Bassham *et* al., 2005: 11).Thirdly, critical thinking is worth studying for its own sake, simply for the personal enrichment it can bring to one's life. One of the most basic truths of the human condition is that most people, most of the time, believe what they are told (Bassham *et al.*, 2005: 11).

"Throughout history, people accepted without question that the earth was the centre of the universe, that demons cause disease, that slavery was just and

that women are inferior to men. Critical thinking, honestly and courageously pursued, can help free one from the unexamined assumptions and biases of upbringing and society" (Bassham *et al.*, 2005:11).

2.2 CRITICAL THINKING DEFINED

Critical thinking is not a cover-all term for all thinking skills, but rather involves the process of determining the authenticity, accuracy and worth of information or knowledge claims. It consists of a number of discrete skills which can be used to determine such authenticity, accuracy and worth (Beyer, 1985:276). The author continues to state that education specialists today appear to agree that critical thinking involves the assessing of the authenticity, accuracy and/or worth of knowledge claims and arguments. The following definitions of critical thinking are offered by researchers who have analysed it in some depth:

- Critical thinking is the judging of statements based on acceptable standards (Freel, 1976:3).

- Critical thinking is the process of examining materials in the light of related objective evidence, comparing the object or statement with some norm or standard, and concluding or acting upon the judgement made (Russel, 1956:285).

- Critical thinking calls for a persistent effort to examine any belief or supposed form of knowledge in the light of the evidence that supports it and the further conclusions to which it tends (Glaser, 1941:6).

In essence, according to Beyer (1985:271-272), critical thinking consists essentially of "evaluating statements, arguments and experiences." It involves in its most benign form "the correct assessing of statements" (Ennis, 1962:82-83) and in its most aggressive form "the spotting of faults" (De Bono, 1983:706). Critical thinking is unique because it involves careful, precise, persistent and objective analysis of any knowledge, claim or belief to judge its validity and/or worth. Critical thinking has two important dimensions. It is both a frame of mind and a number of specific mental operations, including: alertness to the need to evaluate information; a willingness to test opinions;

and a desire to consider all viewpoints (Fraser & West, 1961:222). A critical thinker, therefore, approaches information, assertions and experience with a healthy scepticism about what is really true or accurate or real, as well as with a desire to search through all kinds of evidence to find the "truth" (Fraser & West, 1961:222).

According to Norris and Ennis *(1989:3-5)*, critical thinking can be defined as "reasonable and reflective-thinking that is focused upon deciding what to believe or do".

Reasonable thinking refers to good thinking that relies upon the use of good reasons. People who form beliefs or who act without good reasons are acting arbitrarily and unreasonably. Good thinking is not arbitrary and unreasonable because good thinking does not lead to just any conclusion, but in general to the best conclusions (Norris & Ennis, 1989:3).

Critical thinkers must be **reflective** through examining the reasonableness of thoughts. Thinking does not become reasonable thinking by accident. Critical thinkers must consciously seek and use good reasons (Norris & Ennis, 1989:4).

Critical thinking is **focused** thinking. This attribute is closely related to the previous attribute because it, too, suggests that critical thinking is consciously directed. To say that an activity is consciously directed is to say that it has a purpose. Critical thinking is purposeful thinking as it does not occur accidentally or without reason (Norris & Ennis, 1989:5).

The focus of critical thinking is on taking a **decision about what to believe or do**. Deciding what statements to believe has sometimes been considered the main concern of critical thinking. However, limiting critical thinking to the believability of statements is often considered impractical (Norris & Ennis, 1989:5).

In addition to the above definition, Ennis (1991:6) states that "critical thinking does not exclude **creative thinking**. Creative acts, such as formulating hypotheses, alternative ways of viewing questions and plans for investigating

something, come under this definition which emphasises reflection, reasonableness (interpreted roughly as rationality) and decision-making (about belief and action)" (Ennis, 1991:6). Critical thinking is therefore an important part of the process of problem-solving. Being mindful of the above definition one tends to agree with Facione (1990:6) in that critical thinking is not the "rote, mechanical, unreflective and disconnected execution of sundry cognitive processes." On the contrary, it relates closely to other forms of higher-order thinking, for example, problem-solving, decision-making and creative thinking (Facione, 1990: 13).

Nicoteri's (1998:64) understanding of critical thinking supports that of Ennis and Facione as it involves identifying the problem by assessing the resources and generating solutions to problems. Nicoteri (1998:65) also states that critical thinking is both an attitude and a reasoning process. This means that critical thinking determines one's attitude towards the problem. The reasoning process is the beginning or departure point for problem- solving. This leads to possible solutions to the problem. The process is then concluded with decision- making.

Based on the above definitions of critical thinking, it can be concluded that critical thinking involves:

- evaluating statements and experiences;
- analysing any knowledge, claim or belief carefully, precisely and persistently;
- good thinking that does not just lead to any conclusion, but in general to the best conclusion;
- seeking consciously and using good reasons to reflect in examining the reasonableness of thoughts;
- focusing on the problem- solving process purposefully;
- creative thinking and acting by viewing questions and problems from different angles or viewpoints;

- higher-order thinking in all aspects of problem-solving and decision-making;
- identifying the problem, assessing resources and generating possible solutions;
- attitudes and correct approaches towards problems;
- reasoning processes as departure points for problem solving;
- clarifying the meaning of all major words;
- identifying the stated and implied conclusions;
- identifying the structure of the arguments;
- identifying and critiquing any premises and interferences.
- seeking other relevant arguments.
- evaluating the quality of the argument in light of the results of the preceding steps;
- stating the goal or purpose of the analysis;
- identifying the clues (or evidence) to look for;
- searching the data line-by-line or item-by-item to locate such clues;
- identifying any pattern among the clues (by seeking regularities, repetitions, common associations, etc.);
- matching the clues and perceived patterns with the ideal standards, criteria or patterns appropriate to the skill; and
- determining the extent to which the data being examined match the ideal set of standards or criteria.

2.3 TEACHING CRITICAL THINKING SKILLS TO LEARNERS

Two ways of teaching critical thinking skills to learners will be discussed, namely, teaching critical thinking skills as part of each subject and critical skills as a separate subject.

2.3.1 Teaching critical thinking skills as part of each subject

Teaching critical thinking skills to learners as part of each subject means that the thinking skills are integrated with the normal content of each subject. The different forms of knowledge in general (e.g. Science) and their disciplines (subjects) in particular (e.g. Biology, Natural Sciences and Physical Science) are not arbitrary devices which have been forced unnecessarily upon us by pedagogues, but are essential contexts for thinking (Chambers, 2002:5). According to Chambers (2002:5), children learn to think as they encounter, at levels suited to their age, ways of thinking as part of disciplinary problems. In other words, learners realize that subjects like Accounting and Mathematics both demand some form of calculations although they are part of different learning fields. These relationships occur in quite different forms of knowledge, involve different concepts and awareness of different tests of claims. Thinking critically (in the above subjects) is an essential part of mastering it (Norris & Ennis, 1989:5).

In this regard, Bonnett (1995) states that "any view of good thinking which fails to affirm the sanctity of content is likely to be deficient". Pithers and Soden (2000:241) agree with this view by stating that critical thinking should be taught in the course of teaching discipline knowledge. Teachers should emphasise particular forms of reasoning within their own subject and then give examples of how these forms of reasoning can be applied both within and outside the particular subject.

Cowan (1994) argues that some abilities learned through studying Science have wider generalizability than others to tasks outside this subject. Because of the generic nature of such abilities, it seems unlikely that they will have to be learned from scratch each time that knowledge from another subject is learned. It would, however, ask for a "restructuring of the entire curriculum, in

order that subject specific knowledge could be reduced to allow time for engaging in activities which are likely to develop thinking skills that will be transferred" (Pithers & Soden, 2000:246).

In the context of the above, it also becomes clear that there is no basis for assuming that critical thinking in school subjects will automatically transfer to everyday life. Critical thinking must therefore sometimes be evaluated in everyday-life contexts.

2.3.2 Teaching critical thinking skills as a separate subject

Teaching critical thinking skills as a separate subject involves generic operations that can be learned in themselves, apart from any particular knowledge domains and then transferred to or applied in different contexts.Worsham and Stockton (1986:11) claim that some skills are basic and common to most curriculum tasks, for example gathering information, finding main ideas, analysis, evaluation and synthesis. Smith (2002:659) and Ennis (1991:43) support this view by stating that there is a substantial body of important material, such as concepts, principles and skills, that is general and applicable to various disciplinary domains and which could be taught in general education courses in such a way that students would be able to transfer and apply it in other relevant contexts. Smith (2002:659) and Ennis (1991:43) further state that skills are repeatable and transferable within limits. A skill applies to a certain kind of task, but tasks do not always have clear boundaries. Skills typically consist, in part, of strategies and methods that have been internalized and incorporated into a performance routine.

According to Smith (2002:666), there is no way of "parcelling up potential contents of thought into discrete packages, each of which requires a distinct way of thinking that has nothing significant in common with any other package". These commonalities allow for the existence of general thinking skills.

Quin (1994:34) also argues that critical thinking skills can be taught in a separate subject identified as informal logic. The teaching of critical thinking

as a set of general skills has been strongly supported by Ennis (1989) and Siegel (1991:23).

It is therefore concluded that the strong support that exists for both approaches to the teaching of critical thinking skills indicates that either approach might be effective. However, a combined approach might well be most effective. Within a combined approach, general domain thinking skills can be taught in a separate programme before subject teachers focus on the specific domain to integrate general domain thinking skills as transferable skills to specific subjects. What is essential is that an appropriate habit of mind and appropriate use of intellectual resources are exemplified and that prospective educators are given guided practice in critical thinking in appropriately rich contexts.

2.4 MODELS FOR TEACHING CRITICAL THINKING SKILLS TO LEARNERS

Approaches to teaching critical thinking skills to learners can be enriched by considering the various models for teaching critical thinking skills. The following models for teaching critical thinking skills will be discussed: Calvin Taylor's Creative Thinking Model, Isaken and Treffinger's Creative Problem Solving Model and Benjamin Bloom's Critical Thinking Model.

2.4.1 Calvin Taylor's Creative Thinking Model (Bellis:2003)

Best known as 'Talents Unlimited', a programme of the National Diffusion Network of the United States Department of Education, the Taylor model incorporates both the critical and creative elements of thinking. Rather than a taxonomy, this is a thinking skills model that describes the essential elements of thinking, namely: productive thinking, communication, planning, decision-making and forecasting.

Productivity promotes creative thinking. The Calvin Taylor model suggests a focus on critical and creative thinking that involves many ideas, varied ideas and adding to those ideas(Bellis:2003).

Communication involves six elements which requires from learners the following:

- give many, varied, single words to describe something;
- give many, varied, single words to describe feelings;
- think of many, varied things that are like another thing in a special way;
- let others know that you understand how they feel;
- make a network of ideas using many, varied and complete thoughts; and
- tell feelings and needs without using words.

Planning requires that students learn to explain what they are going to plan:

- the materials that they will need;
- the steps that they will need to accomplish the task; and
- the problems that might occur.

Decisio- Making teaches the student to:

- think of the many, varied things that could be done;
- think more carefully about each alternative;
- choose the best alternative; and
- give many, varied reasons for the choice(Bellis:2003).

Forecasting requires students to make many, varied predictions about a situation, examining cause and effect relationships. Every element of the Calvin Taylor model is used when a child invents.

2.4.2 Isaksen and Treffinger's Creative Problem-Solving Model (Bellis, 2003)

The seond model developed by Scott Isaksen and Donald Treffinger as described in the book "Creative Problem Solving: The Basic Course (1985) focuses on both critical thinking and creative thinking. **Creative thinking** is described as making and communicating connections; thinking of many possibilities; thinking and experiencing in various ways; using different points of view; thinking of new and unusual possibilities; and guiding in generating and selecting alternatives. **Critical thinking** is described as being able to analyse and develop possibilities; compare and contrast many ideas; improve and refine ideas; make effective decisions and judgments; and provide a sound foundation for effective action. These definitions are used in a six-stage, problem-solving process. The six stages can be described as follows (Bellis:2003):

Mess-finding involves determining what the mess is that needs cleaning up.

Data-finding focuses on "taking stock" – unearthing and collecting information, knowledge, facts, feelings, opinions and thoughts to sort out and clarify the identified mess more specifically.

Problem-finding involves the formulation of a "problem statement" that expresses the "heart" of the situation. Common assumptions about "already knowing what the problem is" must be put aside and the problem must be stated in such a manner that different perspectives are considered (Bellis:2003).

Idea-finding is the stage in which brainstorming takes place and in which as many ideas or alternatives as possible are considered for dealing with the problem statement. Ideas are not evaluated at this point. Ideas are merely listed as an "idea pool" from which a variety of solutions to the problem can be drawn.

During **solution–finding,** ideas that can serve as possible solutions to the problem are evaluated systematically. A variety of criteria must be generated

and those most appropriate for solving the problem must be identified. The relative strengths and weaknesses of possible solutions must also be evaluated (Bellis:2003).

Acceptance-finding takes place after having decided upon a solution. A plan of action must be formulated and implemented to solve the problem. It must be determined what kind of help will be needed; what obstacles or difficulties might get in the way and what specific short- and long-term steps will be taken to get rid of the "original mess".

2.4.3 Benjamin Bloom's Critical Thinking Model (Bellis:2003)

In 1956, Benjamin Bloom headed a group of educational psychologists who developed a classification of levels of intellectual behaviour important in learning. Bloom found that over 95% of the test questions students encounter require them to think only at the lowest possible level, namely the recall of information. Teachers in Gauteng have undergone training to use this taxonomy in their classes. Examination papers are set according to this taxonomy.

Bloom identified six levels within the cognitive domain (Bloom's taxonomy), from the simple recall or recognition of facts as the lowest level, through increasingly more complex and abstract mental levels, to the highest order which is classified as evaluation. Verb examples that represent intellectual activity on each level, include:

1. **Knowledge**: arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce, state. Knowledge is defined as the remembering of previously learned material. Knowledge, according to Benjamin Bloom, represents the lowest level of learning outcomes in the cognitive domain (Bellis:2003).

2. **Comprehension**: classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select and translate. Comprehension involves the ability to grasp the meaning of material and

goes just beyond the knowledge level. Comprehension is the lowest level of understanding (Bellis:2003).

3. **Application**: apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practise, schedule, sketch, solve, use, write. Application refers to the ability to use learned material in new and concrete principles and theories. Application requires a higher level of understanding than comprehension (Bellis:2003).

4. **Analysis**: analyse, appraise, calculate, categorize, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test. Analysis requires an understanding of both the content and the structural form of material (Bellis:2003).

5. **Synthesis**: arrange, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, set up and write. Synthesis refers to the creative behaviours with a major emphasis on the formulation of new patterns or structures (Bellis:2003).

6. **Evaluation**: appraise, argue, assess, attach, choose, compare, defend, estimate, judge, predict, rate, core, select, support, value, evaluate. Evaluation is concerned with the ability to judge the value of material for a given purpose. The judgments are to be based on definite criteria. Learning outcomes in this area are the highest in the cognitive hierarchy because they incorporate or contain elements of knowledge, comprehension, application, analysis and synthesis. In addition, they contain conscious value judgments based on clearly defined criteria. The activity of inventing encourages the four highest levels of learning – application, analysis, synthesis and evaluation – in addition to knowledge and comprehension (Bellis: 2003).

2.4.4 Summary

Both the Calvin Taylor's Model for teaching critical thinking and the Creative Problem-Solving Model focus on creative and critical thinking. Benjamin Bloom's Critical Thinking Model differs from the above-mentioned models in

that it identifies six levels within the cognitive domain, from simple recall of knowledge to increasingly more complex and abstract mental levels, and finally to the highest level which is classified as evaluation.

Creative and creative thinking are two key aspects in the teaching and learning process. Teachers are therefore also challenged to be critical and creative in the daily lesson planning, especially in the senior phase. However, Bloom's Model can also be fruitfully implemented in a simplified way in the senior phase. In other words, a combination of all three models in the teaching and learning environment may contribute to a better understanding of the teaching of thinking skills.

2.4.5 Teaching critical thinking skills to learners

The researcher is of the opinion that all trained and qualified teachers should be able to teach critical thinking skills to learners. The real question to ask is: Do teachers KNOW HOW to teach critical thinking skills to learners? Weaver (1998:800) states clearly that the teacher's job is to help learners develop their own critical perspectives and to confront learners with the difficult choices that they have to make or to advocate a particular moral or ideological perspective that learners are encouraged to adopt. Hughes (2003:61) asks the question: "How do we teach people to think independently when we are not indifferent to the conclusions they draw?" As teachers we must understand that good thinking requires an enthusiasm for alternative points of view, knowing that the skill does not develop naturally."Good thinking is to be taught by teachers to learners in helping learners to think well in a way which makes sense to teachers. This could be implemented in all sectors of education with existing resources" (Pithers & Soden, 2000:238). According to Lombard and Grosser (2004: 15), the challenge to bridge the gap between ideals and realities should be accepted with regard to the nurturing of critical thinking, especially among prospective teachers. Teachers should play a pivotal role in ensuring that learners' critical thinking skills are well developed. Teachers should change their classroom practices, but should also reflect competence in the ability to think critically. Lombard and Grosser (2004:15) also state that teacher training programmes "should provide the necessary

knowledge, skills and attitudes for ensuring sustainable holistic development and growth with the aim of producing pioneers for realizing the ideals of the African Renaissance and the sought-after critical outcomes".

To be engaged in critical thinking or to be able to teach critical thinking requires at least a basic knowledge of strategies of critical thinking. If teachers are to teach learners the skills of critical thinking, the quality of the training that the teachers themselves undergo becomes critical. If teachers are not effectively educated in the basic structures of critical thinking, it will result in a situation within which most teachers have little understanding of what reflection is; what assumptions are; what inferences or implications are; or what it means to reason with intellectual discipline within a field of study (Fourie, 2004:7).

Literature makes it quite clear that teachers have an enormous task to fulfill in the classroom. However, teachers have to believe and accept the importance of putting critical thinking into "action".

2.4.5.1 What is required of teachers to be able to teach critical thinking skills to learners?

In order to determine what is required from teachers to be able to teach critical thinking skills to learners, an analysis of the definitions of critical thinking will be done.Teachers who are able to teach critical thinking skills to learners must themselves be able to evaluate whether claims are true or some arguments are good. This needs to be done so that good arguments can be formulated and sound judgements can be made. The ability to identify the problem, analysis, understanding and making use of inferences, inductive and deductive logic, giving meaning and judging the validity of assumptions, sources of data and information, cannot be overlooked (Epstein & Kernberger, 2006:1).

Teachers should also know that critical thinking is a process of determining the authencity, accuracy and worth of information or knowledge claims (Beyer, 1985:276). This means that accuracy is somehow dependent on time, so that the process is allowed to take place. Acceptable standards and judging of

statements cannot be separated (Freel, 1976:3) because it is like two sides of the same coin. The correct assessing of statements (Ennis, 1962:82-83) helps to find the faults (De Bono, 1983:706). This makes critical thinking unique because knowledge is analysed precisely, carefully and persistently. Truly both teachers and learners must have the willingness to test opinions and a desire to consider viewpoints (Fraser & West, 1961:222) at all times. In other words, learners, together with their teachers, must have the willingness and desire to search through all kind of evidence to find the "truth".

Teachers need to know that critical thinking involves reasonable and reflective thinking (Norris & Ennis, 1989:3-5). Learners become critical thinkers when they are reflective in examining the reasonableness of their own and the thoughts of others. Both teachers and learners need to be focused and purposeful so that all activities are directed at one common goal. This is therefore a decision about what to believe (evaluating of statements) or do (action). It is clear that the latter is intended to highlight the practical role that critical thinking can play in our lives. Creativity (Ennis, 1991:6) cannot be excluded in the analysis of the above concepts of critical thinking. This calls for both teachers and learners to formulate hypotheses, alternative ways of viewing questions and possible solutions to problems. Attitude and reasoning (Nicoteri, 1998:64) are vital aspects of critical thinking which really determine the approach and point of departure for problem-solving, possible solutions to the problem and ultimately decision-making.

Teachers should also strive (Beyer, 1985:276) to improve learner competency in critical thinking skills. Chamber (1998:5-6) emphasises that teachers should know the subject(s) in depths to ensure critical thinking at all times. Good teachers should understand the structure of their particular subjects and how it is different from that of other subjects, in order to pass such awareness on to their learners. Learners must come to understand both the distinctions and the connections among subjects.

Teachers should teach from multiple perspectives and focus on linkages and similarities of content (Pithers & Soden, 2000:243). "For example, during a course in high school history a teacher might ask questions about and discuss

similar causes underlying the world wars, in a range of areas such as economics, political, militaristic and social, as well as covering the specific causes of a particular war. Alternatively, during a poetry course, while studying the Romantic poets, common themes (e.g. their views of Nature and its beauty, significance for individuals) written about by different poets of this period (e.g. Keats, /Wordsworth, Colebridge, Byron) could be examined and compared and perhaps linked to learners' research on the life experiences of different poets and how this experience may have led them to their poetic conceptions of Nature and its influence(Pithers & Soden,2000:243). In this way, in each respective subject, some themes can be explored in a wider perspective. This, it is assumed, will encourage learners sensitivity, novelty and awareness of thinking in different contexts. In such a scenario, the learners are active; they ask questions and are able to tolerate ambiguity and uncertainty" (Pithers & Soden,2000:243). Through such an approach, learners develop more control and independence over their own learning.

Teachers should aim to challenge current learner ideas. "For example, by facilitating the generation of hypotheses, the interpretation of information or data, specification of criteria or helping learners to understand the judgemental processes of applying principles to new situations or for making predictions. Learners could be helped to devise the questions, gather information, question, discuss and weigh the different types of evidence and its validity and, perhaps, come to a tentative conclusion" (Pither & Soden, 2000:244).

Teaching in respect of critical thinking involves teaching learners to think critically, rather than instructing them.

The researcher is of the opinion that through regular and continuous workshops, programmes and in-service training courses, teachers must be empowered to teach critical thinking skills to learners. Although it is essential that teachers should know the subject(s) in depth, intervention programmes should also focus on equipping teachers with the following critical thinking skills:

- Evaluating arguments
- Identification of problems
- Analysis
- Understanding and making use of inferences
- Inductive and deductive logic
- Giving meaning and judging the validity of assumptions, sources of data and information
- Finding the truth by searching evidence
- Reasonable and reflective thinking
- Creative thinking
- Decision- making
- Teaching from multiple perspectives and focusing on linkages and similarity of content
- Challenging current learner ideas
- Drawing conclusions

It has been made clear in 2.5 that all teachers should be able to teach critical thinking skills to learners. However, as argued above, to ensure effective teaching of critical thinking skills, teachers must first be equipped with the skills to do so. In this regard, change management at schools is of vital importance. Change management at the school as an organization will now be discussed.

2.5 CHANGE MANAGEMENT AT SCHOOLS AS ORGANIZATIONS

2.5.1 Introduction

There is widespread agreement in literature that change and renewal are two of the most important aspects of successful organizations. When an organization fails to change and develop, the organization stagnates and eventually declines. Consequently change and renewal can be regarded as essential for the development of an organization. An implication of this is that the school as an organization has to be seen as a dynamic entity (Theron in Van der Westhuizen, 1996).

2.5.2 Defining change

Change is the struggle between what is and what is desired. It is an "unavoidable feature of human experience" (Taylor in Van der Westhuizen 1996). Change is a phenomenon that affects all aspects of a person's life, bringing about alterations in both personal and employment spheres.

In the context of educational management, change means, for instance, that school principals are exposed to new controls and regulations, growth, increasing competition, technological developments and changes in the workforce (Kotter & Schlesinger, 1979:106). Furthermore, changes in legislation, the availability of resources, market demands and social priorities often force principals to redesign the organization's structure and procedures, redefine priorities and redeploy resources (Beckhard & Harris, 1987:30).

According to Kimbrough and Burkett (1990:131), change is a deliberate effort to alter the *status quo* by influencing or modifying the functions, structure, technology and / or purpose of an organization. It is a complicated process that requires thorough strategic planning in order to reach prescribed goals (Virgilio & Virgilio, 1984:347). Hall and Hord (1987:10) see change as a process pursued for and by people.

The aim of change is always improvement. According to Glutter (in Wissler & Ortiz, 1988:157), improvement is a systematic, sustained effort aimed at

altering the process of learning and related matters with the sole purpose of attaining educational goals.

Change can therefore be defined as a planned, systematic process that is affected by individuals and is a highly personal experience.

2.5.3 The management of change

Change is a process that needs to be managed. The school principal, as the key figure around whom much of the school's activities revolve, to a great extent, determines the school's successes and failures when change is implemented (Hall in Van der Westhuizen, 1996). According to Herman and Herman (1994:2) an educational leader must lead the change – not merely be subject to it.

There are, however, certain prerequisites for the effective management of change. Furthermore, five phases (diagnosis, planning, implementation, stabilization and evaluation) in the change process must be managed. For each of these phases there are strategies and techniques which can be implemented to heighten the chances of successful implementation of the various kinds of change.

2.5.3.1 Prerequites for the effective management of change

According to Coetsee (1989:49), there are a number of factors that affect the school community which have to be taken into consideration as these factors are prerequisites for the effective management of change. The factors are:

- the degree to which the total school community will be affected by the change and the degree to which it is aware and supportive of the vision driving the change and its intended consequences;
- the degree to which the changes are in line with current practices and objectives;
- the existence of a climate of change at the school; and

- the previous experience that the school community has had of change as well as the degree of readiness for change in the specific community.

According to Herman and Herman (1994:4-5), the following questions have to be answered to determine the readiness for change at the school and in the individual:

- Does the school have a clear vision of what should and what could be in the future?
- Does the school have a clear picture of what is currently in existence and of what its quality is?
- Do internal or external forces require the change?
- Does the school collect data on the results of its programmes and determine the impact of its efforts?
- Does the school view the future with a clear and positive vision, make immediate and continuous plans to achieve this vision and use past and present achievement as a basis for improvement?
- Do individuals in the school have a share at the vision for the school?
- Do the individuals at the school enjoy new challenges and new ways of doing things and are they willing to contribute to positive change?
- Do the individuals at the school look forward to taking part in new working and learning opportunities?
- Do the individuals at the school look forward to the future, plan for it in the present and use the past and present as a basis for improvement?

Authors like Knoop (1987:16), De Villiers (1989:10), Ornstein and Hunkins (1988:14-15), Walker and Vogt (1987:44) and Virgilio and Virgilio (1984:348) agree that no change at a school will be successful without the positive and active support of the teaching corps. Even when the teaching corps supports the change process, there still have to be opportunities for staff development.

In addition to provision for staff development, the professional identity of the teacher will need to be acknowledged.

Baily (1982:103) is of the opinion that all teachers, irrespective of their positions in the hierarchical structure, tend to be a part of "a fair-minded professional elite". Because of this shared community, teachers should cooperate in reaching decisions on change. Hughes, Ribbens and Thomas (1985:460) note that consensual decision-making remains one of the most effective strategies for defusing resistance to change among teachers.

There are several reasons why change at schools does not succeed. The following are some reasons identified by teachers and school principals themselves (Leithwood & Montgomery, 1984:74).

2.5.4 Reasons why change at schools does not succeed

2.5.4.1 Reasons advanced by teachers

Teachers are of the opinion that school principals' efforts to bring about change fail because they (the principals):

- have inadequate knowledge and information about the proposed changes;
- have not all had identical professional training;
- have not been exposed to in-service training relevant to the proposed changes;
- do not grant staff the opportunity to participate in and influence the planning of the changes; and
- fail to recognize the autonomy of the staff.

2.5.4.2 Reasons advanced by school principals

Reasons advanced by school principals for their own lack of success in implementing change include the following (Leithwood & Montgomery, 1984:75):

- Uncertainty – unclear expectations and conflicts about areas of responsibility

- Complexity – which personnel should be assigned to which tasks affecting the change process?

- A limited or faulty notion of how the school system functions and what the principal's role is in that system

- A lack of administrative knowledge and inadequate leadership

Another reason why implementation of change fails, is the insistence on the "one best method solution"(Sergiovanni, 1987:278):

- Some agents of change focus only on the social and political context in which the school operates in winning support for their change proposals.

- Some agents of change focus only on a favourable school climate in order to obtain interpersonal support for change.

- A third group of agents emphasise the individual and his/her aptitude, phases of involvement in the proposed change and factors relating to resistance to the changes.

- A final group of agents focus primarily on the teacher's work, thereby attempting to manipulate the teacher's behaviour and actions in order to accomplish change.

All the above methods for implementing change are important, but none should be seen as the "one best method". The milieu in which change occurs is too complex for the adoption of a "one best method" approach (Theron in Van der Westhuizen 1996).

Kahn (1982:242) regards vision as a critical component of planning change. The school principal needs to be able to visualize the ultimate objective of change and has to convey that vision to the staff. Aims and objectives can only be determined if the mission (task) of the school is clearly defined. The

vision of the principal has to be of such a nature that he/she is able to anticipate the reactions and behaviour of those members of the school community who will be affected by the changes.

The following aspects can be regarded as guidelines for managing change successfully (Dalin, 1978:22; Kotter & Schlesinger, 1979:112; Lunenburg & Ornstein, 1991:221; Aquila & Galovic, 1988:69; Kimbrough & Burkett, 1990:147):

- Change is a process that occurs over time. Change consists of various steps involving and affecting individuals, organizations and many subsystems. If the process is to be handled correctly, the dynamics of change need to be understood.

- Individuals, organizations and interest groups are closely linked in the change process by formal and informal ties which are influenced by external forces. The strength of these ties decides whether the change will be successful.

- Change is a multifaceted phenomenon. Change in education is based on theories from the disciplines of economics, anthropology, psychology, administration and education. It is focused on individuals, but within the organization, the dominant political hegemony has an influence.

- A variety of strategies and methods have to be used to bring about change. During change, new situations requiring new strategies appear constantly. There has to be a strategy to anticipate the unanticipated, because new problems may appear in practice and they will necessitate their own (unique) solutions. Coercion rarely gives rise to sustainable solutions to problems.

- Change must be structured and pursued through well thought out strategies to prevent oversight or neglect of relevant issues.

- Change must be based on a need to eliminate resistance.

- Change has to do mainly with people. Each school's plan for change will have to accommodate the relevant people and their unique needs.

- Change is a gradual process. It requires the active engagement of the agents of change until the change has been fully internalized at the school.

- Existing structures at a school have to be altered if it appears that the intended changes will fail unless this is done.

- The implementation of change should rather be organic (flexible) than bureaucratic (rigid). Instead of insisting on firm rules and direct supervision, a flexible plan that allows for spontaneous modifications of the stated programme in the face of unforeseen factors is desirable.

- It is not desirable for planning and implementation of change to take place simultaneously. It is essential to consider all implementation options in advance.

According to Herman and Herman (1994:3), the following are the prerequisites for successful management and implementation of change:

- There should be a commitment to the change by the leaders and by a critical mass among the stakeholders.

- There should be a clear and desirable vision of what the school will be like once the change is complete.

- There should be clear strategic goals to be reached as the organization undergoes the change process, and milestones should be established to guide the path of the change.

- Detailed tactical plans should be decided upon and made available in understandable language to all who are to participate in the change process.

- Training should be provided for those individuals who are to initiate and / or manage the change, if they do not possess the requisite knowledge or skills.

- Adequate time, finances material and human resources must be provided to enhance the probability of successful change.

- High-quality, comprehensive and frequent two-way communication should take place throughout the entire change process.

- Adjustments to the tactial or strategic plans should be made during the formative period of the change process, if changes are required during the initiation and implementation stages of change.

- The leader should give recognition to all who do good work, and he/she should attend group celebrations every time an important milestone is reached.

2.5.4.3 Phases in managing change

Change involves five phases to be managed, namely diagnosis, planning, implementation, stabilization and evaluation.

2.5.4.3.1 Diagnosis

A need for change exists when any group of participants in the educational process loses faith in current practices, activities and outcomes of actions (Knoop, 1987:15). The resulting dissatisfaction has to be diagnosed and unfrozen. Diagnosing can happen in three ways. Firstly, the principal may become aware of a situation that requires alteration in the school. Secondly, staff may become aware of a situation that needs to be altered and may report this to the principal. Thirdly, parents or members of the public may become aware of the role of the principal as the educational leader and agent of change (Walker & Vogt, 1987:42).

According to Huddle (1987:81) ,diagnosing the problem reveals the extent and reality of the situation. It is possible to establish whether the problem that has

been raised needs to be taken seriously, and whether it actually has an influence on the person or persons who have reported it. If it appears from the diagnosis that these persons no longer have a problem, then the principal has nothing to unfreeze. To summarize, unfreezing should only occur when a diagnosis shows that there is a genuine need for change. Diagnosis should be the basis for planning for change (Knoop, 1987: 15). Planning as the second phase of managing change will now be discussed.

2.5.4.3.2 Planning

Planning refers to finding creative alternatives to the problem that has been diagnosed, analysing these alternatives and finally making a choice between possible solutions (Knoop, 1987:16). Each of the planned alternative solutions should have the potential to limit dissatisfacation and operate against forces of resistance to change.

Torrington and Weightman (1989:09) maintain that the following are appropriate questions that agents of change should ask during this phase:

- What is the current state of affairs and how did it start?
- Why is the situation problematic?
- In what way could it be different?
- What factors will help and what hinders change?
- Who will be affected by any changes that are made?
- How will those affected react to the proposed changes?
- What will be the point of departure?

Against the above questions, some school principals attempt to force change upon teachers and insist on the adoption of new values and attitudes (Aquila & Galovic, 1988:52). This approach rarely works, as teachers have no vested interests in the change. Lunenburg and Ornstein (1991:222) emphasize that

coercion should be the last resort in bringing about change. It is necessary to establish a climate conducive to change first.

An appropriate climate can be created by continuously communicating with those involved in the change process, by establishing work committees to investigate the problem and by discussing whatever problems are encountered with the school committee (SGB) (Knoop, 1987:16; Ornstein & Hunkins, 1988:67). The focus of the investigation process should be to promote cooperation between the principal (agent of change) and the school community (Walker & Vogt, 1987:42). Knoop (1987:16) advocates a decision-making procedure in which the decision-making group is small, to obtain the best set of alternative solutions.

Implementation of decisions taken should begin as soon as the existing situation has been diagnosed and the alternative solutions planned.

2.5.4.3.3 Implementation

Implementation is the most difficult phase of the change process (Knoop, 1987:16). Planning has to serve as a blueprint during this phase of making practice real. Implementation means that new structures are created, rules and regulations changed, objectives made clear and training provided. Resistance to change may also appear during this phase (Knoop, 1987:17).

According to Walker and Vogt (1987:43), resistance to change can originate from the system or from the individual. Some of the causes of resistance to change during this phase include the following (Walker & Vogt, 1987:43):

- Failure to involve people who are affected by the changes in the planning phase.
- The changes are not noted in writing and appropriately circulated.
- The goals of the changes are not clearly articulated and cleared with people involved with the changes.
- Working group recommendations are not accepted.

- Teachers are not kept informed of the compass of proposed changes.
- Teachers' concerns that the changes might prove disastrous are not addressed.
- There is excessive pressure of work during the implementation phase.

Effective support for countering the forces of resistance will have to be found during the implementation phase. For this reason, according to Knoop (1987:17), only one person or group of people should be responsible for the implementation of change. The only condition pertaining to this person or group is that he/she/they should enjoy the necessary respect, standing and interpersonal relationships to implement the changes effectively. Other supporting forces during this phase include (Van der Vegt & Knip, 1988:62; Ornstein & Hunkens, 1988:68-69; Knoop, 1987:17):

- effective communication by the principal;
- involvement by the principal during implementation;
- the necessary competence on the part of the principal;
- sensible allocation of duties so that tasks are completed conscientiously; and
- a principal who is prepared to be the central facilitator during the implementation phase.

The situation should be frozen or stabilized as soon as changes have been implemented and are up and running.

2.5.4.3.4 Stabilization

New norms come into existence during the stabilization phase. Loyalty to these norms is achieved by increasing people's involvement (Walker & Vogt, 1987:42). People need to be encouraged and rewarded during the stabilization phase to ensure that support for the changes is maintained and to prevent regression to old ways.

2.5.4.3.5 Evaluation

The final phase in change management requires an evaluation of the entire change process. This evaluation should indicate the degree of success of the change process and the change itself. It will enable the principal to ascertain the success of the change and will also serve as a point of departure for other change processes that need to be made (Walker & Vogt, 1987:44).

From the discussion of the preceding five phases it is clear that change is a process that has to be managed. Managing these five phases entails that the existing situation is unfrozen, that movement occurs and refreezing takes place.

In planned change driving forces are increased and resistance reduced to facilitate unfreezing and movement in the desired direction. Freezing should take place as soon as the intended change has been achieved (Van der Westhuizen, 2002:197)

It is clear from what has been discussed so far that the principal as the leader of teaching activities plays an important role in the management of change at school.

2.5.4.4 The role of the school principal in managing change

A number of writers on change management refer to the school principal as a change agent who has to accept the entire responsibility for managing change at a school (Dull, 1981:71; Kimbrough & Burkett, 1990:130: Sergiovanni, 1987:286; Virgilio & Virgilio, 1984:27; Bester, 1994). As such he/she is expected to initiate change, to facilitate it and to implement it, all stakeholders expect that principals will accept the responsibility of changing existing practices in the interests of progress (Kimbrough & Burkett, 1990:130). These expectations place pressure on the principal to manage change and to accept the following responsibilities (Dull, 1981:71):

- Determining the objectives of the proposed change
- Determining the procedures and methods for implementing change

- Scrutinizing the literature relevant to the proposed change
- Contacting other principals who have already had experience of the proposed change

The principal has to accept these responsibilities, but also needs to have the necessary skills to manage change effectively.

2.5.4.4.1 Skills needed by the school principal as an agent of change

Carnall (1986:106) emphasizes that the principal needs certain skills in order to initiate and manage change successfully. He regards vision and creativity as prerequisites for the systematic planning required for solving new problems. Furthermore, the principal has to be able to respond intuitively when new decisions have to be made. Guinness (1990:184) sees intuitive decision-making as being based on wide experience and knowledgeable handling of brainstorming sessions where contributions from outsiders are welcome. Huddle (1987:86) is of the opinion that the personal vision, involvement, dedication and visible support of the principal are the crucial factors in successful implementation of change.

In addition to the above-mentioned points, Miles, Saxle and Lieberman (1988:185), Paulu (1989:72), Carnall (1986:106) Van der Vegt and Knip (1988:61), Huddle (1987:84-85) and Virgilio and Virgilio (1984:348-349) regard the following skills, personal qualities and characteristics of the principal as necessary to initiate and implement change successfully:

- Good interpersonal relationships and ease of manner
- A grounding in the ethics and philosophy of change
- An understanding of how groups function
- Familiarity with adult education and with running workshops
- Wide teaching experience, a sound knowledge of educational management and a good general knowledge of other disciplines

- Initiative and innovative ideas
- Skills in enhancing communication, trust and self-confidence
- The ability to generate effective, positive relationships, to give support and to show empathy and sensitivity
- A willingness to confront people where necessary without generating hostility
- A sound understanding of how to handle conflict and stress
- A flexible and adaptable management style
- The ability to identify his / her own and others' strengths and weakness
- Skills in planning for action and implementation

2.5.4.4.2 The management task of the principal as an agent of change

Change is managed according to its phases. Planning is one of the key factors in the success of the implementation and acceptance of change: "... the principal has to give special attention to how he/she intends to (Harris, 1985:93; Keeve, 1987:51):

- manage change as a process;
- evaluate the effect of the changes and change strategy;
- persuade the school community to accept the changes; and
- communicate the aims of the changes to the school community".

2.6 RESISTANCE TO CHANGE

Research findings (Dalin, Lovell & Wiles, Hanson and Coetzee in Van der Westhuizen 1996) on the management of resistance to change reveal that orgarizations differ in respect of their willingness to change and manage

change. The resistance to change is often not resistance to change itself, but resistance to the psychological and social results of change (Coetzee, 1989).

Hall and Hord (1987) have indicated that the principal is primarily responsible for the implementation of change at the school and must therefore be conversant not only with the factors that cause resistance, but also with the manner in which resistance to change must be managed. Rash actions on the part of the principal to implement a new dispensation or new programme can give rise to resistance and cause the project to fail.

The manner in which the principal reacts to the change depends to a large extent on whether he / she feels that such change threatens the interests of the school, to what extent such changes are prescribed or enforced and whether adequate opportunity exits for personal participation. If confronted by unforeseen events which could cause uncertainty about established values and practices, the principal should try to neutralize or obviate the change (Smith & Crane, 1990). But when confronted with the reality that the educational dispensation is already in the process of change and resistance does exist, the correct procedure for managing resistance to change must be followed.

Another reason why the principal should know how to manage resistance to change in education is that change places enormous pressure on teaching staff. According to Gerber, Nel and Van Dyk (1994:108-117), most staff members are not prepared for the demands made on them by renewal and change. Staff often suffer from tension, frustration, exhaustion, insomnia and moodiness. Constant tension can cause burn-out, which is gradually becoming more prevalent in teaching.

If the principal knows how to handle resistance to change in education, he / she can apply this knowledge positively to the advantage of the school and the school community. Possible resistance can be decreased when implementing the change, and the psychological reaction of teachers (as well as the learners and school community) to protect themselves against the consequences of change and the accompanying tension can also be

minimized. Change can be implemented fairly easily if the principal knows and has insight into the nature, reasons, reactions and forms of resistance to change, and knows how to deal with and manage change at the school. With knowledge he / she can optimize the quality of the working life and teaching events at the school. Change and renewal can then be viewed and managed as a challenge instead of a threat that gives rise to resistance (Gerber *et al.*, 1994:108-109). This will allow the school to function more efficiently as a dynamic educational organization.

2.6.1 The value of resistance to change

Resistance to change can make a positive contribution to the management thereof. The most important contributions of resistance to change according to Gjerde, Davis and Newstorm Hanson in Van der Westhuizen 1996 are the following:

- It points to a need for more information on the nature, aim and value of the change.
- It can lead to better communication between the department of education, the school principal and the staff.
- Specific problem areas can be identified.
- It can lead to improved planning and better implementation of the change.
- It can also give an indication of how intensely staff members experience resistance to change.

It therefore appears that change usually takes place despite resistance to it. Resistance to change is merely a signal that the change has not been managed properly, which is why it can also be valuable.

2.6.2 Conclusion

Education is engaged in a process of change worldwide. This is especially so in South Africa, where change dominates the profession and principals are expected to lead the transformation process. The question is thus not

whether the educational leader is required to manage change, but to what degree he/she is able to do it effectively.

The rationale of this study is rooted in the idea that teachers are the key change-agents in producing a thinking generation. If teachers are going to be mediators and change-agents in the classroom (the change element that is relevant here is the incalculation of critical thinking skills), it will be imperative to determine whether teachers are adequately prepared for teaching critical thinking skills in the classroom context. It will be equally important to determine their attitudes towards the value of teaching critical thinking skills to their learners.

There should also be a clear relation between the teaching of critical thinking skills and change management.

When change is implemented at a school, a disturbance of the *status quo* occurs. The school as an organization and, more specifically, the teachers in the school, normally react to the change by resisting it in order to maintain the status quo. Change occurs, however, in spite of resistance to it, and that is why resistance should be seen as an inherent part of the change process. The reasons for resistance to change are complex and diverse and are closely linked to the inherent nature and uniqueness of every individual who is affected by the change. That is why individuals' responses to change can be divided into various reactions or phases. How resistance to change is dealt with or managed is very important. The successful implementation of change depends not only on insight into the factors that give rise to the reactions to change, but also on how this resistance is managed.

It is the researcher's view that the implementation of the principles of change management will contribute positively to changing teachers' attitudes towards teaching critical thinking skills to learners.

2.6.3 Teachers' attitudes toward teaching critical thinking skills to learners

Watson and Glaser (1980:1) define critical thinking as "a composite of attitudes, knowledge and skills. This composite includes: (1) attitudes of inquiry that involve an ability to recognize the existence of problems; (2) knowledge of the nature of valid inferences, abstractions and generalizations; and (3) skills in employing and applying the above attitudes and knowledge." Beyer (1990:58) has a similar conception of critical thinking, defining it as willingness (a predisposition) and an ability to scrutinize and evaluate thinking in order to determine true accuracy or worth and to construct logical arguments to justify claims or assertions. This makes it clear that attitudes towards teaching thinking skills in the classroom; dispositions towards thinking skills; knowledge about thinking skills and its relationship towards learning; and teaching skills and techniques for creating thoughtful classrooms are elements that contribute positively or negatively to teachers' perceptions and attitudes toward teaching critical thinking skills to learners.

The researcher is of the opinion that the knowledge and understanding of any subject or learning area makes teachers confident to teach it and that this has a positive impact on the attitude of teachers towards teaching critical thinking skills to learners. For example, the research of Ball (1999:12) indicated that teachers' attitudes and beliefs towards teaching critical thinking skills in Mathematics and Science are key influences on how they teach the subjects. The goal should be to prepare teachers who can encourage learners to ask their own questions and allow children to find their own answers, not to tell children a bunch of facts and information so that they can pass a test.

In summary, the teaching of critical thinking skills of teachers can be improved. Positive inclinations towards critical thinking will cause teachers to be more critical in their approach towards their academic reasoning.

2.7 THE RELATION BETWEEN TEACHING CRITICAL THINKING SKILLS AND CHANGE MANAGEMENT

In this section, definitions of critical thinking will be used as a guide to indicate what teachers should know and do to be able to teach critical thinking skills to learners. The need for the implementation of change management in this regard will also be discussed.

According to Epstein and Kemberger (2006:1), critical thinking involves problem identification, analysis, understanding and making use of inferences, inductive and deductive logic, giving meaning and judging the validity of assumptions and finding sources of information. Brookfield (1987:1) adds that critical thinking must be done daily in the context of personal relationships and classroom activities. It is also clearly stated by Weaver (1998:800) that the teachers' duty is to help learners develop their own critical perspectives and to confront learners with the difficult choices that they (learners) need to make. Bonnett (1995:306) argues that teachers should teach learners to think well. However, Lombard and Grosser (2004:15) emphasize that the gap between ideals and realities should also be accepted.

Training programmes should aim to enrich the necessary knowledge, skills and attitudes for ensuring sustainable and holistic development and growth. Teachers must also have knowledge of the fact that critical thinking is a process of determining the authenticity, accuracy and worth of information of knowledge claims (Beyer, 1985: 27). According to Norris and Ennis (1989: 3-5), teachers should know that critical thinking involves reasonable and reflective thinking.

Learners need to be shown where they are right and where they are using inappropriate disciplinary thinking (Chambers, 2002:6). This calls for more than just hard work and dedicated teachers who make learning interesting. In other words teachers should not be afraid to say that a statement is wrong merely because this may temporarily displease a child or parent. Teachers should aim to challenge learners' ideas and create opportunities for learners to come to tentative conclusions. This will ensure that critical thinking will be

more a case of teaching learners to think critically, than of merely instructing them.

The above certainly demands effective management of change in our current school situation. The challenge is related to effective management of change to the teaching of critical thinking skills. According to Hall and Hord (1988:49), school activities revolve around the school principal as the key figure who determines to a great extent the school's successes and/or failures when change is implemented. Herman and Herman (1994:2) add by expressing the view that "an educational leader must lead the change."

Vision is regarded by Kahn (1982:242) as a critical component of planning change. The school principal's vision regarding the teaching of critical thinking skills to learners has to be conveyed to the teaching staff. The aims and objectives of the school, regarding teaching and learning, should be determined so that the mission (task) of the school is clearly defined. Kahn (1982:242) continues to state that the vision of the principal has to be of such a nature that he/she is able to anticipate the reaction and behaviour of those members of the school community who will be affected by the change.

2.8 CONCLUSION

In this chapter an attempt has been made to explain the value of teaching critical thinking skills to learners and to manage schools as organizations. The researcher is of the opinion that critical thinking at school, in the workplace and in real life situations are essential for the upbringing and growth of our society. This calls for critical thinkers in all spheres of life.

The ways of teaching critical thinking skills to learners are vital. Firstly, teaching critical thinking skills as part of each subject represents an important integration of knowledge and thinking skills. This can only be mastered by the application and implementation of critical thinking as an essential part of learning. Secondly, teaching critical thinking skills as a separate subject involves operations to be transferred in various contexts and applied in different subjects and learning areas.

The different models for teaching critical thinking skills, namely Calvin Taylor's Creative Thinking Model, Isaksen and Treffinger's Creative Problem Solving Model and Benjamin Bloom's Critical Thinking Model can enrich the teaching of critical thinking skills to learners. Creative and critical thinking are essential elements in the first two models. Bloom's model focuses on progressing from the lowest level of facts to the gradually, increasingly more complex and abstract levels. Truly, the first two models call for proper planning and regular practice in the application of creative and critical thinking. The third model may also be implemented in the senior phase; however, this may be a great challenge to both learners and teachers.

The question posed, namely whether teachers can teach critical thinking skills to learners, is positively responded to through the literature. Well trained and qualified teachers should be in a comfortable and confident position to teach critical thinking skills to learners. The question, "Do teachers KNOW HOW to teach critical thinking skills to learners?" can be a challenge to teachers in their calling Questioning and cooperative learning are some of the critical teaching skills that teachers can apply .

For the above to be materialized and realized, change and renewal are two of the most important aspects of the school as an organization. What is currently transpiring at most of the schools concerning the teaching of critical thinking skills to learners is not what is desired. In other words, the struggle between what exists and what is desired demands change at our schools and this should be managed effectively. Change management is a process. Although the principal is the key figure in this process, teachers as classroom managers and the foot soldiers of class activities, are the main agents of change in this regard. Learners and parents as main stakeholders are to join in the journey of implementing this process. One of the critical outcomes is that all learners should become life long learners and this can only be achieved by empowering learners to become critical and creative thinkers.

The next chapter focused on the description of the research design and the research methodology was outlined.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The purpose of this chapter is to outline the design and methodology of the research. The literature study in the first two chapters formed the framework for the empirical research. In Chapter 1 the objectives of this study were stated as:

- Determining the attitudes of teachers regarding the value of teaching critical thinking skills to learners
- Determining how teachers' attitudes regarding the value of teaching critical thinking skills to learners can be managed
- Designing a model for changing teachers' attitudes towards the value of critical thinking skills: a school management perspective

3.2 METHOD OF RESEARCH

The research design is quantitative in nature. According to Schumacher and McMillan (1993:14), quantitative research is one form of data presentation. **Quantitative research** presents statistical results represented with numbers. The quantitative research method is based on different assumptions of the world, the research purpose, research methods, prototypical studies, the researcher's role and the importance of context in the study, as briefly noted below (Schumacher & McMillan,1993:14-15):

Assumptions about the word. Quantitative research is usually based on what is called a "local positivist" philosophy which assumes there are social facts with a single objective reality, separated from the feelings and beliefs of individuals.

Research purpose. Quantitative research is done to establish relationships and explains cause of changes in measured social facts.

Research and process. In quantitative studies there is an established set of procedures and steps that guide the researcher. In quantitative studies there is a great flexibility in both methods and the research process.

Prototypical studies. The quantitative researcher employs experimental or correlational designs to reduce error, bias and extraneous variables.

Researcher's role. The ideal quantitative researcher is detached from the study in order to avoid bias.

Importance of the context of the study. Quantitative research attempts to establish universal context-free generalizations.

The above quantitative research method is not absolute when one conducts research or reaches a complete study (Schumacher & McMillan, 1993:15). In this study, the quantitative research method was used to investigate and design a model for changing teachers' attitudes towards the value of teaching critical thinking skills. This design seeks to establish relationships and explains causes of change in measured social facts. The researcher was also be guided by an established set of procedures and steps. The great flexibility in both methods and the research process made the task of the researcher easy. Finally, the researcher is detached from the study to avoid bias.

3.2.1 Review of literature

The literature study includes relevant sources like books and the internet. For this study, EBSCO-Host and ERIC searches of primary and secondary information was conducted to gain information. Primary and secondary literature sources were studied to gather information about critical thinking, teaching critical thinking skills, developing critical thinking skills, effective direction, thinking skills and attitudes. Key words that were used include the following:

- critical thinking;

- teaching critical thinking skills;
- critical thinking skills;
- development of critical thinking skills;
- effective directing;
- thinking skills;
- attitudes of teachers;
- school management; and
- resistance to change.

The information gathered from primary and secondary literature sources were utilized to construct a questionnaire to gather information on the experiences of teachers regarding the teaching of critical thinking skills to learners and to determine teachers' attitudes towards teaching critical thinking skills to learners.

3.2.2 Empirical research

3.2.2.1 Population and sample

Population is a term that sets boundaries on the study units which also refers to all the individuals in the universe who posess specific characteristics. A population is further defined as the totality of persons, events, organization units, case records or other sampling units with which a specific research problem is concerned (De Vos, Strydom, Fouche, Poggenpoel & Schurink, 1998:190).

The target population for this research comprised all senior phase teachers (N=3000) of secondary and primary schools in the Johannesburg South and Central Districts of the Gauteng Province.

A **sample** of 20% is well-representative (Leedy & Ormrod, 2005:207). The sample therefore consists of individuals selected from the population. The

basic rule is: the larger the sample, the better. To some extent, the size of an adequate sample depends on how homogeneous or heterogeneous the population is – how alike or different its members are with regard to the characteristics of research interest. A sample of 10% (n = 300) of teachers was drawn from two areas in the Johannesburg South and Johannesburg Central Districts respectively. A sample of 10% is enough because teachers was selected from two districts of the Gauteng Province and sufficient data can be collected to represent the population. The intention of the researcher was therefore to ensure that the study includes a well diverse South African society. The research was conducted at twenty randomly selected secondary and primary schools.

According to De Vos *et al.* (1998:193), random sampling is the only technique available that will ensure an optimal chance of drawing a sample that is representative of the population from which it was drawn.

3.2.2.2 Pilot study

In addition to the preliminary check made to locate ambiguities, it is desirable to carry out a pre-test of the questionnaire before using it in the research. For the pre-test, a sample of individuals from a population similar to that of the research subjects should be selected. The pre-test form should provide space for respondents to comment about the questionnaire itself in order to indicate whether some questions seem ambiguous and to indicate other aspects that can lead to improving the questionnaire (Tuckman, 1994:235).

The questionnaire was piloted with a sample of teachers (n=20). The sample group wasl drawn from the intended target population. The pilot group was requested to comment on the questionnaire in terms of its length, unclear or ambiguous questions and any further suggestions as is advised by Ary, Jacobs and Razavieh (2002:42). They were not be part of the research group.

The pilot study responses were analysed and, the necessary changes were made to the questionnaire.

For the purpose of this research a structured questionnaire was used. The rationale for the use of a structured questionnaire was presented.

3.2.2.3 The questionnaire as a research tool

A questionnaire is a self-report instrument used for gathering data about variables of interest to the researcher and consists of a number of questions or items that a respondent reads and answers (Best & Kahn, 1993:230).

According to Tuckman (1994:216), a survey questionnaire is a tool used in the collection of research data and is ultimately dependent on the purpose of the study. Researchers use questionnaires to convert information directly given by people into data. In this sense the questionnaire is appropriate to gather data for this research in that it would elicit factual data about the experiences of teachers regarding the teaching of critical thinking skills to learners (Tuckman, 1994:216).

The suitability of the questionnaire in this research is based on the fact that the respondents are teachers who should be involved in the teaching of critical thinking skills to learners.

According to Fraenkel and Wallen (1990:336), the questionnaire has both advantages and disadvantages. This will now be discussed.

3.2.2.3.1 The characteristics of a questionnaire

According to Patton (1987), the defining characteristics of a questionnaire can be listed as follows:

A questionnaire

- is a paper document that presents a set of questions to which a person responds;
- can be anonymous or the person responding can identify him/herself in some way;

- can be mailed to the respondent directly or indirectly (some questionnaires are sent to specific people by name; others are sent to types of people such as nurses or teachers without identifying specific individuals);
- can have several different types of questions, e.g. multiple choice or open-ended; and
- can vary in length, but should rarely take more than ten to fifteen minutes of a person's time.

3.2.2.3.2 The advantages of questionnaires

The following are some of the advantages of the questionnaire as used in this research (Fraenkel & Wallen, 1990:421; Best & Kahn, 1993:230; Tuckman, 1994:216):

- It can be distributed to respondents with financial and time cost effectiveness and has a wide coverage.
- It reaches people who would be difficult to reach, thus obtaining a broad spectrum of views.
- Since the questions are phrased identically, the questionnaire allows for uniformity and elicits more comparable data.
- Anonymity of respondents is assured since respondents are not required to expose their identities, addresses and institutions.
- It is relatively easy to plan, construct and administer.
- Anybody can administer it on behalf of the researcher.
- Respondents can answer the questionnaire without pressure for immediate response.
- The influence that an interviewer might have on the respondent is obviated.
- Processing is made easy by the questionnaire being well constructed

- Due to its impersonal nature, the questionnaire may elicit more candid and objective, thus more valid, responses.

- The questionnaire enhances progress in many areas of educational research and brings to light much information which would otherwise be lost.

3.2.2.3.3 Disadvantages of questionnaires

According to Fraenkel and Wallen (1990:336), Best and Kahn (1993:230) and Tuckman (1994:216) questionnaires have a number of disadvantages:

- Questionnaires might be interpreted and understood differently by respondents.

- As the motivation of the respondents is difficult to check, the researcher might receive misleading responses.

- It is difficult to determine who really completed the questionnaire.

- A low response rate is the biggest disadvantage of the questionnaire and may lead to misleading responses.

- Respondents may feel that their personal opinions are left out.

- Respondents may be unwilling to respond to questions on private matters or controversial issues and may consequently provide what they regard as desirable responses.

- The length of the questionnaire may lead to careless or inaccurate responses and may result in low return rates.

- Questionnaires that do not probe deep enough do not reveal a true picture of opinions and feelings.

- Respondents might have little interest in a particular problem and therefore might answer the questionnaire indiscriminately.

Wolf (1997:422) states that careful and sensitive developmental work will help to identify and make full provision for the limitations of questionnaires. The researcher must be satisfied that the questions are stated with sufficient clarity to function in the impersonal interaction and must maximize the likelihood that a respondentl answered the questions and return the questionnaire (Ary *et al.*, 2002:423). The researcher has ensured that everything was done as stated in this paragraph.

3.2.2.3.4 The format of the questionnaire

According to Ary *et al.* (2002:429), the questionnaire items and the covering letter are the main sources of information that the respondent will refer to in deciding whether or not to complete the questionnaire. The following rules of questionnaire formatting must be adhered to:

- The questionnaire must be made attractive.
- Questions should be laid out or orgainized in such a way that the questionnaire is easy to complete.
- Questions should display a natural ordering or flow so that it keeps the respondent moving towards completion.
- Questionnaire items and pages must be numbered.
- Brief, clear and bold-type printed instructions should be included.
- The questionnaire should start with a few interesting and non-threatening items.
- Questionnaires should not be too long and should include enough information so that items are interesting to the respondents.

The above stated rules were taken into consideration in the formatting of this questionnaire. Instructions for answering and keys for ranking the items will be provided in each section.

3.2.2.3.5 The design of the questionnaire

As suggested by Ary *et al.* (2002:422-424), Frary (1996) and Gall, Borg and Gall, (2003:294), the design of a questionnaire must be well organized by a thorough process. The questionnaire that was used in this research was designed in accordance with the suggestion that the following factors be considered in the preparation of a questionnaire:

- The questionnaire should reflect scholarship so as to elicit high returns.
- The questionnaire should be as brief as possible so that answering it requires a minimum of the respondents' time.
- The questionnaire should not include unnecessary items.
- All respondents should phrase questionnaire items in a manner that is understandable.
- Items in the questionnaire should be phrased in a way that will elicit unambiguous responses. Words such as "often" and "sometimes" should be avoided.
- Items should be phrased in such a manner that it avoids bias or prejudice that might predetermine respondents' answers.
- Alternatives to questions should be exhaustive .
- Questions that might elicit embarrassment, suspicion or hostility in the respondents should be avoided.
- Questions should be arranged in the correct psychological order. If both general and specific questions are included, the general should precede the specific.
- The questionnaire should be attractive, neatly arranged and clearly duplicated or printed.

- Questions should allow for respondents to review their own relevant experiences in order to arrive at accurate and complete responses.

- Questionnaires should communicate necessary rules about the process of answering so as to reduce complexities.

- Questionnaire items must be constructed carefully in order to measure a specific aspect of the study's objectives or hypotheses.

The construction of the questionnaire items in this study was done carefully. The aim of the empirical research was taken into consideration.

3.2.2.3.6 Questionnaire distribution

The final questionnaire was then distributed. The accompanying cover letter was aimed at orientating the respondents to the questionnaire as well as assuring them of confidentiality and anonymity.

The researcher distributed the questionnaires in order to minimize the disadvantages of postal questionnaire surveys and to ensure a high return rate as well as to exercise control over the time for returning the questionnaires. A total of 300 questionnaires for teachers was distributed in some areas of the Johannesburg South and Central Districts within Gauteng Department of Education.

3.2.2.4 Statistical techniques

The Statistical Services of the Vaal Triangle Campus of the North-West University analysed and processed the data collected by means of the SAS-programme. The programme was used to find the frequencies and means. Frequency tables were used to represent the results.

Descriptive statistics was used to describe the basic features of the data in the study. Descriptive statistics provided simple summaries about the sample and the measures. Together with simple graphics analysis, descriptive statistics formed the basis of virtually every quantitative analysis of data. Various techniques that was used are classified as:

- graphical description in which graphs are used to summarize data;
- tabular description in which tables are used to summarize data; and
- summary statistics in which certain values are calculated to summarize data.

3.3 CONCLUSION

In this chapter the research design was presented briefly. The research method, development and the pilot study were outlined. The next chapter will present the data analysis and interpretations.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

The aim of this study (par.3.1.) was to design a model for changing teachers' attitudes towards the value of teaching critical thinking skills in the senior phase (grades 7, 8 and 9) in the Johannesburg South and Johannesburg Central Districts of the Gauteng Department of Education.

The intention of this chapter is to attach proper meaning and interpretation to the collected data in order to establish if there is a need for new enquiry into related research through the conclusions drawn from the data analysis. Neuman (1997:271) claims that data analysis is a technique of gathering and explaining the content of the text. The content in this regard refers to words, meanings, ideas, themes or any messages that can be communicated.

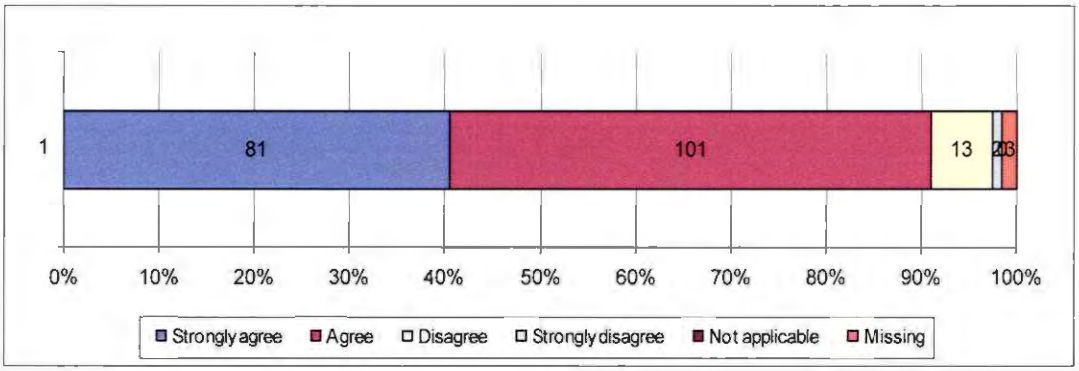
The target population of the empirical survey included teachers involved in the senior phase in Johannesburg South and Johannesburg Central Districts of the Gauteng Department of Education.

A total of 300 questionnaires were distributed. Of the total number, 200 questionnaires (67%) were returned. This constitutes a reliable and valid sample for purposes of an empirical survey. The data is represented by means of frequencies (*f*) and percentages (%). Descriptive statistics will also be used.

4.2 SECTION A (A): GENERAL VIEW/OPINION OF CRITICAL THINKING

4.2.1 To work with argumentative raw material requires that learners apply their critical thinking skills

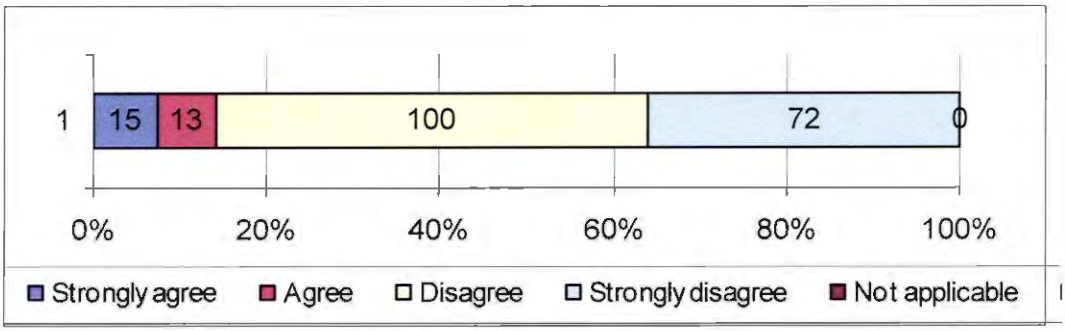
Figure 4.1: Learners to apply their critical thinking skill



According to figure 4.1, the majority of respondents (101) agree and 81 strongly agree that to work with argumentative raw material requires that learners apply their critical thinking skills. This might imply that learners are provided with opportunities to work with argumentative raw material in order that they apply critical thinking. However, thirteen respondents disagree and two strongly disagree with this statement. It seems that these teachers don't provide learners with opportunities to think critically.

4.2.2 Decision- making does not require critical thinking

Figure 4.2: Decision making does not require critical thinking



Most respondents (49%) (refer to figure 4.2) disagree and 36% strongly disagree with the statement that decision-making does not require critical thinking. This is a clear indication that these respondents agree that good decisions cannot be made without thinking critically. It also indicates that the respondents feel that critical thinking cannot develop if decision-making opportunities are limited or not being realised at all. However, 8% strongly agree and 7 % agree with the statement. (It therefore seems that these teachers do not create opportunities for learners to think critically during decision making).

4.2.3 Critical thinking allows one to decide which solution is the most reasonable under circumstances

Figure 4.3: Most reasonalbe decisions under circumstances

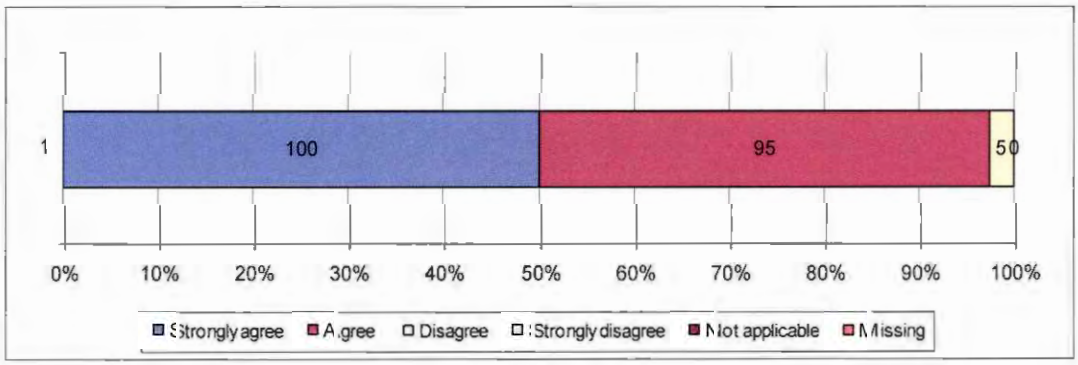
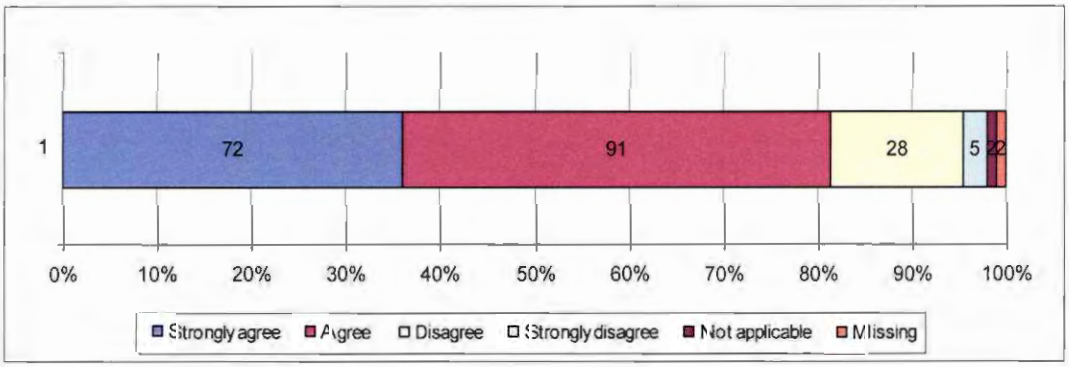


Figure 4.3 depicts that 100 respondents strongly agree and 95 agree that critical thinking allows one to decide which solution is the most reasonable under circumstances. This implies that the respondents understand that critical thinking is needed for comparing solutions to problems for deciding which solution is best. The finding is supported by the responses in 4.2.2, namely that learners need to apply their critical thinking skills to enable them to make the right decisions. A small number of respondents (5) disagree with the above statement. This is an indication that a number of teachers might not provide learners with opportunities where critical thinking should be applied in order to decide which solution is best under certain circumstances.

4.2.4 One is setting oneself up for failure if one only sees one solution to a problem

Figure 4.4: One's solution to a problem sets one for failure



It is deduced from figure 4.4. that ninety one (45%) of respondents agree and 72 (36%) strongly agree that one is setting oneself up for failure if one only sees a single solution to a problem. This might imply that most teachers do not just see one solution to a problem, but make room for more possible solutions. Making room for more solutions conquers the fact that critical thinking allows one to decide which solution is the most reasonable under certain circumstances (*cf.* 4.2.3). The fact that twenty eight (14%) of the respondents disagree and five (3%) strongly disagree, is a clear indication that there are still teachers who see only one solution to a problem, therefore setting themselves up for possible failure. Two (1%) of the respondents do not understand the statement.

4.2.5 Critical thinking does not play a role in the classroom because the new curriculum (RNCS) does not allow it (or make room for it)

Figure 4.5: The role that critical thinking plays in RNCS

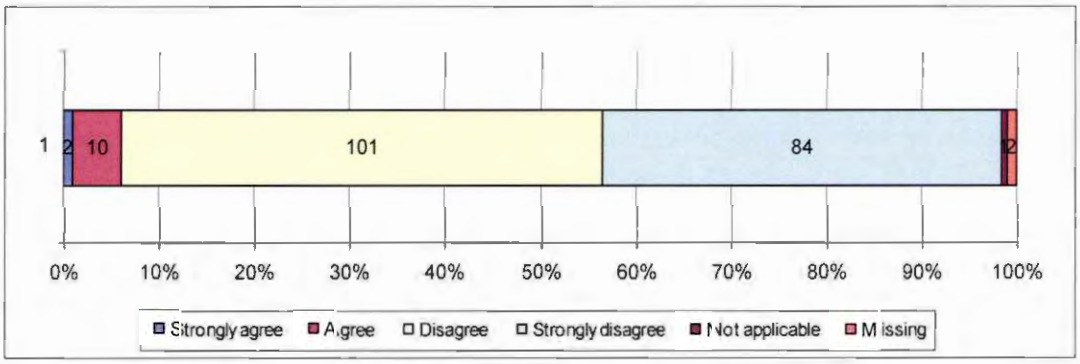
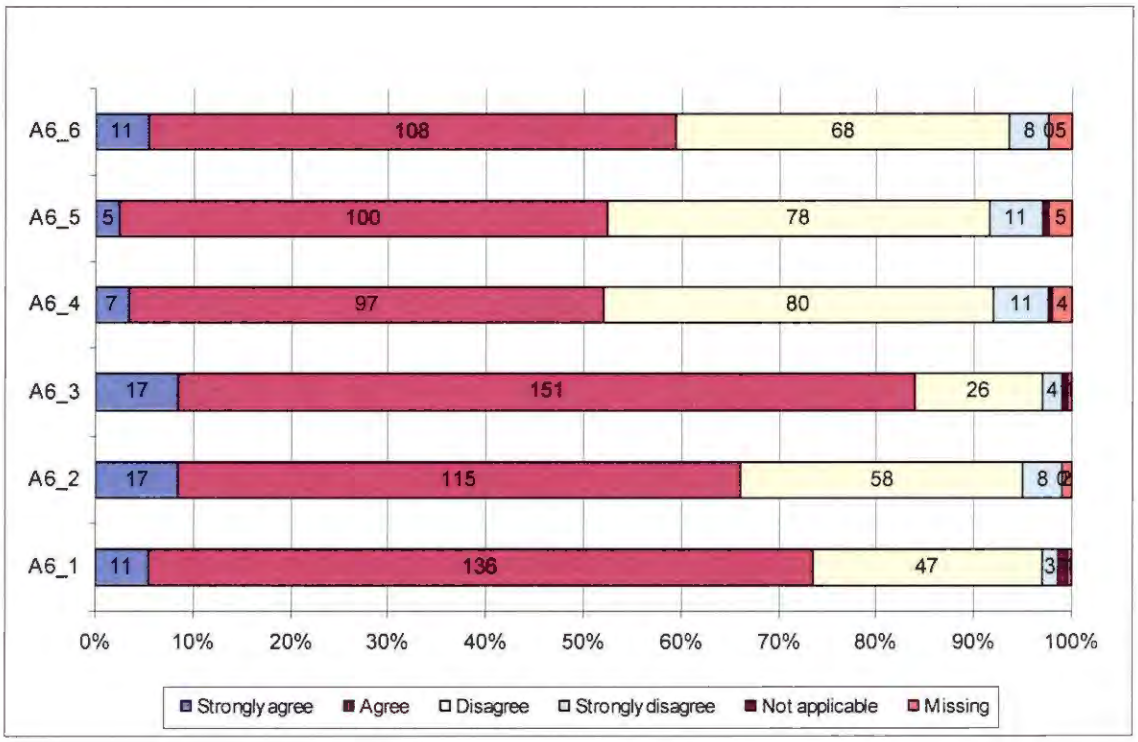


Figure 4.5 reveals that 101 (50%) of the respondents disagree and 84 (42%) strongly disagree that critical thinking does not play a role in the classroom because the new curriculum (RNCS) does not allow it. According to the researcher the focus at secondary school level (especially in the senior phase) should be on higher order thinking: the active evaluation of ideas and information (cf. 2.1). It can therefore not be emphasized enough that critical thinking plays a vital role throughout the school curriculum because classroom performance can greatly improve due to the teaching and learning of a variety of skills. A mere two (1%) of the respondents strongly agree and ten (5%) agree. It seems that there are a small number of teachers who do not allow or make room for learners to think critically while teaching the RNCS.

Figure 4.6: Problem solving, creative thinking, gather / analyze information, appropriate conclusion and effective communication



Learners who are taught in class can:

4.2.5.1 Solve problems

The majority of respondents (136) according to figure 4.6(1) agree and 11 strongly agree that learners who are taught in the classroom can solve problems. This might imply that these teachers do not teach learners to solve problems. However, 47 of the respondents disagree and 3 strongly disagree. This is an indication that some teachers do teach learners in class to solve problems. Two did not understand the statement.

4.2.5.2 Think creatively

According to figure 4.6(2), most of the respondents (115) agree and 17 strongly agree that learners can think creatively. It seems that most teachers focus on creative thinking skills in the classroom. However, 58 disagree and 8

strongly disagree. This shows that some teachers do not encourage learners to think creatively, neither do they teach creative thinking skills to learners.

4.2.5.3 Gather information

Figure 4.6(3) shows that 151 of the respondents agree and 17 strongly agree that learners can be taught how to gather information. This implies that the majority of teachers do teach learners how to gather information. However, 26 of the respondents disagree and 4 strongly disagree. This is an indication that learners are not exposed to a variety of information which will allow them to select valid and relevant information carefully and critically.

4.2.5.4 Analyse information

Data from figure 4.2(4) indicates that the majority of respondents (97) agree and 7 strongly agree that information can be analysed by learners. It seems, therefore, that most teachers are teaching learners to analyse information. However , 80 of the respondents disagree and 11 strongly disagree. This indicates that a number of teachers do not teach learners how to analyse information. One respondent did not understand the statement.

4.2.5.5 Draw appropriate conclusions

It can be deduced from figure 4.6(5) that most (100) of the respondents agree and 5 strongly agree that learners should be taught to draw appropriate conclusions. This implies that the majority of teachers are teaching learners to draw appropriate conclusions. However, a small number (11) of respondents strongly disagree and 78 disagree. It seems that some teachers do not make room for learners to draw appropriate conclusions.

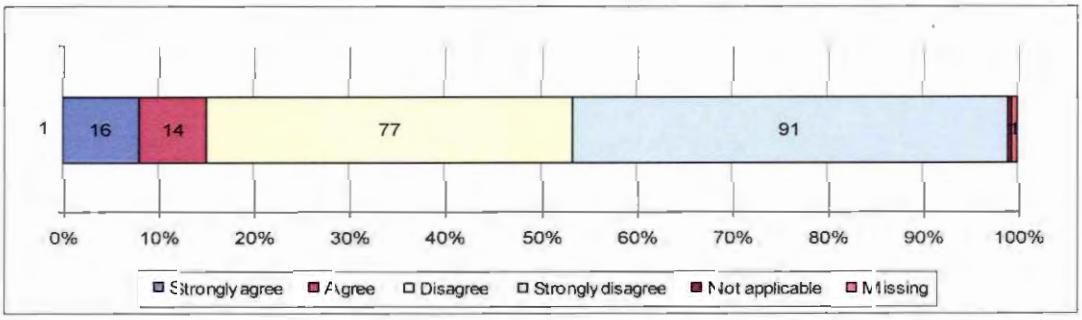
4.2.5.6 Communicate learners' ideas effectively

According to figure 4.6(6), the majority of respondents (108) agree and 11 strongly agree that learners can be taught to communicate their ideas effectively. These are exactly the kinds of generalized thinking and problem - solving skills that critical thinking aims to improve (*cf. 2.1*). This calls for learners to be taught and trained to structure their minds in such a way that

their communication skills speak of effectiveness by controlling their ideas at all times. However , 68 disagree and 8 strongly disagree. This might imply that not enough or even no opportunities at all are created for learners to communicate their ideas effectively.

4.2.6 Foolish personal decisions can be made if one cannot think critically

Figure 4.7: Foolish personal decisions without thinking critically



It is revealed in figure 4.7 that most of the respondents (45%) strongly disagree and 38% disagree that foolish personal decisions can be made if one cannot think critically. This implies that it is vital, in the first instance, that one should think critically at all times to avoid foolish personal decision - making. Secondly, the implication is that should one not think critically and creatively, foolish personal decisions can be made. However, 8% strongly agree and 7% agree. (This means that these respondents believe one does not have to think critically to avoid foolish personal decisions).

4.3 SECTION A (B): TEACHING CRITICAL THINKING SKILLS TO LEARNERS

4.3.1 Define critical thinking

The majority of respondents define critical thinking as analysing, interpreting, evaluating and solving problems analytically by viewing them from different angles. A great number of respondents also describe critical thinking as well informed decision-making or choices and the skill to gather information in

order to take responsible action. Some respondents regard critical thinking as the ability to make their own sound decisions and justify them by drawing similarities and pointing out differences. Critical thinking creates possibilities to find the best solution under various circumstances. Critical thinking means to some of the respondents the ability to weigh all options by synthesizing data before reaching conclusions. A few respondents see critical thinking as objective, constructive and systematic thinking. However, some respondents argue that critical thinking enables you to think beyond your own understanding by considering others' opinions and judgments. The smallest group of respondents define critical thinking as the ability to do research in the form of identifying problems and facts, comparing data and drawing conclusions based on findings and making decisions carefully, honestly and independently.

An unexpected and disappointing 47 respondents did not understand the question and 24 did not respond to the question at all. This is certainly of great concern in the teaching profession. The fact that these teachers do not know and do not respond to what critical thinking entails and that they do not know how both teachers and learners can benefit, indicates clearly that they might not pay attention to teaching critical thinking skills in their classrooms.

However, the above definitions of critical thinking imply that most respondents know what critical thinking is. The challenge, though, is to ensure that self discovery, problem-solving and analysis of data become a reality inside and outside the classroom. It is of the utmost importance that knowledge and skills should be put into practice by both teachers and learners. It is important, therefore, that workshops be organised for educators in this regard.

4.3.2 Do you think critical thinking should be creative?

Most respondents indicated that critical thinking should be creative because it allows individuals to express themselves by giving their own opinion and justifying it. They further state that, should one apply one's experience and educational background, a wider perspective will come to the fore and the ultimate outcome will not be limited. This would ensure that one is innovative

and open-minded and thinks independently and originally. They added that critical thinking should be creative and should stimulate and inspire interest.

A group of respondents stated that critical thinking should be creative so that problems could be seen as challenges and opportunities to think fruitfully. This will increase problem-solving abilities and will help one to think beyond the surface (what is expected). This refers to deep / in-depth / thorough and different levels of thinking. Furthermore, it encourages abstract thinking in the form of visualization and imagination (theoretical and practical).

However, some respondents strongly feel that critical thinking ensures good reasoning, brain storming and self (new) discovery, and contributes to identifying effective, logical solutions and making meaningful decisions.

Fifty nine of the respondents did not respond to the question or did not understand the question. These respondents gave an indication that the question was either too difficult or that they were not interested. This is a matter of concern because critical thinking and creativity are essential components of the teaching and learning process.

However, the response of the rest of the respondents indicated that they believe that critical thinking should be creative and not structured, rigid, limited, close-minded and prescriptive.

4.3.3 Do you think critical thinking should be reflective?

The majority of respondents think critical thinking should be reflective because one should compare and/or reflect on what could have been done, based on what one has learned or experienced. This is a process whereby one ponders on decisions taken and draws comparisons to best solve problems. In the process, one can discover what went wrong and why it went wrong. However, by checking thoroughly and using other options, gaining experience from others, giving proper feed-back, reviewing and avoiding the same mistakes, one can be reminded of the progress and achievement that have been accomplished and can apply the good practice again. They continue to state that critical thinking should be reflective because it will then ensure the

identification of facts for future benefit, consideration and solutions. Solutions for future problems in similar circumstances can be approached differently in the classroom and in real life situations.

A great number of respondents think that critical thinking should be reflective due to the fact that it will then allow one to choose the right path to conclusions by considering appropriate alternatives. The chosen path includes other and new possibilities, ideas and thoughts that help to assess the outcome of a particular issue differently and holistically. In this process, other solutions are discovered, ideas are communicated and conclusions are drawn.

The smallest number of respondents think that critical thinking should be reflective because it lays the foundation for improving decision-making processes and the effectiveness of results and outcomes. Reflective critical thinking creates opportunities to review choices that reflect mistakes and arguments of the past. Reflection helps one to learn from previous mistakes, to adjust perspectives and operations, and to stimulate one's own original thinking ability.

The greatest number of respondents (55) did not respond to this question while a great number of respondents did not understand the question. This is a clear indication that these respondents might not think that critical thinking should be reflective or that it does not concern them at all. Should this attitude of teachers continue inside and outside the classroom, surely both teachers and learners will not develop and grow academically. The fact that a great number of teachers did not understand the question is of great concern because throughout the education process there is a need to reflect, to review and to put corrective measures in place. This calls for assistance in the form of in-service training, seminars and workshops for teachers.

However, those who responded, clearly indicate that there is great value in critical thinking that is reflective. According to them, by reflecting, problems can be solved in the present and this can help to solve the same and even other problems in the future. It seems to be like history which includes the

past, present and future. This means that critical thinking should be reflective because it contributes to better understanding of issues. By comprehending, clarity-seeking questions arise. Answers to such questions might lead to eliminating things that did not work at all or which are not relevant anymore and make room for what is really working and relevant. Reflection on the past seems to refresh one's memory by putting solutions to the test in the process of change.

Critical thinking that is reflective helps to avoid making the same mistakes of the past. One might also reflect on what went wrong, why it went wrong and fix it as successfully as possible. Reflection might also create opportunities for achievements and accomplishments to be celebrated and improved on, but also to be critically re-assessed and re-evaluated.

4.3.4 Do you think critical thinking should involve analysis?

Most of the respondents think that critical thinking should involve analysis because the best options are then weighed to determine feasible and suitable solutions to problems. During analysis, all options are considered viable in order to seek the best opinion or view by literally breaking down or taking the problem apart in order to draw reasonable conclusions. The knowledge gained from this process could lead to predictions, intentions and ultimately to a realistic, proper diagnostic review of possibilities. In other words, all the fragmented thoughts and ideas go through various stages and, as a result, form a meaningful and dynamic interpretation.

A substantial number of respondents continue to state that analysis enables one to see smaller parts in a whole of totality and completeness. This, in turn, makes recommendation, improvement and evaluation possible, as all permutations are explored before decision-making. Furthermore, it helps that informed accurate choices are made to back up and support future thinking processes. By doing this, one could reconstruct, apply perspectives, interpret ideas, sort the relevant from the irrelevant, discard what is not applicable and discover better ideas.

Some respondents also think that critical thinking should involve analysis because it will then bring about creativity and careful reflection on certain thoughts. Data can be thoroughly checked from all angles and this helps one to realise unknown factors and might lead to the most suitable answers and solutions to problems. A much smaller number of respondents did not understand and respond to the question. This implies that there are still a small group of teachers who needs to understand that they have to expose themselves, as well as their learners, to analysis as a vital part of critical thinking.

4.3.5 Do you think critical thinking should be focused?

The majority of respondents think critical thinking should be focused because one needs to concentrate on a specific area and not be sidetracked by anything else. This will avoid careless and thoughtless mistakes so that positive, good, correct and informed decisions can be made. It also helps one to stick to the point and not to deviate from outcomes. They continue to state that to focus guarantees better and more correct conclusions. It also helps to provide structure, a holistic picture and a particular, precise and concise surety in any problem-solving process. To the respondents, focusing also means to set goals and to aim for a certain target in order to get direction and to be creative. This ensures logical thinking.

A great number of respondents also think critical thinking should be focused because it helps one to identify, isolate, define and avoid negative influences and ideas. This will help one to stay in touch with a particular subject or topic and avoid diversion, so that better results can be achieved. Blurred thinking can also be avoided so that attention can be given to expected outcomes. To focus makes one open-minded, concise, interested and purpose-driven. This contributes to the collection of relevant, good and beneficial information and ensures a clear understanding of facts and reality while one gains meaningful knowledge. The gathering of the necessary information can also be well interpreted so that an argumentative stand can be taken.

A smaller group of respondents is of the view that critical thinking should be focused because it helps one not to loose sight of the focus area until the task is completed. Focusing keeps one continuously aware of ones' surrounding. This helps one not to derail from the point by being destructed and helps to avoid inaccuracy, vagueness and fruitlessness. Instead, one thinks in a certain framework and strives to give creative and innovative solutions to problems. This ensures objective thinking and a well informed approach.

Thirty six of the respondents did not understand and forty did not respond to the question. This shows that some work needs to be done to encourage teachers to ensure that critical thinking is focused. For learners to develop their critical thinking skills, they should be focused throughout the process.

4.3.6 It is vital for learners to think critically inside and outside the classroom

The vast majority (76) of respondents stated that it is of vital importance for learners to think critically inside and outside the classroom because critical thinking involves all aspects of their lives. Thinking critically inside and outside the classroom allows learners to view issues from different perspectives. This allows learners to assess situations critically and endeavour to become successful and useful citizens by applying content into practice. In addition to this, learners develop their skills to look and think beyond borders, and become analytical and aware of their surroundings. Critical thinking, especially outside the classroom, enables learners to deal with problems, situations or challenges by applying the knowledge they acquired in the classroom. In other words, learners are implementing what they have learned by making their own judgements.

The above respondents continue to state the importance for learners to think critically inside and outside the classroom as it enables them to identify problems and confidently attempt to find amicable solutions.

Some (42) of the respondents claim that it is of vital importance for learners to think critically inside and outside the classroom because it enables them to apply their minds operatively by attending to challenges systematically. By so

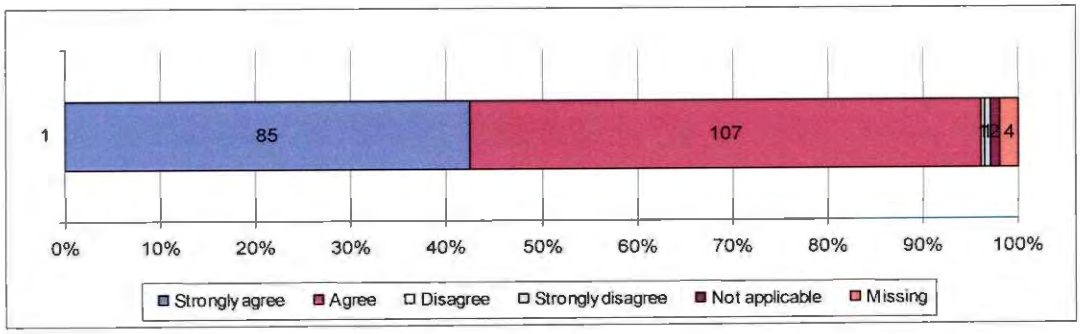
doing, learners are developing skills to come to optimal solutions and good problem-solving. Critical thinking, especially outside the classroom, is vital because it promotes creativity, independence, accountability and responsibility.

The smallest group (25) of respondents stated that critical thinking inside and outside the classroom motivates learners to go the extra mile. It also reveals the fact that learners show acceptable behaviour and are influential in discussions and activities. Learners who apply critical thinking inside and outside the classroom show improvement at all levels of learning, view problems from all angles, think deeply (thoroughly) and stay focused. This enables learners to be fruitful, productive and guarantee survival in the real life situations.

Forty six of the respondents did not understand and thus did not respond to the question. This is a clear indication that some teachers do not understand the vital importance for learners to think critically inside and outside the classroom. It therefore means that School Management Teams (SMTs) should unpack the importance of critical thinking inside and outside the classroom to teachers and motivate them to implement this by encouraging learners to do it daily.

4.3.7 It is important to integrate critical thinking skills with the normal content of the subject/learning area

Figure 4.8: Integration of critical thinking skills with content of subject/learning area



According to fugure 4.8 most respondents (107) agree and 85 respondents strongly agree that it is of vital importance to integrate critical thinking skills with the normal content of the subject or learning area. The implication of the above depicts a clear indication that the different forms of knowledge in general (e.g. Science) and subjects or learning areas in particular (e.g. Natural Science and Physical Science) are essential contexts for thinking *(cf. 2.3)*. In other words, learners start to realize that subjects like Accounting and Mathematics both demand some form of calculation although they are part of different learning fields.

However, an equal number of 1% of respondents strongly disagree and disagree. This shows that a very small number of teachers do not realize the importance of integrating critical thinking skills with the normal content of the subject/learning area.

4.3.8 It cannot be assumed that critical thinking that is addressed in school subjects/learning areas will automatically transfer to everyday life

Figure 4.9: Assumption that critical thinking skills is transferrable to everyday life

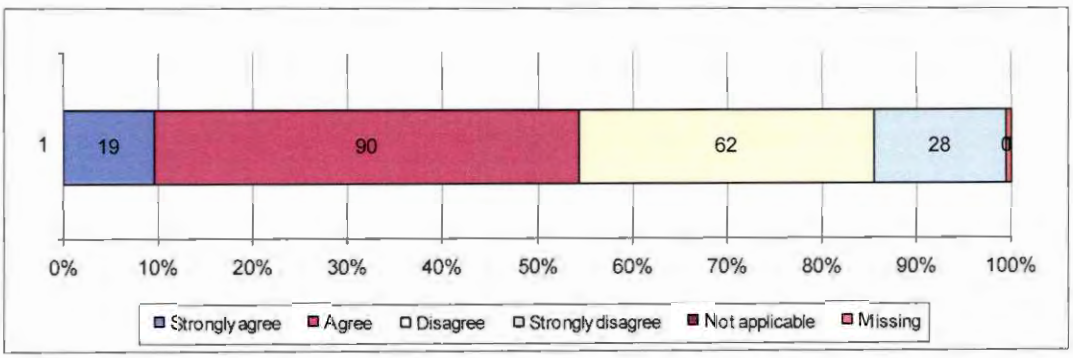


Figure 4.9 shows that 44% of the respondents agree and 10% strongly agree, opposed to 31% who disagree and 14% strongly disagree that it cannot be assumed that critical thinking that is addressed in school subjects / learning areas will automatically transfer to everyday life.

The above indicates that critical thinking must also be evaluated in everyday life contexts (*cf. 2.3*). The majority of responses in 4.2.14 are contradictory to most responses in 4.2.15 because integration of subjects/learning areas might ultimately be applicable to everyday life.

4.3.8.1 Critical thinking skills are repeatable and transferable

Figure 4.10:Critical thinking skills are repeatable and transferable

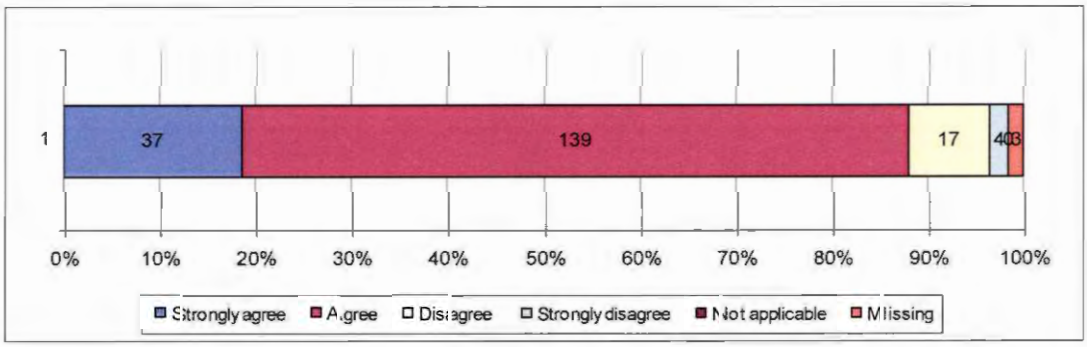
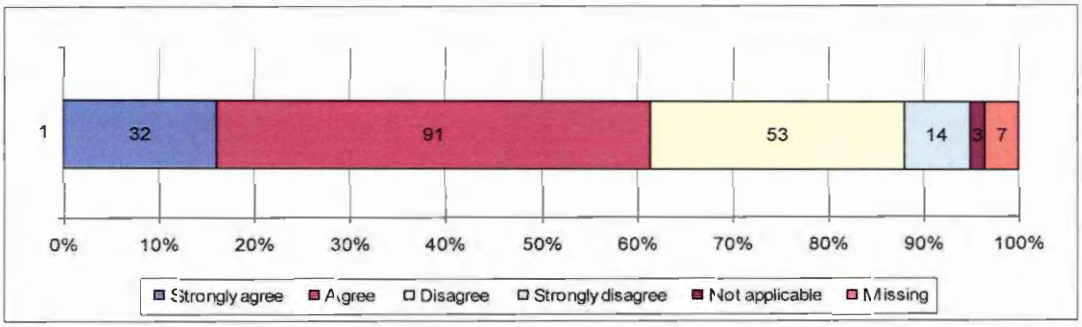


Figure 4.10 indicates that the majority of respondents (139) agree and 37 strongly agree, while only four strongly disagree and 17 disagree that critical thinking skills are repeatable and transferable. Critical thinking skills are repeatable and transferable within limits (cf. 2.3). Although tasks do not always have clear boundaries, a skill applies to a certain kind of task. It is also a fact that critical thinking skills differ, depending on the subject/learning area in question (cf. 2.3). Being an excellent critical thinker in a subject or learning area does not necessarily guarantee that one can display the same excellence in another subject/learning area.

Teachers should therefore continuously make learners aware that many of the critical thinking skills learned in one subject/learning area can be applied in other subjects/learning areas. It is also important that teachers provide examples of how this can be done, as learners often don't have the ability to see these links by themselves.

4.3.8.2 Critical thinking skills differ, depending on the subject area

Figure 4.11:Critical thinking skills differ, depending on subject/learning area



Most of the respondents (45%) in figure 4.11 agree and 16% strongly agree that critical thinking skills differ, depending on the subject area. However, 7% strongly disagree and 26% disagree with the above-mentioned statement. Subjects / learning areas are, generally speaking, different as far as the content is concerned. The application of critical thinking skills will automatically differ from subject to subject.

However, it is interesting that the majority of teachers also indicated that critical thinking skills are transferable and repeatable (Figure 4.10). It might imply that these teachers feel that critical thinking skills can be taught in a separate subject identified as informal logic and then be transferred to specific subjects/learning areas (Figure 4.12).

4.3.8.3 Critical thinking skills can be taught as a set of general skills

Figure 4.12:Critical thinking skills can be taught as a set of general skills

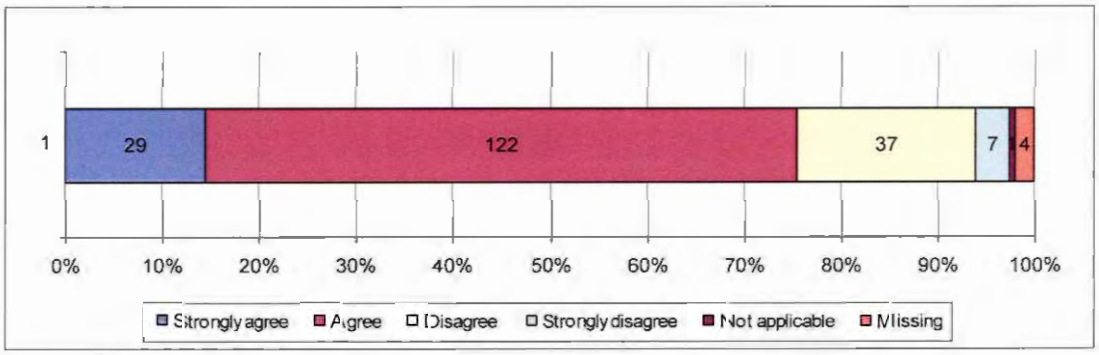
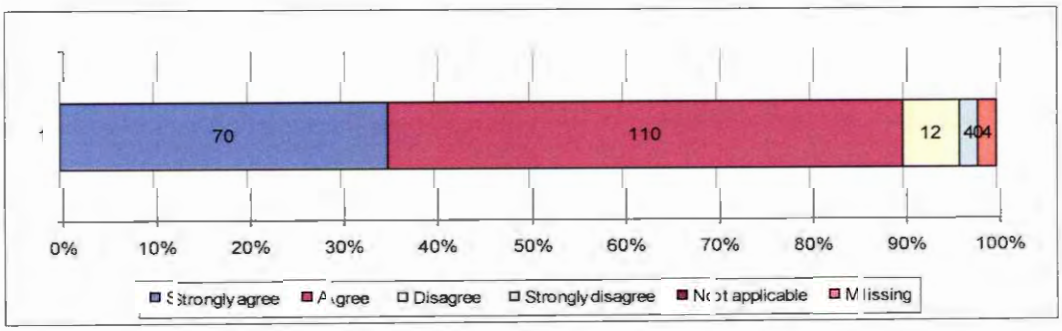


Figure 4.12 reveals that 122 of respondents agree and 29 strongly agree, whereas 7 strongly disagree and 37 disagree that critical thinking skills can be taught as a set of general skills. One respondent did not understand the statement.Within a combined approach, general domain thinking skills can be taught in a separate programme before subject teachers' focus on the specific domain to integrate general domain thinking skills as transferable skills to specific subjects (*cf 2.3.*). It is therefore clear that it is essential that appropriate habits of mind and the appropriate use of intellectual resources are exemplified by teachers.

4.4 SECTION B: TEACHING CRITICAL THINKING SKILLS TO LEARNERS

4.4.1 It is the duty of teachers to help learners to develop their critical perspectives

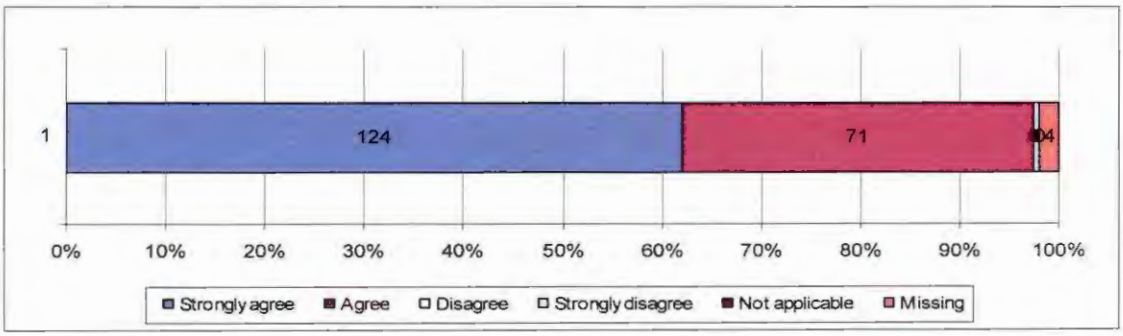
Figure 4.13:Teachers to help learners to develop critical thinking skills



According to figure 4.13, most of the respondents (110) agree and 70 strongly agree that it is the duty of teachers to help learners to develop their critical perspectives. This might imply that teachers understand that it is essential to ensure that learners' critical thinking skills are well developed. However, four strongly disagree and 12 disagree that it is the duty of teachers to help learners to develop their critical perspectives. This implies that learners might have to take initiative for the development of their own critical perspectives as these teachers do not assist these learners in the way they should. One respondent did not understand the statement.

4.4.2 Teachers should be able to think critically

Figure 4.14: Teachers should be able to think critically



The majority (124) of respondents, according to figure 4.14, strongly agree and 71 agree that teachers should be able to think critically. This argument is supported by literature, stating that "...if teachers are to teach learners the skills of critical thinking, the quality of the training that the teachers themselves undergo becomes critical" (cf 2.5.1). This statement is further supported by the majority of respondents in 4.2.19 who indicated that teachers should be able to think critically to help learners to think critically. However, 1% disagree with the statement. It seems that a small number of teachers do not agree that teachers should be able to think critically. These teachers will most probably not focus on undergoing training themselves, hence the quality of teaching learners critical thinking skills and to think critically might be very poor.

4.4.3 It is important to put critical thinking into practice

Figure 4.15:Critical thinking to be put into practice

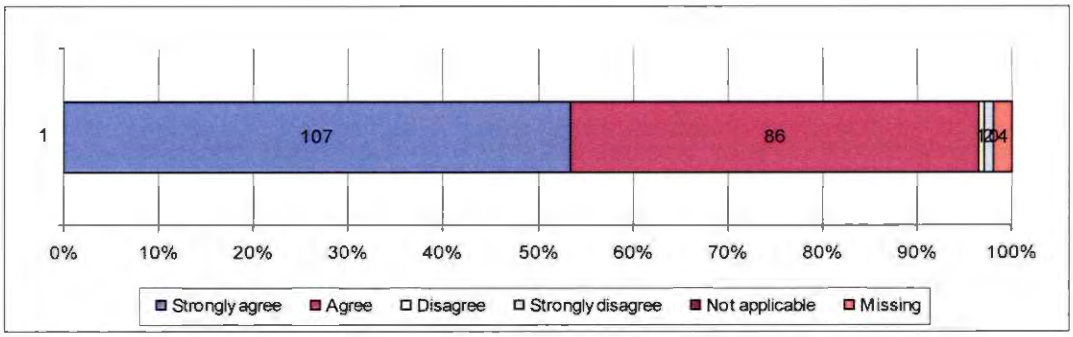
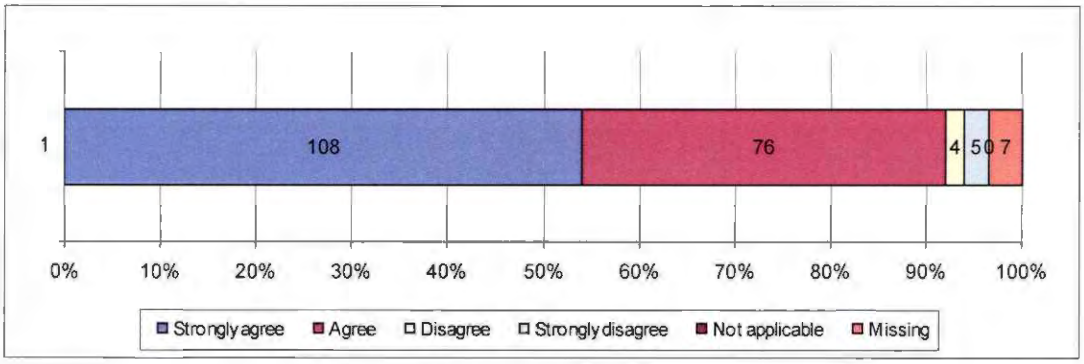


Figure 4.15 shows that the majority of respondents (107) strongly agree and 43% agree to the above statement. According to most of the respondents it is important to put critical thinking into practice. This is supported by literature stating that "...teachers have to believe and accept the importance of putting critical thinking into 'action' (cf 2.5.1). Only1% disagree and only 1% strongly disagree that it is important to put critical thinking into practice. This might imply that some teachers do not understand the importance of putting critical thinking skills into practice and therefore do not focus on creating opportunities for learners to apply their critical thinking skills in and outside the classroom.

4.5 SECTION C: CHANGE MANAGEMENT IN SCHOOLS AS ORGANISATIONS

4.5.1 Change and renewal is important for the development of a school

Figure 4.16:Change and renewal for school development



According to figure 4.16, most of the respondents (108) strongly agree and 76 agree that change and renewal is important for the development of a school. There is widespread agreement in literature that change and renewal are two of the most important aspects of successful oganizations (*cf 2.6.1).* This implies that schools are dynamic organizations and should be managed as such. However, 4 disagree and 5 strongly disagree to the statement. The fact that a few teachers disagree might be an indication that some schools are quite functional without change and renewal. On the other hand, it might suggest that these teachers are not much interested in the development of the school.

4.5.2 Define change

The majority of respondents define change as something better and new which is suitable for the well being of an institution, namely to move from one level to the next. They also argue that change can be difficult because it can be a process that entails fresh ideas for the betterment and excellence of schools. Change is also described as a progressive mental attitude and transformation of old paradigms to emerging new ones. This ensures improvement in situations and conditions which will lead to a radical shift in

ideology, perception and purpose. The renewal process influences existing practices for the better by replacing them with newly revised practices. In other words, it is a clear shift from a traditional approach to a new mindset. Change can be positive by creating opportunities for stakeholders, but it can also be negative by destroying effective, working environments. Respondents also claim that change refers to the application and implementation of new and alternative strategies, plans and value systems. This includes new tools and techniques. Change for the better also discards things that are not working, keeps what works, improves on it and paves the way to quality.

A smaller group of respondents argue that change is the ability to do things differently. The different angles of thinking develop skills for effectiveness, creativity and efficiency so that one can be more innovative to substitute the new for the old. Change also makes room for different styles, attitudes and systems, amendment of rules and regulations, by reconsidering options that are irrelevant and by embracing relevant options. The respondents also maintain that change brings growth, should one focus on common goals as well as self-reflection. Latest, modern and upgrading are also synonymous with change.

A small group of respondents regarded change as a process of testing, evaluating and taking the view and opinions of others into account. They continue to state that change avoids stagnated and static behaviour. Instead, change should empower people and enhance them at all levels. It is a fact that change sometimes goes with pain, but there is also gain some way or the other.

About 32 respondents did not respond to the question or did not understand the question. It seems that those who did not respond still do not support the fact that change is a phenomenon that becomes part of our lives. It is of great concern that change is not clearly understood by some teachers. This calls for serious intervention, although the number of teachers holding this view is very small.

However, the vast majority of teachers responded confidently to what change really means to them. This is a clear indication that there is excitement among teachers concerning the latest developments and challenges in education. This is portrayed through their views/opinions about what change is and how this should contribute towards the upliftment, development and empowerment of learners. This implies that change is a dynamic process that continually forms, reforms and transforms teaching methods and ways of thinking.

4.5.3 What changes would you like to see/make at your school concerning critical thinking?

The majority of respondents would like to make changes at their schools concerning critical thinking by allowing and encouraging learners to think independently and to do their work themselves as far as they possibly can. Teachers and learners should work towards the same goal with a positive attitude. Lesson planning and the presentation thereof should be relevant to learners' needs, from the concrete to the abstract and not vice versa. The greatest part of the lesson should accommodate learner expressions, discussions and learner activities. This makes provision for critical thinking skills development and the application of knowledge beyond content. Learners should also be encouraged and challenged to do more research projects so that they could somehow be encouraged to inculcate a culture of reading and analysis.

A number of respondents indicated that less emphasis should be on rote learning and more on critical analysis. Learners should be encouraged to spend more time on problem-solving inside and outside the classroom. The rigid theoretical methodology should change to a more flexible and practical one so that learners can broaden their horizons. This challenges teachers to mentor the minds of learners with care and sensitivity. Learners should also be stimulated to be creative and not be limited to what is taught in the classroom. Learners should be encouraged to take part in public speaking and to debate issues that affect them.

The respondents also stated that learners must be motivated to voice their own opinions without being intimidated and to respect the views of others. No room should be made for spoon-feeding whatsoever.

About 54 of respondents did not understand or respond to the question. This indicates that some teachers do not understand why change should take place at schools regarding critical thinking or that they are not interested at all.

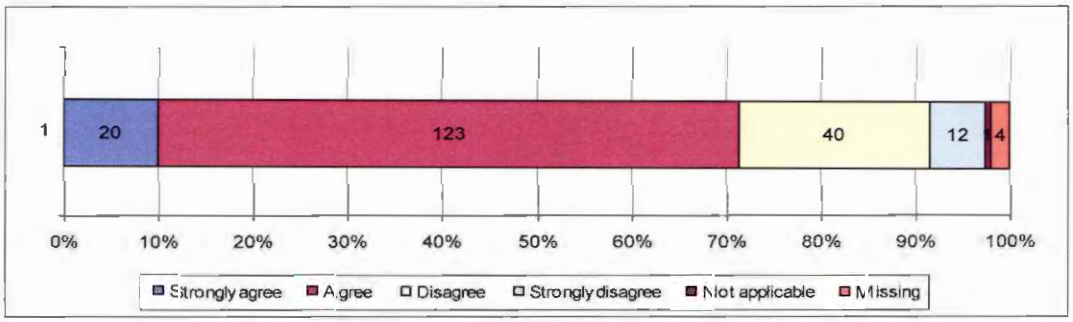
However, it is clearly revealed that the majority of the respondents would want to see changes made at their schools concerning critical thinking. They would like to see their teaching task to be more a facilitating one so that opportunities of critical and independent thinking can be created for learners. Should this be done in a constructive way, teaching styles and methodologies would influence learner behaviour for the better.

4.5.4 Your school has a clear picture / understanding of what quality is

Figure 4.15 reveals that the majority of respondents (55%) agree and 16% strongly agree that their schools have a clear picture of what quality is. The implication of this is that most teachers are involved in quality teaching. However, 22% disagree while 6% strongly disagree with the statement. It seems therefore that there are still a number of schools where teachers do not have a clear picture or understanding of what quality is. This means that the school and individuals are not yet ready for change regarding quality teaching and learning. Two respondents did not understand the statement.

4.5.5 Individuals in the school are willing to contribute to positive change

Figure 4.17: Individuals to contribute to positive change

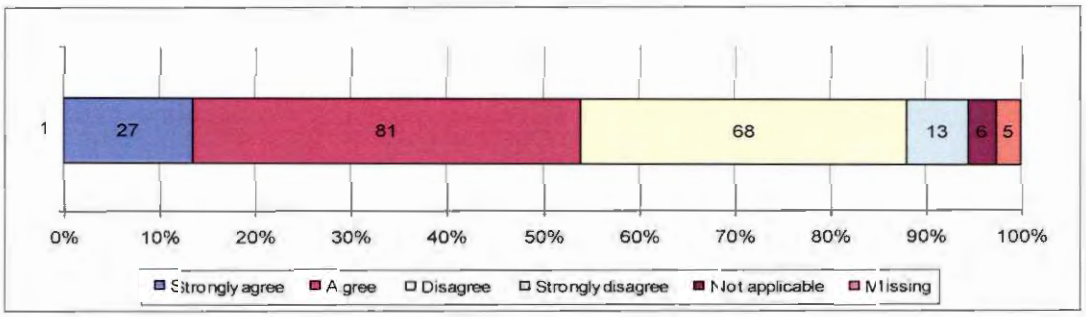


It is depicted in figure 4.17 that most (123) respondents agree and 20 strongly agree that individuals at the school are willing to contribute to positive change. This implies that the majority of teachers are dynamic in their approach and adapt easily to changing environments. It also indicates that individuals at the school enjoy new challenges and new ways of doing things (cf. 2.6.3.1).

However, twelve (6%) strongly disagree and 40 disagree with the statement. These responses might indicate resistance to change and the one respondent who did not understand the statement at all has no idea of what positive change really is.

4.5.6 Individuals at the school look forward to taking part in new working and learning opportunities

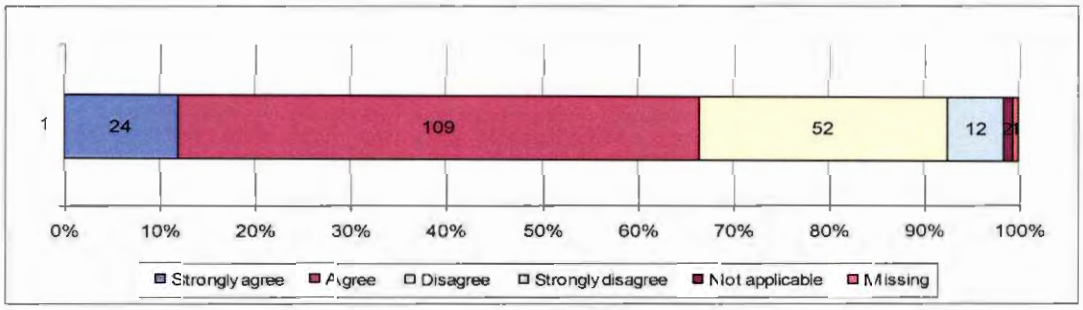
Figure 4.18: Individuals are looking forward to new working and learning opportunities



The majority of respondents (81) in figure 4.18 agree and 27 strongly agree that individuals at the school look forward to taking part in new working and learning opportunities. This indicates readiness for change at the school. However, 13 of the respondents strongly disagree and 68 disagree with the above statement. This implies that some respondents do not look forward to taking part in new working and learning opportunities. Such teachers will most probably not be interested in teaching learners the skills of critical thinking, as they would rather stick to existing and unchallenging working and learning habits. Six of the respondents did not understand the statement.

4.5.7 Teachers are of the opinion that school principals' efforts to bring about change fail because they have not been exposed to in-service training relevant to the proposed change

Figure 4.19:Principal's efforts fail for the proposed change



According to figure 4.19, most (54%) of the respondents agree and 12% strongly agree that school principals' efforts to bring about change fail because they have not been exposed to in-service training relevant to the proposed change. It is of great concern that it seems that the majority of principals who have to drive the process of change are not trained to manage change. This calls for in-service training by the Department of Education.

However, 26% of respondents disagree and 6% strongly disagree with the above statement. This implies that these teachers are of the opinion that principals are in a position to manage change effectively. Six of the respondents did not understand the statement.

4.5.8 In your view, what should the management task of the principal be as an agent of change regarding critical thinking?

According to most of the respondents, the management task of the principal as an agent of change regarding critical thinking should be to consult with stakeholders and look at different possible solutions. Teacher in-service training, courses, workshops and seminars should also be initiated by the principal and he/she should be the driving force and coordinator of this process. For teachers to be critical thinkers, the principal should be familiar with critical thinking and should ensure the thorough planning and execution

thereof. The principal should be open to change by utilizing available resources and by creating an environment conducive to teaching and learning. Teachers should be guided and encouraged to think and teach critically. Change programmes should be put in place in advance, while the principal him/herself should be involved and should evaluate the process.

Respondents also argue that everybody's view should be considered, critically analysed and accepted in good faith by the principal. The principal should ultimately be accountable and responsible for the discipline of both teachers and learners in enhancing critical thinking in the school. His/her active role in critical thinking must make him/her an agent of critical thinking by allowing teachers and learners to debate issues thoroughly and critically and sharing key information with them. The principal should be a mentor in this regard through leading by example, walk his/her talk and practice the principles of change. Alternatives and different opinions should be accommodated and be seen as challenges. Critical thinking and diverting views should be supported and respected by the principal at all times.

A smaller group of respondents argue that the management task of the principal as an agent of change regarding critical thinking should be part of his/her job description. The principal should be open-minded and should be a strategic planner. The principal must also ensure quality teaching and learning and his willingness to change must clearly come to the fore. His/her involvement would also encourage team work among teachers and an open invitation to class visits.

Class visits would make principals aware of teachers' struggle in the classroom, their strengths and weaknesses, so that a critical approach can be adapted to assist and support teachers. Collaborative decision-making could assist the principal in his/her management task. Collective review and the development of school policies should be done.

The respondents' state that teachers who are going out of their way to ensure that critical thinking becomes a reality in their classrooms should get incentives as recognition for their initiatives. A new dynamic and flexible

approach by the principal should help to avoid any resistance to change regarding critical thinking.

A sustainable number of about 57 respondents did not respond or did not understand the question. This indicates that some teachers might not know what the management task of the principal should be, especially as far as change about critical thinking is concerned.

However, most teachers responded in a matured and professional way. The responses of teachers are a clear indication of a new vision that they have for schools. Most teachers are committed to change regarding critical thinking and would want to support the principal. In service-training, workshops and seminars would be ideal in this regard. The fact that both teachers and the principal should be prepared to learn together with the learners is a challenging thought, but would at the same time create opportunities for addressing issues in a creative, transparent and collective manner.

4.5.9 Resistance to change points to a need for more information on the aim of the intended change

Figure 4.20: Resistance to change

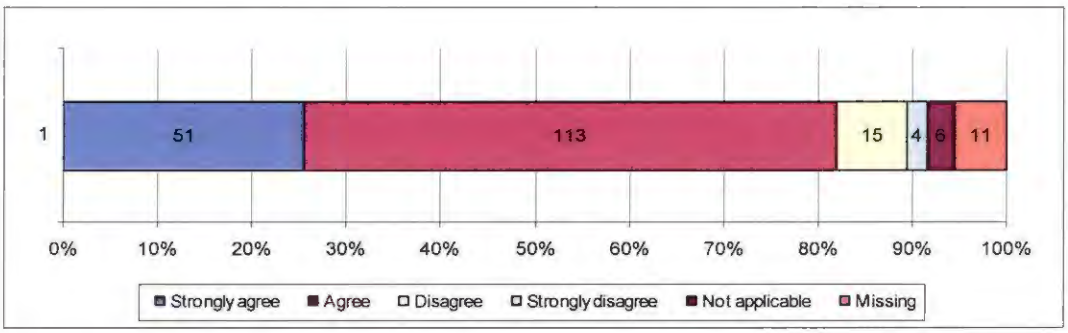
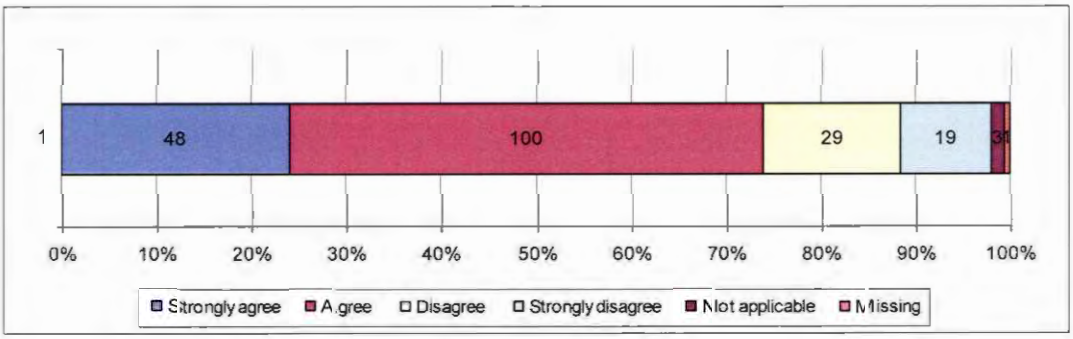


Figure 4.20 shows that the majority (113) of the respondents agree and 51 strongly agree that resistance to change points to a need for more information on the aim of the intended change. This implies that resistance to change can make a positive contribution to the management thereof. However, 4 respondents strongly disagree and 15 disagree with the above statement. These respondents do not see training as a prerequisite for effective change

management or they might not understand the concept and implications of change. In a situation of change they might very well resist it.

4.5.10 Teachers' attitudes towards teaching critical thinking skills to learners can impact negatively on the implementation thereof in the classroom

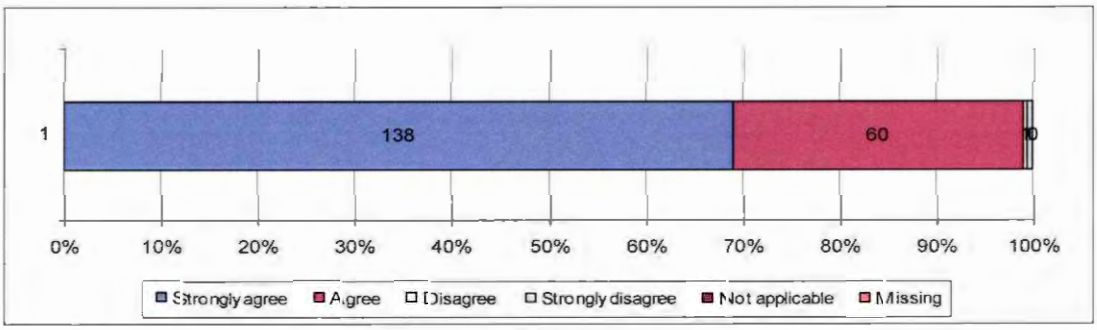
Figure 4.21:Teachers' attitudes towards teaching critical thinking skills



In figure 4.21 most (49%) of the respondents agree and 23% strongly agree that teachers' attitudes towards teaching critical thinking skills to learners can impact negatively on the implementation thereof in the classroom. However, 15% of the respondents disagree and 10% strongly disagree with the above statement. Three of the respondents did not understand the statement. These respondents might not understand the meaning of teaching critical thinking skills to learners or might just not be interested in teaching these skills.

4.5.11 Knowledge and understanding of any subject or learning area make teachers confident to teach the subject

Figure 4.22: Knowledge and understanding of subject/learning area



The majority (138) of the respondents in figure 4.22 strongly agree and 60 of respondents agree that knowledge and understanding of any subject or learning area make teachers confident to teach the subject or learning area. The fact that almost all respondents agree to the above statement implies that knowledge and understanding guarantee confidence in the teaching and learning process. Knowledge and understanding of the subject or learning area might then also have a positive impact on the attitude of teachers in teaching critical thinking skills to learners (*cf 2.6.7*).

However, a small number (1%) of the respondents disagree. This, of course, is a matter of great concern, because if one does not understand that knowledge and understanding of the subject is a prerequisite for having confidence to present it, it might mean that teaching and learning in such a classroom is not effective and that the teaching of critical thinking skills will not even be considered. It could also indicate that these skills will be taught without the teacher understanding what it actually entails.

4.5.12 The impact of the attitude of teachers towards teaching critical thinking skills to learners

Figure 4.23:Positive impact on attitude of teachers

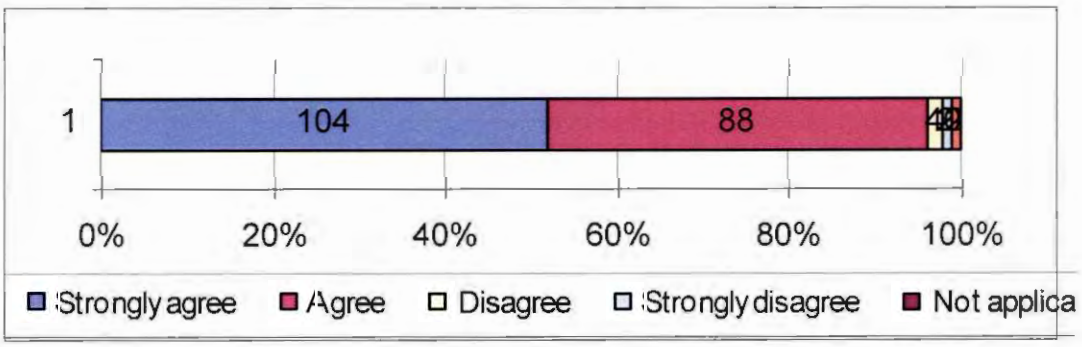
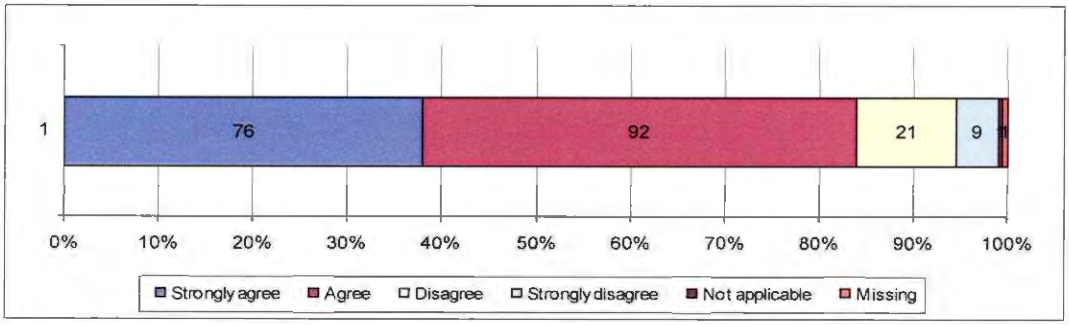


Figure 4.23 reveals that the majority (104) of the respondents strongly agree and 88 agree that knowledge and understanding of the subject or learning area will have a positive impact on the attitude of teachers towards teaching critical thinking skills to learners. This could imply that teachers will be more positive to teach critical thinking skills to learners if it is done in the subjects/learning areas that they know. This supports the finding in 4.2.32 that the more knowledge teachers have in their subjects/learning areas, the more confident they become. However, two of the respondents strongly disagree and four disagree with the above statement. This might imply that some teachers' still believe that one does not need knowledge of the subject or learning area to be able to teach it effectively. These teachers' attitudes may not be positive towards teaching critical thinking skills to learners.

4.6 SECTION D: THE RELATION BETWEEN TEACHING CRITICAL THINKING SKILLS AND CHANGE MANAGEMENT

4.6.1 Learners should take responsibility for their own learning

Figure 4.24:Learners should take responsibility for their own learning



According to figure 4.24, the majority (45%) of respondents agree and 37% strongly agree that learners should take responsibility for their own learning. In other words, learners must make use of the knowledge and information gained in the classroom and put it into practice for their own development. Teachers should teach learners to think critically and to be independent (*cf 2.6.7*). However, 11% of respondents disagree and 5% strongly disagree with the above statement. This might imply that some teachers do not allow learners to take responsibility for their own learning and are still spoon-feeding learners and / or doing their work for them. These teachers seem not to realize the importance of independent learning, including the skills of critical thinking. One percent of the respondents do not understand the statement.

4.6.2 Teachers should aim to create opportunities for learners to come to tentative conclusions

Figure 4.25:Teachers should aim to create opportunities for learners

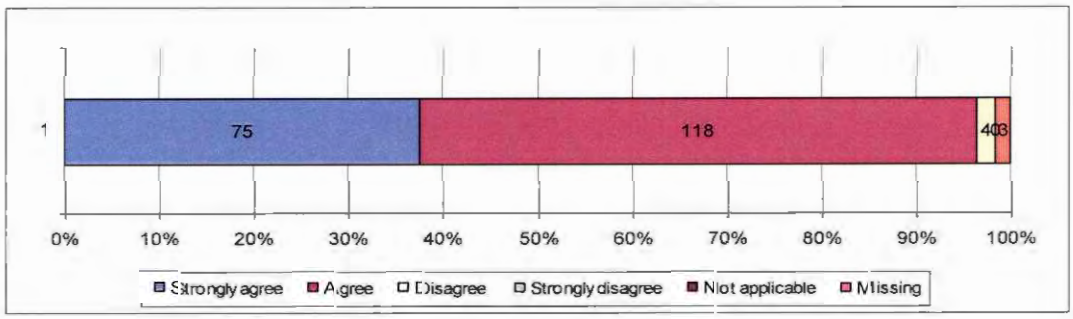


Figure 4.25 depicts that most (118) of the respondents agree and 75 strongly agree that teachers should aim to create opportunities for learners to come to tentative conclusions. This indicates that these teachers challenge learners' ideas by creating opportunities for creative and critical thinking. This finding supports the finding in 4.2.34, as learners can only take responsibility for their own learning if opportunities are created for them to come to tentative conclusions. However, a very small number of respondents (2%) disagree with the above statement. The implication of this is that there are still teachers who are merely instructing learners without creating opportunities for them to think creatively and critically in order to come to tentative conclusions (*cf 2.7*).

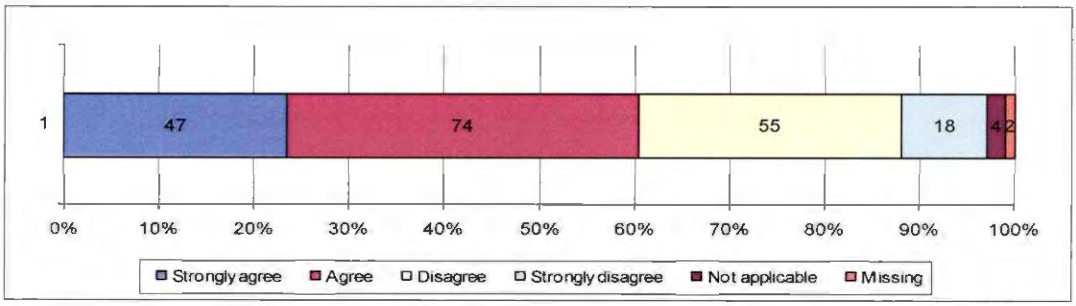
4.6.3 Critical thinking should be more a case of teaching learners to think critically than instructing them.

Figure 4.25 shows that the majority of the respondents (53%) agree and 44% strongly agree that critical thinking should be a case of teaching learners to think critically more than of instructing them. The implication of this is that opportunities are created during teaching and learning for learners to build their confidence to think critically and creatively in and outside the classroom. However, four (2%) of the respondents disagree with the above statement. This might imply that there are still a number of teachers who do not teach learners to think critically and creatively and that they still use ready teaching

and learning. In other words, learners reproduce knowledge exactly as it is given to them.

4.6.4 The school activities resolve around the principal as the key figure who determines to a great extent the school's success and/or failure when change is implemented.

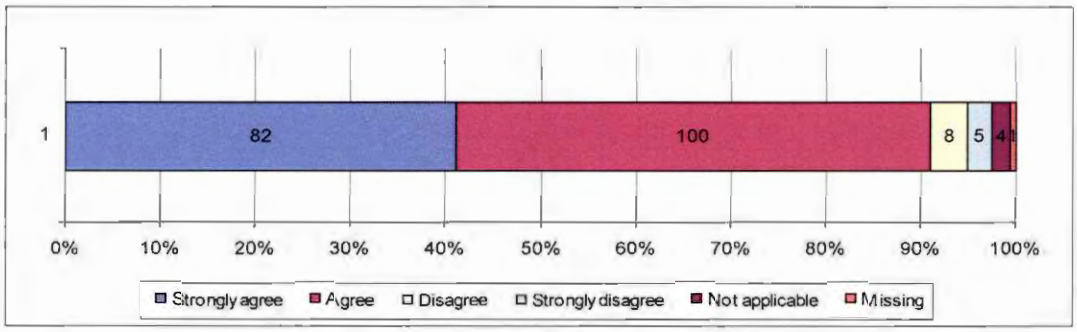
Figure 4.26: School activities resolve around the principal



Most (74) of the respondents in figure 4.26 agree and 47 strongly agree that school activities resolve around the principal as the key figure who determines to a great extent the school's success and/or failure when change is implemented. This implies that the principal as educational leader must lead the change – not merely be subjected to it. However, the fact that 55 of the respondents disagree and 18 stongly disagree might imply that principals are not necessarily key figures who determine the school's success. Four (2%) of the respondents did not understand the statement.

4.6.5 The principal should support teachers in teaching critical thinking skills to learners

Figure 4.27: Principals should support teachers



According to figure 4.27, the majority (49%) of the respondents agree and 41% strongly agree that the principal should support teachers in teaching critical thinking skills to learners. This implies that positive and active support should be given to the teaching corps (*cf 2.7*), as it will contribute to a good and healthy change process at the school. However, 4% of the respondents disagree and 3% strongly disagree with the above statement. This could imply that a small number of teachers endeavour to teach critical thinking skills to learners effectively without the support of the principal. Four of the respondents did not understand the statement.

4.6.6 Teachers' attitudes and beliefs regarding critical thinking skills influence the manner in which they teach

Figure 4.28: Teachers' atttitudes and beliefs

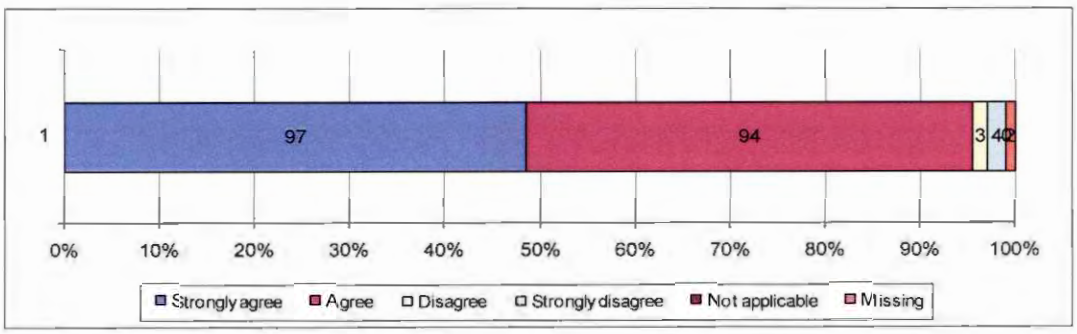


Figure 4.28 reveals that most (97) of the respondents strongly agree and 94 agree that teachers' attitudes and beliefs regarding critical thinking skills influence the manner in which they teach. However, three of the respondents disagree and four strongly disagree. This might imply that a number of teachers feel that attitudes and beliefs of teachers regarding critical thinking skills do not influence the manner in which they teach. It could further indicate that these teachers are not interested in teaching critical thinking skills to their learners or that they will teach it without aiming for success.

4.6.7 Learners should be seen as empty vessels to be filled with information by teachers. MOTIVATE.

Most respondents stated that most of the learners come to school with prior knowledge, experience and certain skills. Teachers build on existing knowledge, add to learners' experience and continue to develop their skills. Learners have the ability to gather information themselves, use it effectively and recall it when it is needed. They also argue that learners can be taught the ability to learn constructively.

Respondents furthermore stated that, depending on their level of maturity, learners also make their own decisions and practise what they have learned on their own. Teachers, on the other hand, supplement the existing information and play a leading and guiding role. Teachers also acknowledge that learners live in an era of high technology and can retrieve information from all sorts of resources.

A very small number (19) of the respondents chose not to respond, while only seven seem not to have understood how to respond to the statement. It can therefore be deduced that by not motivating their choices, some teachers are still regarding learners as empty vessels to be filled with knowledge. This should not be tolerated by education authorities. However, the vast majority of teachers who motivated their choices made it clear that learners do come to school with basic knowledge and experiences and that they merely add or build on the foundation laid by parents. This is a clear indication that these teachers are facilitators and guide the learning experiences of learners.

Learners should be given the opportunity to disagree, debate and argue about information given to them. In other words, learners should be allowed to think critically, discover for themselves and come to their own conclusions. Learners should not be left to their own fate, but be guided and moulded in their development to adulthood.

4.7 CONCLUSION

Respondents' views/opinions of critical thinking and how to teach critical thinking skills to learners were presented in this chapter. It became evident that the support of the principal is vital in any effort to teach critical thinking skills to learners. It was also clearly indicated that teachers' attitudes regarding critical thinking skills influence the manner in which they teach.

The next chapter presents a model for changing teachers' attitudes towards the value of teaching critical thinking skills.

CHAPTER FIVE

A MODEL FOR CHANGING TEACHERS' ATTITUDES TOWARDS THE VALUE OF TEACHING CRITICAL THINKING SKILLS: A SCHOOL MANAGEMENT PERSPECTIVE

5.1 INTRODUCTION

Critical thinking is of vital importance in the teaching and learning process because critical thinking skills involve judgement to convince others that some arguments are good or bad (Lipman, 2003:6). For one to make valuable decisions requires critical thinking in order to evaluate data and gather information accurately. Critical thinking also allows one to decide which decision is the most reasonable under specific circumstances by taking into account how the end result will be affected (Nicoteri, 1998:64 – 65). This becomes a reality when one is sometimes faced with daily demands in a profession and it is only one's critical thinking skills that will get one through the task. At secondary school level, especially at senior phase level, thinking should be on a higher-order level. It is for this reason that Bassham *et al.* (2005:8) argue that critical thinking plays a vital role throughout the school curriculum because learners master a variety of skills that can greatly improve their classroom performance.

The literature study in chapters 2 and 3 and the data analysis, interpretation discussion of findings in chapter 4 provide a clear indication that many teachers do not value critical thinking skills the way they should. It became clear that statements are not properly evaluated and correctly assessed and that knowledge is not carefully and precisely analysed. There was not much evidence to prove the teaching of focused, reflective, reasonable and creative thinking. The above findings indicate a need for managing a process of change regarding the attitudes of teachers towards the teaching of critical thinking skills to learners.

According to Taylor (1987:175), change is a struggle between what is and what is desired. This makes change an unavoidable feature of human experience and affects all aspects of a person's life, in both personal and employment spheres. Kimbrough and Burkett (1990:347) confirm this by stating that change is a deliberate effort to alter the *status quo* by influencing or modifying the functions, structure, technology and purpose of an organization. In the context of educational management, change means that school principals are exposed to new developments and change in the work force (Kotter & Schlesinger, 1979:106). Beckhard and Harris (1987:30) add that changes in legislation, the availability of resources, market demands and social priorities force principals to redesign. This, according to Virgilio and Virgilio (1984:347), is a complicated process that requires thorough strategic planning in order to reach prescribed goals. Change is therefore a process pursued for and by people (Hall & Hord, 1987:10).

To ensure effective management of change, certain factors need to be considered. According to Coetsee (1989:49), these factors include:

- The degree to which the total school community will be affected by the change and the degree to which it is aware and supportive of the vision driving the change and its intended consequences
- The degree to which the change is in line with current practices and objectives
- The existence of a climate of change at the school
- The previous experience that the school community has had of change and the degree of readiness for change in the community

According to Herman and Herman (1994:3), the successful management and implementation of change is also dependent on the following prerequisites:

- There should be a commitment to change by leaders and by a critical mass among the stakeholders.

- There should be a clear and desirable vision of what the school will be like once the change is complete.

- There should be clear strategic goals to be reached as the organization undergoes the change process and milestones should be established to guide the pace of the change.

- The leader should give recognition to all who do good work, and he/she should attend group celebrations every time an important milestone is reached.

The principal should therefore also manage the five phases of managing change in the institution: diagnosis, planning, implementation, stabilization and evaluation. By diagnosing the problem, the principal becomes aware of a situation that requires alteration at the school. The staff may also become aware of a situation that needs to be altered and may report this to the principal. Parents or members of the public may also become aware of things that need to be changed and may report them to the principal (Walker & Vogt, 1987:42). According to Huddle (1987:81), diagnosing the problem reveals the extent and reality of the situation. To find creative alternatives to the problem that has been diagnosed, to analyse these alternatives and finally make a choice between possible solutions, is referred to as planning (Knoop, 1987:16). Each of the planned alternative solutions should have potential to limit dissatisfaction and operate against forces of resistance to change. Knoop (1987:16-17) regards implementation as the most difficult phase in the change process.

Planning has to serve as a blueprint during the phase of making practice real. Implementation means that new structures are created, rules and regulations changed, objectives made clear and training provided. Resistance to change may also appear during this phase. New norms come into existence during the stabilization phase. Loyalty to these norms is achieved by increasing people's involvement (Walker & Vogt, 1987:42). People need to be encouraged and rewarded during the stabilization phase to ensure that support for changes is maintained and to avoid regression to old ways. The

final phase in change management requires an evaluation of the entire change process. Evaluation should indicate the degree of success of the change process and the change itself. This will enable the principal to ascertain the success of the change and will also serve as a point of departure for other change processes that need to be made (Walker & Vogt, 1987:44).

The prerequisites and the phases mentioned above determine the role of the principal in managing change. The principal needs certain skills as the manager of change. Skills like vision and creativity are prerequisites for systematic planning. Huddle (1987:86) is of the opinion that the personal vision, involvement, dedication and visible support of the principal are the crucial factors in successful implementation of change. Planning is one of the key factors in the success of the implementation and acceptance of change. The principal should give special attention to how he/she intends to evaluate the effect of the change strategy and implemented changes (Harris, 1985:93; Keeve, 1987:51).

Change is managed as a process. The principal persuades the school community to accept change and communicates the aims of the change (Harris, 1985:93; Keeves, 1987). To manage change is not an easy process. It therefore seems necessary to design a model that could be used for changing teachers' attitudes towards the value of teaching critical thinking skills to learners.

This chapter sets out to design a model that could be used to change teachers' attitudes towards the value of teaching critical thinking skills to learners. An exposition of the concept 'model' will now be defined and discussed.

5.2 THE CONCEPT "MODEL"

Jonker (1994:208) advocates that a model can be viewed as a supportive construction for research. According to Mouton and Marais (1990:144), a model identifies a central problem or question concerned with the problem statement that is being investigated. Phenomena that are complex in nature

can be rendered more visual and understandable by reducing them to an essential or fundamental coherence. A model restricts, isolates, simplifies and systemizes the domain under investigation. They continue to state that a model indicates the relationships that exist between the components that are researched. According to Decorate *et al.* (1981:6), the definition of a model depends partially on the function of the model. A model can be viewed as a psychological device (to simplify visual relationships); a normative device (to accommodate broad comparisons); an organizational device (the manipulation and collection of data); an illustrative device (a diagram of the model) and a constructive device (in search of a theory). Additional to the fact that models can be distinguished by their functions, models may also be distinguished in terms of their content. The content can include maps, graphs or scaled representations of real-world simulations. De Corte *et al.* (1981:6) indicate that it should be kept in mind that a model is not a theory *per se* but should rather be viewed as an aid to develop a general or specific theory. A model supplies the figures and means to make predictions but the model still does not supply the total explanation of the phenomenon (Mouton & Marias, 1990:144).

A model is a representation of an object, system or idea in a form which differs from the object itself (Mouton & Marais, 1990:143). Nadler (1989:4) describes a model as a representation of the reality of those who have developed it. Mouton and Marais (1990:143) state that a model attempts to represent the dynamics of a phenomenon in that it provides a simplified indication of relations between the main elements in a process. A model is thus a mode of representation, within which not all its features correspond to some characteristic of its subject matter, but rather draw attention to specific themes, relations and dimensions.

Mouton and Marais (1990:144) advocate that most models have certain common characteristics, namely:

- Models identify central problems or questions regarding the phenomenon to be investigated.

- Models limit, isolate, simplify and systematizes the domain of research.
- Models provide a new language within which the phenomenon can be discussed.
- Models provide explanation sketches and resources for making predictions.

A good model can help the user to understand what is actually a complicated process (Nadler, 1989:5). Although models are only representations and should not be confused with reality, models have many benefits for the user. These benefits or advantages will now be presented.

5.3 ADVANTAGES OF MODELS

The following advantages of the use of models should be considered by researchers (Nadler, 1989:5):

- Research results can be presented in text-form within a specific framework.
- The meaningfulness of the research results can be presented and evaluated within a specific framework.
- The problem that has been researched can be presented in a reduced and summarised form.
- The gap between the theory and the empirical research can be closed.
- What is known through research and observation can be integrated.
- Observation is guided.

Although a good model can help the user to understand what is essentially a complicated process, there are also limitations or disadvantages to models.

5.4 DISADVANTAGES OF MODELS

The following disadvantages of models should be considered (Nadler, 1989:6-7):

- Models can only represent reality and should thus not be confused with reality.
- In reducing a complex process to a one-dimensional representation, information can be lost.
- The utility of models depends on the user's own understanding of reality.
- Feedback in an open model is not automatic.
- The closed model gives few options for the user's own interpretation.

5.5 MODEL DESIGN

Nadler (1989:5) identifies a number of questions that should be considered in the choice of a model, namely:

- What is its purpose?
- For what kinds of learning is it appropriate?
- Does it help the user to anticipate what he/ she will find?
- Does it provide alternatives?

The design of a model will depend on the application value of that specific model. For the purpose of this research, two kinds of models will be discussed, namely the closed model and the open model.

5.6 TYPES OF MODELS

There are two types of models, namely the closed and the open models. These two models will now be discussed.

5.6.1 The closed model

A closed model is based on the assumption that all inputs can be identified. Closed models endeavour to build all the possible variables into the model. Anything that can have an impact on the design process should have been previously identified and integrated into the model (Nadler, 1989:6).

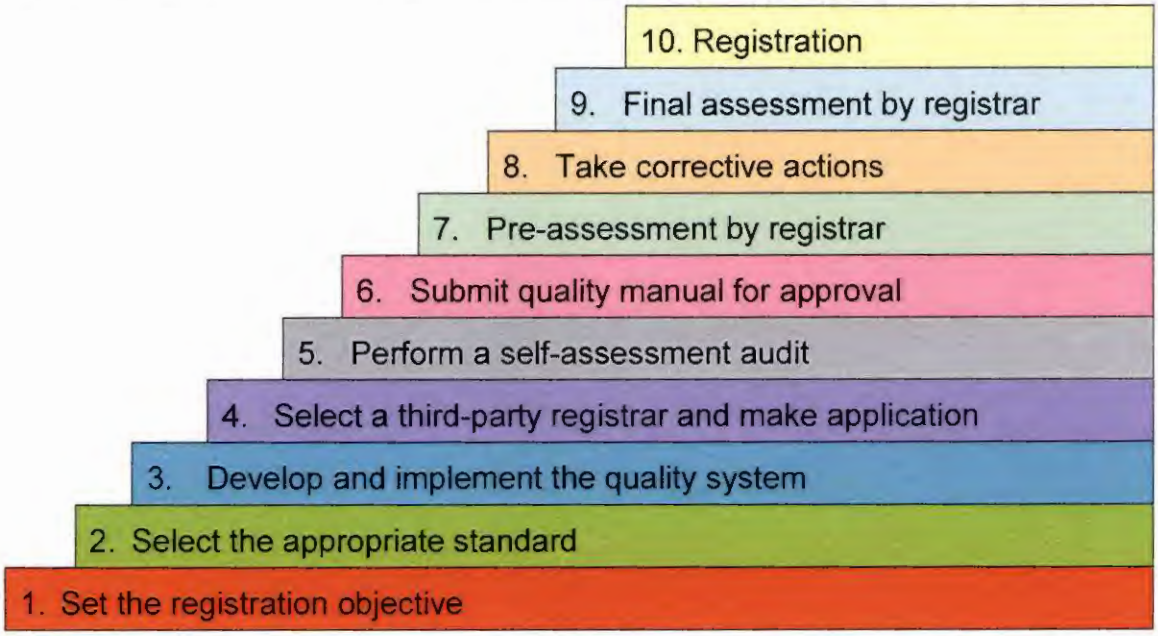
When using a closed model, the designer knows that the conclusions and outcomes are predetermined. If the designer therefore uses the model as indicated by the model-builder, the programme will evolve exactly as promised by the model. According to Nadler (1989:6), the designer has few options because if he deviates from the model, it will not result in the successful achievement of outcomes. An example of a closed model is The International Organization for Standardization (ISO) 9000.

ISO 9000 has its origin in manufacturing settings, but provides a quality management framework for service-oriented organizations that have an intention to upgrade their performance. ISO 9000 is a non-governmental worldwide federation representing national standards bodies from more than 100 countries (Harding, Tesolowski & Simmons, 2000:32). The aim of ISO 9000 is to improve internal communication and to increase monitoring of activities in an organization. Although it has its origins in industry, it is equally applicable to educational institutions.

The linear movement in a closed model, as in ISO9000, is depicted in Figure 5.1.

ISO 9000 has been implemented by educational institutions in the USA, Canada, Singapore, the UK, Switzerland and Australia (Evans & Lindsay, 2002:315).

Figure 5.1: Ten basic steps to ISO registration (Craig, 1994:20)



Reasons for implementing ISO9000 in educational institutions include the following:

- To make education more efficient and improve overall performance.
- To promote collaboration and partnerships with business and industry and to prepare learners better for the workplace.
- To provide a framework and structure to help to improve customer service.
- To improve business processes through documentation to reduce the internal cost of doing business and communicating with customers.
- To bring better management practices to providers (Evans & Lindsay, 2002:315).

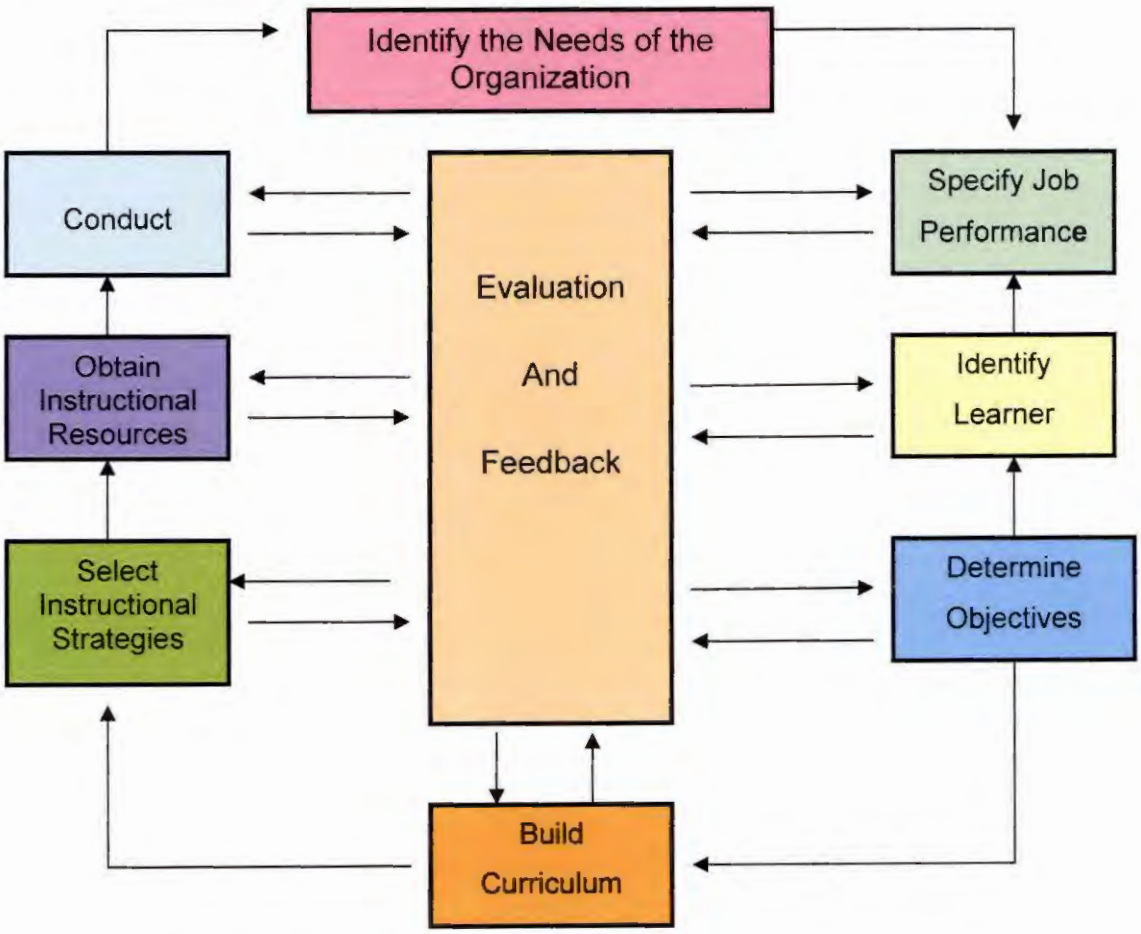
5.6.2 The open model

An open model is a model that considers that outside factors can have an impact on the design process. In creating an open model, the model builder accepts the fact that some outside forces may be beyond the scope of the model, but should still be considered in the design process. The open model

therefore provides the designer with possible courses of action and anticipation of outcomes (Nadler, 1989:6).

The open model endeavours to describe what will happen if the model is followed. However, it provides no guarantees as to the outcomes and thus the design process should be carefully observed as it unfolds. According to Nadler (1989:6), feedback in an open model is not automatic, but the assumption is made that the user will recognize the need for feedback. There is, however, nothing to restrict an open model from having a feedback component built into it. Figure 5.2 represents an example of an open model.

Figure 5.2: An example of an open model (Nadler, 1989:18)



This model can be used by educational institutions because it identifies the needs of the institution and the learner, determines objectives, builds curricula and makes provision for evaluation and feedback.

The models that will be discussed below are models that might play a role in assisting and guiding the researcher to design a model to manage a process of changing teachers' attitudes towards the value of teaching critical thinking skills.

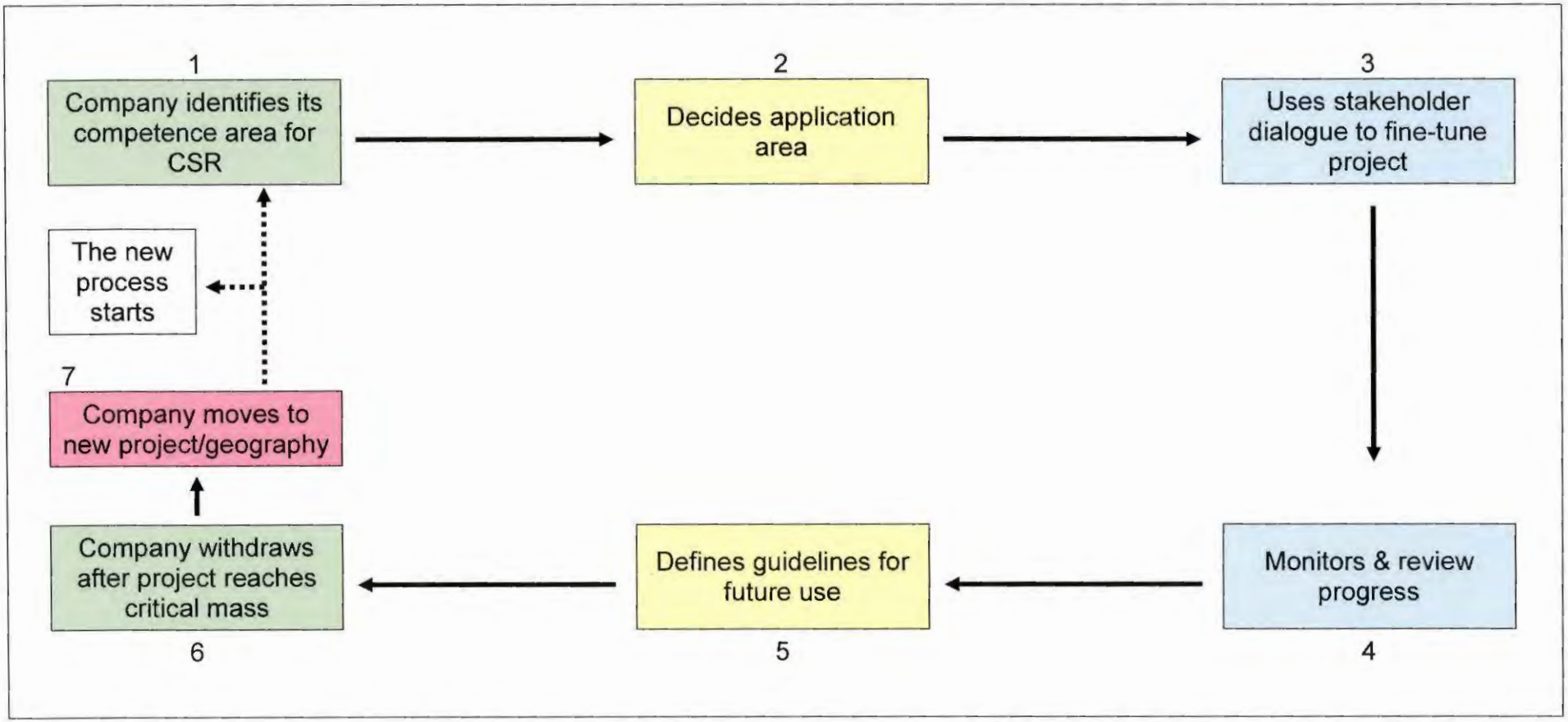
5.7 POSSIBLE MODELS FOR THE MANAGEMENT OF CHANGING TEACHERS' ATTITUDES TOWARDS THE VALUE OF TEACHING CRITICAL THINKING SKILLS

5.7.1 Community learning in the Indian Education Sector (Nadler, 1989:6)

The Community Learning in the Indian Education Sector model, is a closed model. The purpose of the model is to contribute knowledge and expertise to the Indian Education Sector. Closed models are widely used in industry and equally applicable to educational institutions (Nadler, 1989:6).

Companies first identify areas where they can contribute knowledge and expertise. This is a paradigm shift from earlier trends of allocating a percentage of total revenue to schools, hospitals or community development. Based on knowledge resources, companies are then able to focus on areas where they have competence. Often these areas help to improve the competitive context of the company. Dialogue with stakeholders leads to the identification of methodology and review mechanisms. Communication plays a vital role to keep stakeholders informed of the company's current activities and future plans. Done in isolation, Corporate Social Responsibility (CSR) projects become corporate showpieces with little long-term value. The Indian experience shows many innovative initiatives that have failed to take off to the next level. In this model, periodic review and defining guidelines are of critical importance to give momentum to the project. Once a CSR initiative starts generating revenue for itself, companies need to delegate operations to different communities and look for the next project in order to identify new areas where their expertise and experience can add value (Jonker & De Witt, 2006: 197 – 198). In Figure 5.3 the process flow chart of the Community learning in the Indian Educator Sector model is illustrated.

Figure 5.3: Process flow chart of the Community Learning in the Indian Education Sector Model (Adapted from Jonker & De Witt, 2006:98)



This model can possibly be used to provide guidelines for reviewing the model of changing teaches' attitudes towards the value of teaching critical thinking skills periodically and to give momentum to the change process.

5.7.2 Reflexivity: Linking Individual and Organizational Values (Jonker & De Witt, 2006: 129)

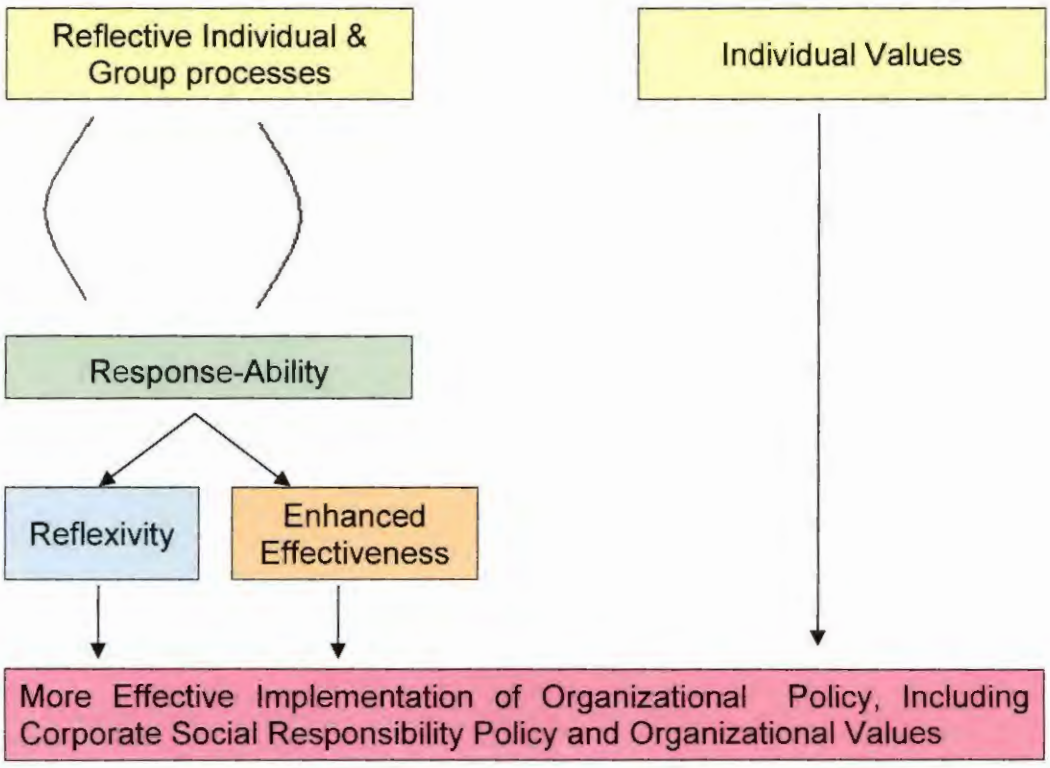
This is a closed model as it is based on assumptions, conditioned responses and ideas. All inputs can be identified in terms of meaning, significance, habits, etc.. This model is mainly used by managers in the workplace for organizational policy-making by linking individual and organizational values reflexively. This model can also be used when working with any goal-orientated activity. Managers who apply this model are able to assess whether their intentions are in harmony with organizational policy and are able to act effectively because they understand what they need to achieve (Jonker & De Witt, 2006: 129).

"The role of values in decision-making in organizations is complex and often misunderstood. Personal values shape individual interpretations of organizational policy and decisions. Exposed organizational values often differ from values implicit in practice and the relationship between personal and organizational values is often obscure. Any values expressed in CSR policy may or may not be aligned with actual individual and organizational practice. Individual worldviews are shaped by perceptual filters which colour experience according to predispositions inherited at birth and learnt during life. These predispositions are a complex of fundamental beliefs about the world, assumptions, conditioned responses, ideas about meaning and significance, habits, etc. An important group of such predispositions is personal values which affect our vision even when their presence has long been forgotten (Jonker & De Witt, 2006: 129)."

"In the workplace, individuals interpret organizational policy through just perceptual filters and consequently make operational decisions according to personal beliefs. Not only do their values colour their choices, but they also limit the options they perceive as available to them. Becoming aware of these

subjective limitations, enables individuals to see beyond them to discover new possibilities for interpretations and action. The more aware an individual becomes of how their personal values affect their interpretation of organizational policy the more effective their decisions will be. Enhanced self-awareness leads to a better understanding of organisational aims and a wider range of options for action. Managers with these attributes are better able to assess whether their intentions are in harmony with organisational policy and are better able to act effectively because they understand what they need to achieve. They are flexible, creative decision-makers who learn quickly, communicate clearly and create better working relationships with colleagues. When managers behave in these ways, organisational effectiveness is increased and value is added in every way (Jonker & De Witt, 2006:30)." Thus effectiveness is perceived as the link between individual and organizational values. A management development model which focuses on individual values is an ideal tool to use when working with organizational activity that is value-driven and goal-orientated. Figure 5.4 represents: Linking individual and organizational values reflexivity.

Figure 5.4: Linking individual and organizational values through reflexivity (Adapted from Jonker & De Witt, 2006: 130)



As this model focuses on value-driven goals, as well as the development of all aspects of organizational performance, it could assist the researcher in designing a model for changing the attitudes of teachers towards the value of teaching critical thinking skills.

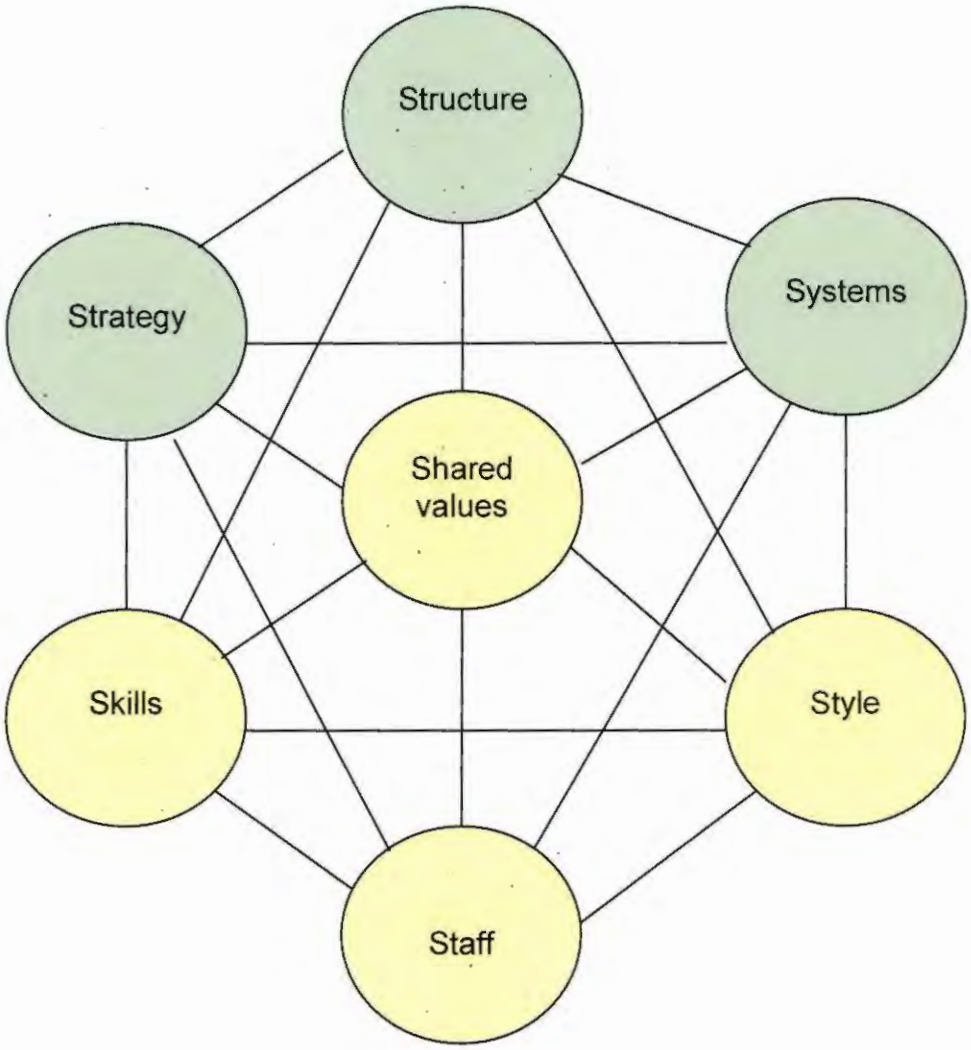
5.7.3 The 7-S-Model

This is an open model as it provides possible courses of action and anticipation of outcomes (Nadler, 1989:6). The model also endeavours to describe what will happen if the model is followed. The 7-S-Model starts from the premise that an organization is not just a structure, but consists of seven elements.

These seven elements (structure, systems, style, skills, staff, strategy and shared values) are distinguished in so-called hard elements and soft elements. The hard elements (green circles: strategy, structure and systems) are feasible, easy to identify and can be found in strategy statements, organizational plans, organizational charts and other documentation (Waterman *et al.*, 1980:18).

The four soft elements (style, staff, skills and shared values), are difficult to describe since capabilities, values and elements of corporate culture are continuously developing, changing and are highly determined by the people in an organization. Although the soft elements are below the surface, it can have a great impact on the hard elements of the organization (Waterman, Peters & Phillips, 1980:18). In Figure 5.5 the 7-S-Model of Peters and Waterman is illustrated.

Figure 5.5: The 7-S-Model of Peters and Waterman



Adapted from Waterman *et al.,* (1980:18).

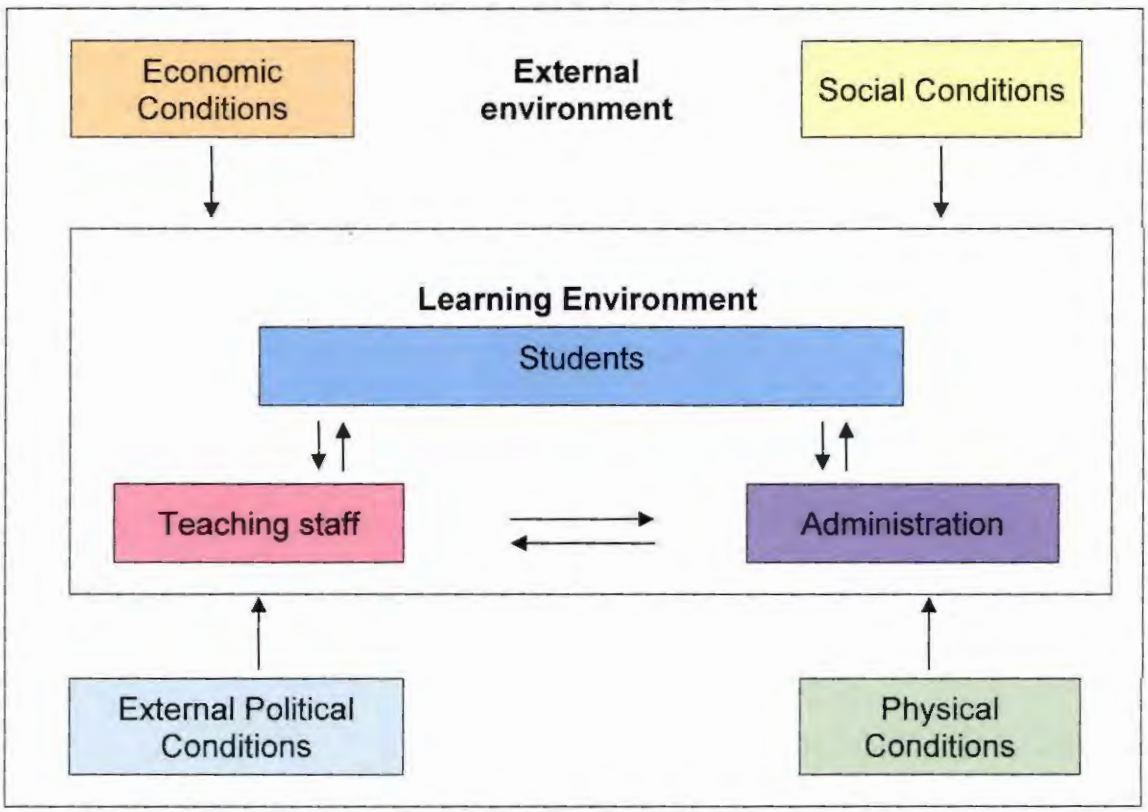
The 7-S model focuses on the management of strategies, systems and structures and could correlate with the structures within a model for changing teachers' attitudes towards the value of teaching critical thinking skills and may contribute to design a model to monitor and assess teachers' attitudes towards the value of teaching critical thinking skills. The continuously developing and changing style, staff, skills and shared values included in the 7-S model, are also characteristics of schools as orgsanizations and could assist the researcher in the design of a model for changing teachers' attitudes towards the value of teaching critical think skills.

5.7.4 An adaptive management model (Nadler, 1989: 6)

This is an open model because it considers that outside factors exist and that these factors may have an impact on the process of designing a model. Some outside forces may be beyond the scope of the model, but should still be considered in the design process (Nadler, 1989:6).

In order to change the way learning environments are perceived and managed, there needs to be a shift in the boundaries of the thinking genre of educational management (De Bono, 1990).De Bono (1990) defines a sustainable learning environment as "a learning environment that is capable of being maintained at a steady level without exhausting or adversely affecting its human components or on-site material resources". De Bono further states that in order to maintain a steady level of the learning environment without work overload, the responsibility of the management of the process should reside with a coordinator who would ensure that the performance of the process is kept at a high level. Figure 5.6 represents the Adaptive Management Model.

Figure 5.6: Adaptive management model (adapted from De Bono, 1990)



The learning environment is thus affected by the external environment within which the learning environment is active. Conditions, such as the economic, social, political and physical conditions of the external environment, impact on the learning environment and its effectiveness (De Bono, 1990:27).

To manage the learning environment is part of the management process towards changing teachers' attitudes towards teaching critical thinking skills to learners.

All the models that have been discussed have characteristics that correlate with schools as organizations and can contribute to the design of a model for changing teachers' attitudes towards the value of teaching critical thinking skills. However, the researcher will mainly draw on the 7-S model and the Adaptive Management Model as these models recognise the fact that outside factors can have an impact on the design process (Nadler, 1989:6):

- The 7-S model is an open model that focuses on the management of strategies, systems and structures.
- The adaptive management model is an open model that focuses on the learning environment which is affected by the external environment within which the leaning environment is active.

The proposed model provides possible courses of action as well as anticipation of outcomes. The model also recognizes that, in order to change the way learning environments are perceived and managed, there should be a shift in the boundaries of the thinking genre of educational managers (De Bono, 1990). However, elements of closed models are also considered in the design of the proposed model as it endeavours to build all possible variables into the model, is focused on goal-orientated activities which are in harmony with organizational policy, attempts to link organizational and individual values reflexively (Jonker & De Witt, 2006:129) and assumes that all inputs can be identified (Nadler, 1989:6). It is thus envisaged that if the model is implemented as proposed by the researcher, the programme will evolve as promised by the model.

The proposed model will attempt to present the researched problem in a reduced and summarized form and to close the gap between the theory and the empirical research results.

5.8 A MODEL (M) FOR CHANGING (C) TEACHERS'(T) ATTITUDES (A) TOWARDS THE VALUE OF TEACHING CRITICAL (C) THINKING (T) SKILLS (MCT-ACT)

5.8.1 Introduction

This model starts from the premise that the school principal is the driving force behind any attempt to change teachers' attitudes towards the teaching of critical thinking skills and is the central figure in the implementation of the proposed model aimed to achieve this. The model is based on an approach that focuses on the need to develop an internal process that can be used to facilitate and manage the changing of teachers' attitudes towards teaching critical thinking skills. As this model aims at managing the above process, the details of critical thinking and critical thinking skills will not be discussed.

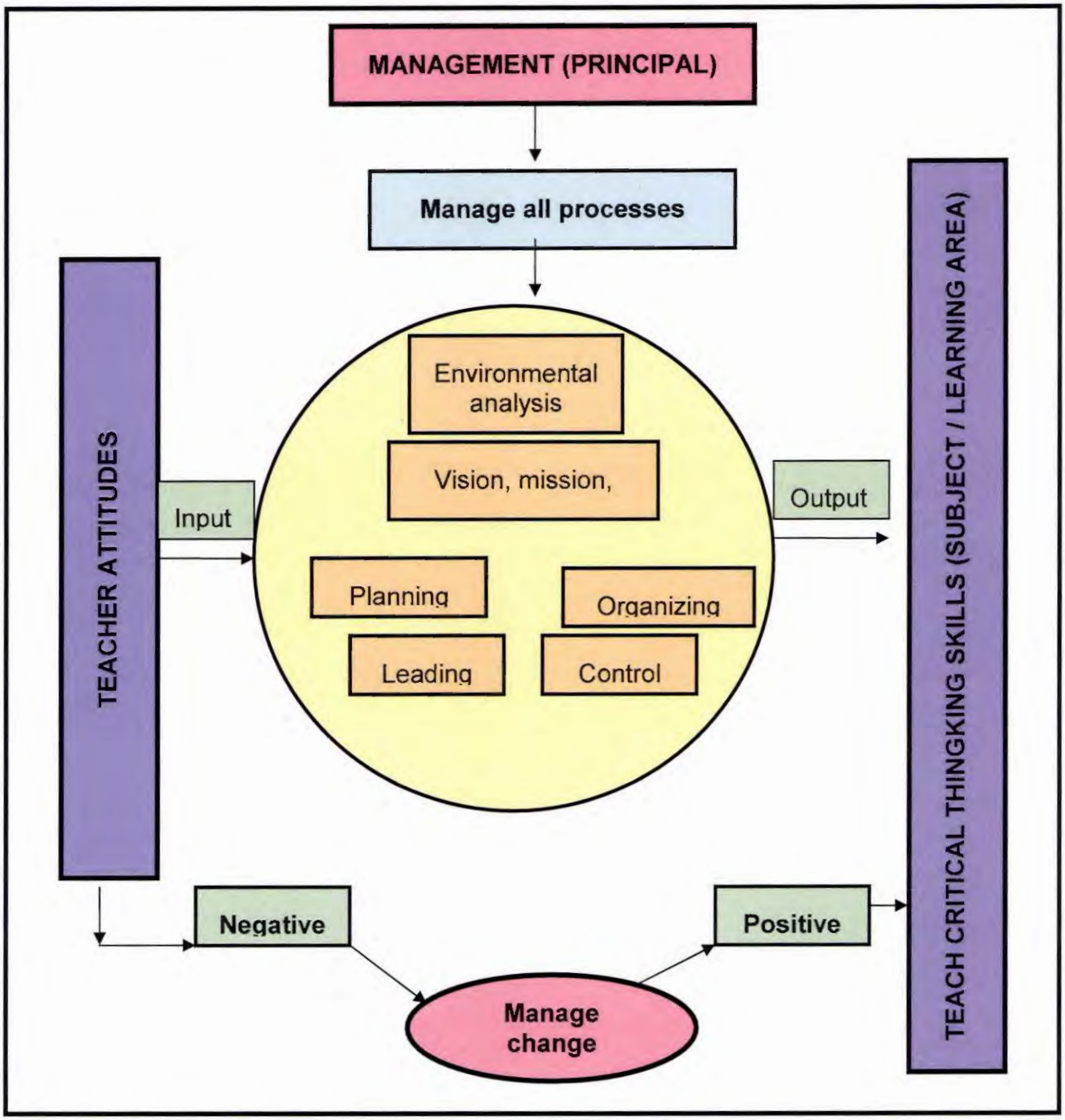
The proposed model can be implemented at schools to ensure that:

- the school's vision, mission and goals include a focus on teaching critical thinking skills and that this is known and supported by all stakeholders;
- the manner in which the work will be done is well thought through and clearly communicated to everyone;
- responsibility for tasks is clear;
- monitoring and evaluation mechanisms are in place; and
- there are agreed ways of correcting deviations from the set plan.

The MCT-ACT approach is illustrated in Figure 5.7

Figure 5.7: An approach to changing teachers' attitudes towards the value of teaching critical thinking skills (MCT-ACT)

Figure 5.7: An approach to change teachers' attitudes towards the value of teaching critical thinking skills (MCT-ACT)

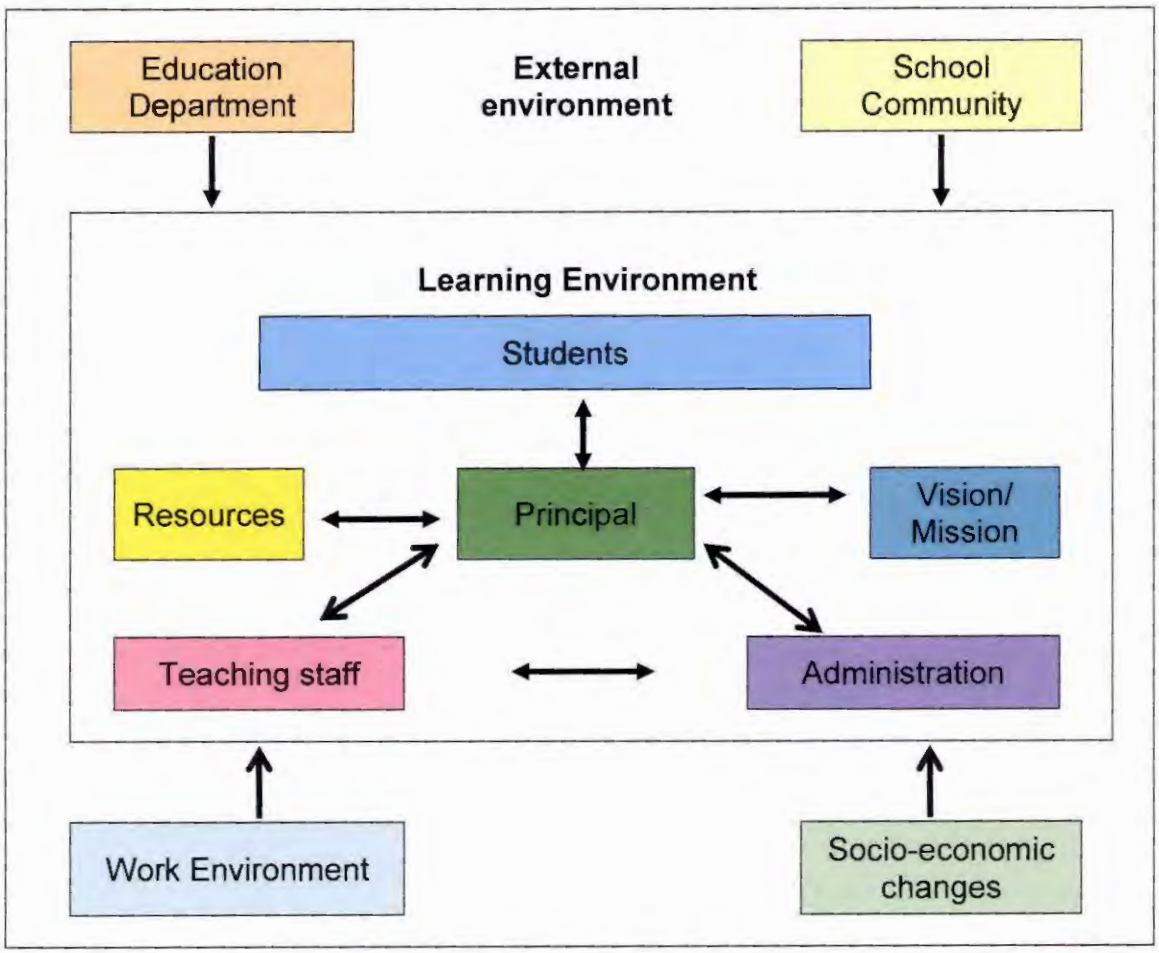


There are numerous factors in the internal (learning) and external environment that could impact on the process of changing teachers' attitudes towards teaching critical thinking skills. These factors will now be discussed.

5.8.2 Factors that could have an impact on the process of changing teachers' attitudes towards the teaching of critical thinking skills

When attempting to change teachers' attitudes, the principal has to do an environmental analysis in order to identify internal as well as external factors that could have an impact on the process. In order to change the way learning environments are perceived and managed, there needs to be a shift in the boundaries of the thinking genre of educational management (De Bono, 1990). De Bono (1990) defines a sustainable learning environment as "a learning environment that is capable of being maintained at a steady level without exhausting or adversely affecting its human components or on-site material resources". In Figure 5.8 the various factors that should be considered by the school principal are depicted.

Figure 5.8: Internal and external factors that could have an influence on the process of changing teachers' attitudes (Adapted from De Bono, 1990)



To manage the internal (learning) environment is part of the management process for the implementation of teaching critical thinking skills to learners. This environment is affected by the external environment within which the learning environment is active. Conditions including decisions and policies of the Department of Education, the needs of the school community, requirements of the future work environment of learners and socio-economic changes in the external environment impact on the learning environment and its effectiveness (De Bono, 1990:27). All these factors need to be considered by the school principal in the process of managing change.

However, as stated by Nadler (1989:6), an organization is not just a structure, but consists of various elements. This is also applicable to schools as organizations.

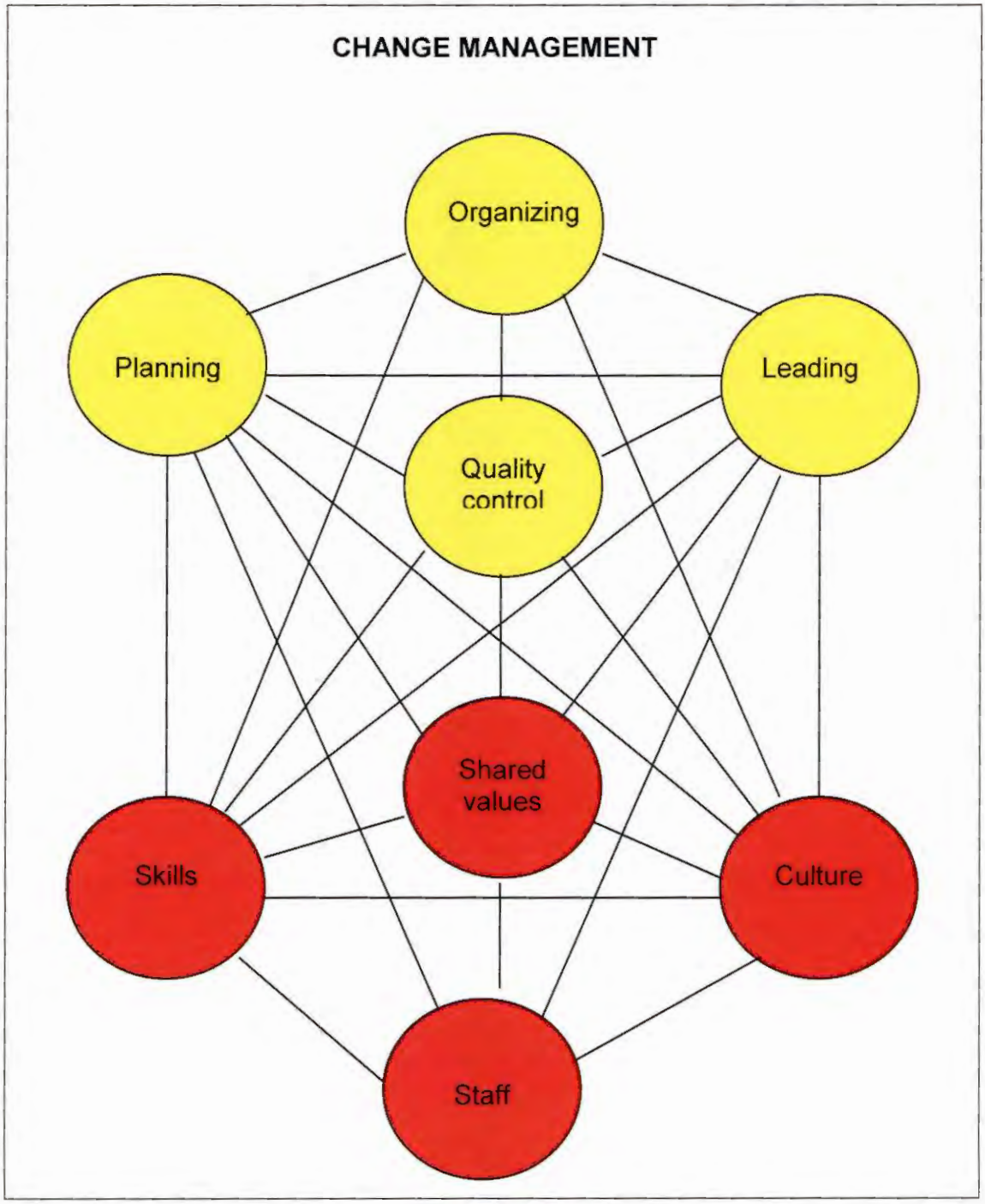
5.8.3 Elements involved in changing teachers' attitudes towards the teaching of critical thinking skills

The 7-S (Nadler, 1989:6) model that focuses on the management of strategies, systems and structures could correlate with the structures within an approach towards changing teachers' attitudes towards the value of teaching critical thinking skills. In Nadler's model, seven elements (structure, systems, style, skills, staff, strategy and shared values) are distinguished in hard elements and soft elements. In the same way, the elements involved in changing teachers' attitudes towards the teaching of critical thinking skills can be distinguished in hard elements (planning, organizing, leading, quality control) that are feasible and easy to identify and can be found in strategy statements, organizational plans, organizational charts and other documentation (Waterman *et al.*, 1980:18).

The four soft elements (skills, values, staff and style) are difficult to describe since capabilities, values and elements of the school as organization are continuously developing, changing and are highly determined by the people in an organization. At school the soft elements include shared values, skills (ability to teach critical thinking), staff (values and attitudes) and organizational culture. Although the soft elements are below the surface, it can have a great

impact on the hard elements of the organization (school) (Waterman *et al.*, 1980:18). In Figure 5.9, the above elements which are applicable to schools as organizations are illustrated. The hard elements are indicated in yellow and the soft elements in red.

Figure 5.9: Elements involved in changing teachers (Adapted from Waterman, Peters & Phillips, 1980:18)



Adapted from Waterman *et al.*, (1980:18).

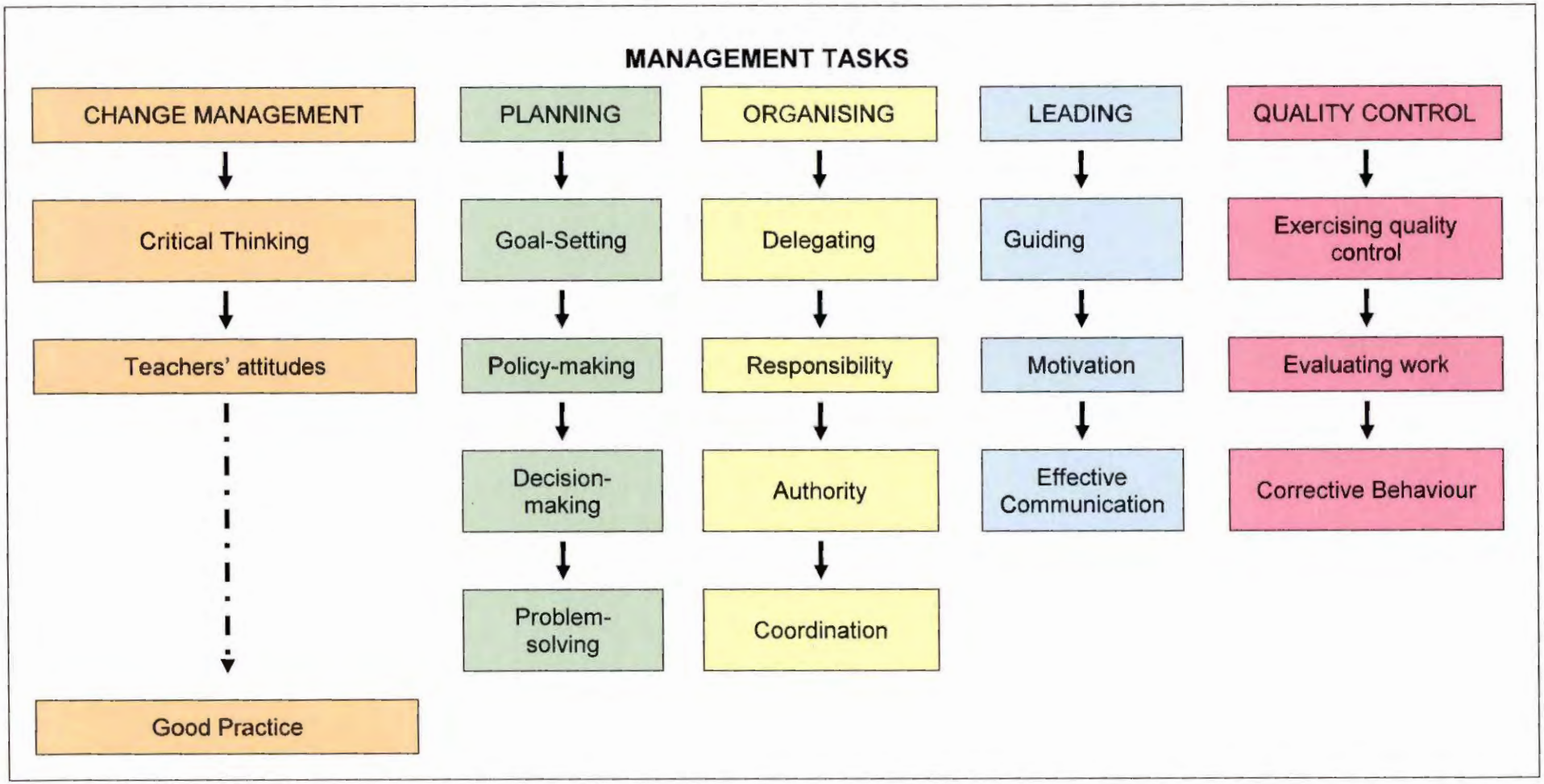
In any attempt aimed at managing the process of changing teachers' attitudes towards the teaching of critical thinking skills, the above elements have to be considered.

As a manager of change and the driver behind the process, the school principal has to accept that a prerequisite for changing teachers' attitudes towards the teaching of critical thinking skills is an understanding of the importance of executing basic management tasks. These management tasks of the school principal will be discussed in the section that follows.

5.8.4 The management tasks of the school principal

The management tasks of the school principal, namely change management, planning, organizing, leading and quality control are illustrated in Figure 5.10.

Figure 5.10: Management tasks of a school principal



These management tasks will be discussed in the next section.

5.8.4.1 Change management as a management task of the principal

Schools are dynamic entities and change and renewal contribute to its success. This means that school principals are exposed to new ways of control and regulation. Change is a process that requires strategic and good planning so that prescribed goals can be achieved. The aim of change is to improve at all times. This sole purpose of improvement is to sustain the attainment of goals systematically (Glutter in Wissler & Ortiz, 1988:157).

The success of a school is mostly determined by the school principal as the key figure around which the school activities revolve (Hall, 1988:49). The school principal has the responsibility for managing change at the school by facilitating and implementing it. For change to be managed effectively, the principal needs to have certain skills as an agent of change. This would include vision and creativity to ensure systematic planning to resolve new problems. Crucial factors in successful implementation of change are dedication, visible support, good interpersonal relations, a flexible and adaptable management style and knowledgeable decision-making. Change is also the ability to do things differently to develop skills for effectiveness, creativity and efficiency.

However, the findings from the empirical research revealed that many teachers feel that change and renewal are not important for the development of a school. This clearly suggests that some teachers are very uncomfortable with change, they stagnate and are not interested in their own growth or that of the school (*cf. 4.2.22 ; figure 4.17*). This means that some teachers do still not have a clear picture or understanding of what quality really is (*cf. 4.2.25*) and are therefore not willing to contribute to positive change at the school *(cf. 4.2.26*). It also became clear that some individuals at the school do not wish to take part in new working and learning opportunities (*cf. 4.2.27*). Instead, it seems that they become a threat to some teachers. This might have lead to the reason why some teachers are of the opinion that school principals do not

even have to be exposed to in-service-training relevant to the proposed change.

As stated previously, when attempting to change teachers' attitudes, the principal needs to consider internal as well as external factors that could have an impact on the process (*cf. 5.8.2*). As the aim of the proposed model is to change teachers' attitudes towards teaching critical thinking skills to learners, the perceptions of teachers regarding the teaching of critical thinking skills will be briefly discussed.

Teachers are of the opinion that the principal as an agent of change should create an environment conducive to teaching and learning. However, findings from the empirical research indicated that the principals are not supporting teachers in teaching critical thinking skills to learners. Guidance should be given to teachers to teach and think critically and learners should be encouraged to develop a critical approach to their work. Respondents indicated that room should be made for teachers to express themselves to enhance personal growth and to develop group dynamics in critical, healthy, argumentative and meaningful dialogue engagement. As an agent of change, according to some of the respondents, the principal should be an open-minded and strategic planner by ensuring that quality teaching and learning takes place. They further suggested that collaborative decision-making, collective review and the development of school policies could assist the principal in his/her management task (*cf. 4.2.29*).

However, according to the data collected, many teachers do not create opportunities for learners to work within argumentative raw material to apply their critical thinking skills, as they see only one solution to a problem. Some respondents also state that the new curriculum (RNCS) does not allow or make room for critical thinking in the classroom. It therefore seems that learners are not taught how to solve problems, think creatively, gather and analyse information, draw appropriate conclusions and communicate their ideas effectively. A substantial number of respondents do not believe that it is important to integrate critical thinking skills with the normal content of subjects/learning areas. They further state that critical thinking skills are not

transferable, but also think that critical thinking skills can be taught as a set of general skills. According to some of the respondents, it is not the teachers' duty to help learners to develop their critical perspectives. This might imply that learners should take responsibility for their own critical thinking development. Some teachers stated that one does not need knowledge or understanding of a subject/learning area to be confident to teach it (*cf. 4.2.32; figure 4.24*).

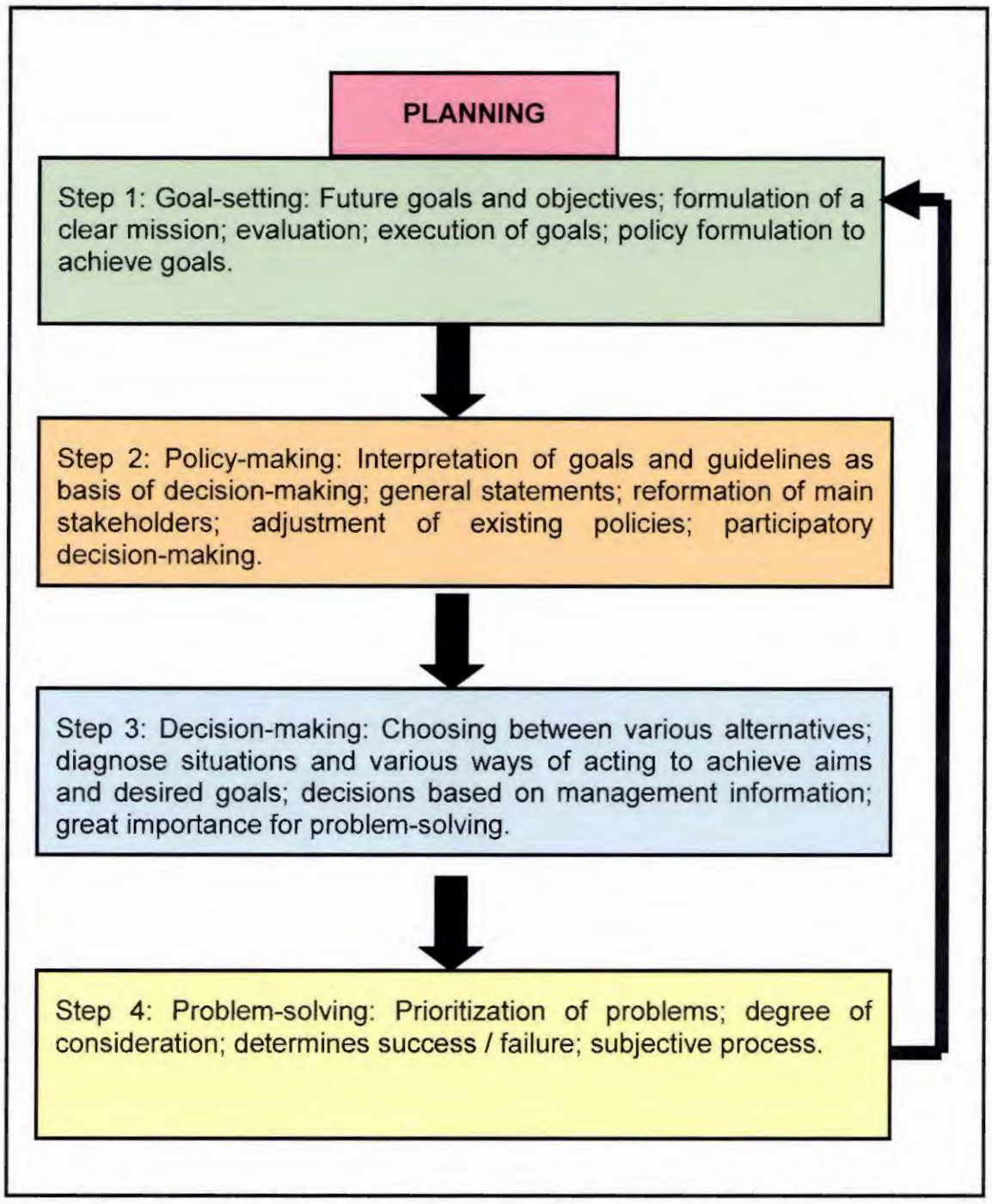
It became clear that some teachers do not allow learners to take responsibility for their own learning and prefer spoon-feeding, parrot-learning or doing learners' work for them (*cf. 4.2.34; figure 4.26*). Notwithstanding the fact that teachers should facilitate the learning process, learners should still be encouraged to work independently and be exposed to critical thinking. It also became evident that a number of teachers do not create opportunities for learners to come to tentative conclusions *(cf. 4.2.35; figure4.27*). This implies that learners are still just instructed to do their work without them being encouraged to think critically. Clearly this does not expose learners to critical thinking. Instead, learners are encouraged to memorize and just give the same information back on paper (*cf.4.2.40; figure 4.30*).

As stated previously, the school principal has the responsibility for managing change at the school by facilitating and implementing it *(cf.5.8.2*). Change also requires the ability to do things differently. In light of the above mentioned findings from the empirical research, it cannot be contested that although teachers hold the principal responsible for managing change, their own attitudes and practices do not indicate their being able to teach critical thinking skills to their learners.

As the manager of change, the school principal should therefore plan, organize, lead and control the process of empowering teachers and of changing their attitudes towards teaching critical thinking skills. These management tasks will now be discussed.

5.8.4.2 Planning as a management task of the principal

Figure 5.11:Planning (Van der Westhuizen, 1996)



Step 1: Goal-setting

Macmillan (2002:609) defines a goal as something that someone hopes to achieve. This is also the starting point of any managemnet activity. A teacher who wants to manage effectively must have clearly defined goals. Before

goals and objectives can be formulated, the school's vision and mission must be clearly described. A school's vision is a "mental picture" of where the school wants to go (Nieuwenhuis & Mokoena, 2001:59). A mission statement describes the basic purpose of the organisation (Nieuwenhuis & Mokoena, 2001:126).

Objectives can be measured and evaluated (Van der Westhuizen 2002:145), for example, to improve the quality of teaching by attending courses. However, goals and objectives are part of the planning task.

Step 2: Policy-making

Du Preez (2003:85) provides the following guidelines for policy making:

- It must be within the framework of different laws of education.
- It must be related to goals.
- It must be a long-term validity but should not be flexible.
- It must be in writing and available to all teachers and the community.
- It msut give guidelines for task performance.
- It must save time and increase the quality of decision-making.
- It must be realistic and fair.
- It must be constructed in consultation with all stakeholders.
- It must be used regularly.

Policy contains guidelines as to how teachers exercise their powers and make decisions. A policy also reflects the values that will be taken into account in making decisions (Van Deventer & Kruger, 2003:91).

Step 3: Decision-making

Decision-making plays a determining role in both school- and classroom management. Decision-making is the process of choosing among

alternatives. Purposeful and effective planning depends on effective decision-making (Van der Westhuiszen, 2002:152).

According to Kruger and Van Schalkwyk (1997:54), the decision-making process entails a cycle of steps that include the following:

Step 1: Determine and define the problem.

Step 2: Identify alternative solutions.

Step 3: Evaluate the alternative solutions.

Step 4: Choose the best alternative.

Step 5: Implement the decision.

Step 6: Evaluate and control.

The above steps can be applied when the teacher must make formal decisions within the school and especially the classroom.

Step 4: Problem-solving

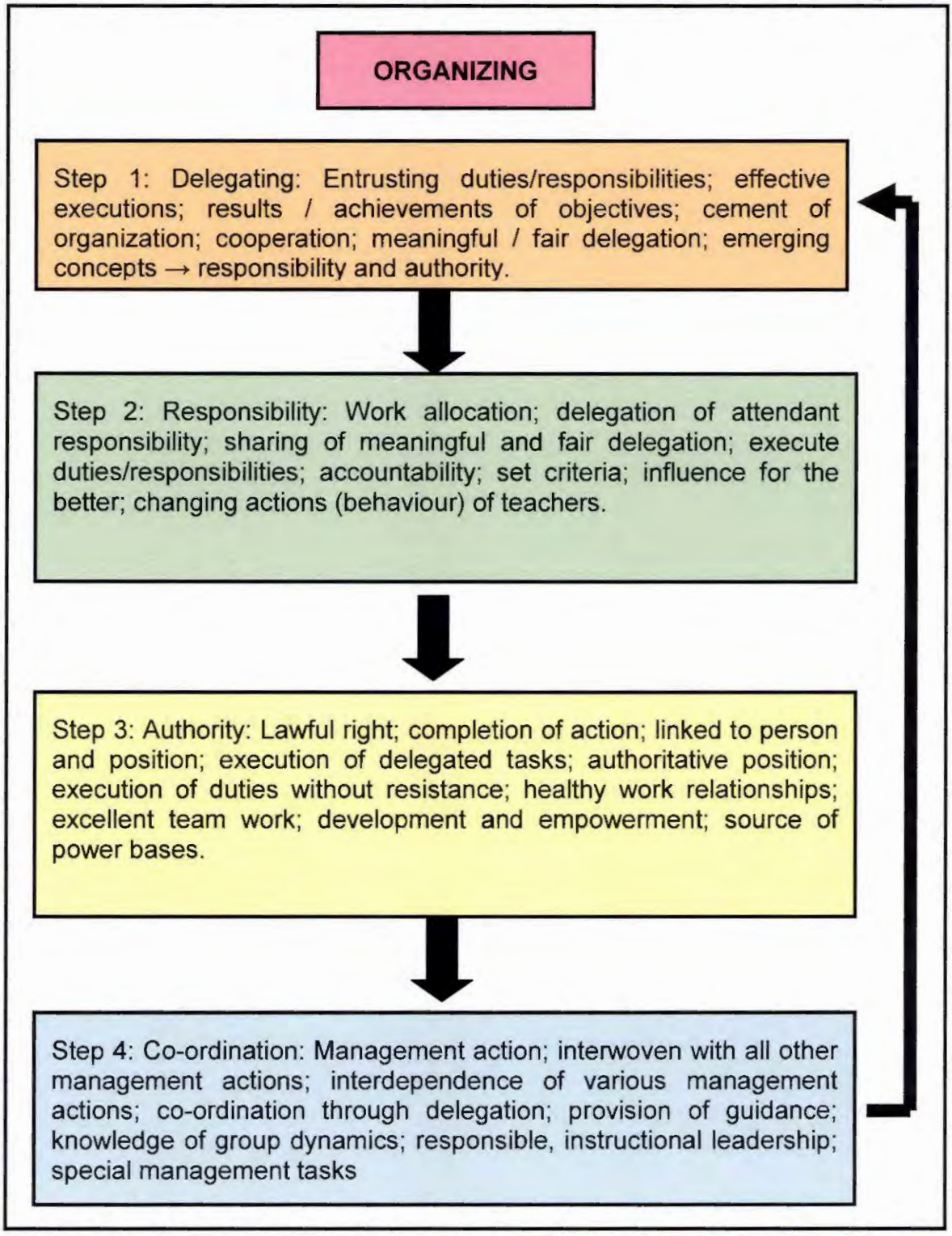
Problem-solving is the process of making and carrying out a decision that will overcome an obstacle standing in the way of achieving an outcome (Van Deventer & Kruger, 2003:96).

To solve problems effectively in the school, the following principles should be kept in mind (Gorton,1976:61):

- Anticipate and identify possible problem areas before they become a reality.
- If a problem arises, information should be obtained about its causes, nature and seriousness.
- Find more than one solution for the problem.
- Do not give the impression of possessing total wisdom or that all problems are solvable.

5.8.4.3 Organizing as management task of the school principal

Figure 5.12:Organizing (Van der Westhuizen, 1996)



Step 1: Delegating

Van Deventer and Kruger (2003:119) and Smit and Cronje (1999:249) provide the following guidelines for effective delegating:

- Set standards and outcomes.
- Ensure clarity of authority and responsibility.
- Involve staff members.
- Ensure the completion of tasks.
- Apply adequate control measures

Kruger and Van Schalkwyk (1993:70) stipulate the following advantages of delegation:

- Delegation gives the teacher more time to concentrate on matters that are more important.
- It enables the teacher to manage more effectively.
- It provides the opportunity for the learners to become more responsible.
- It promotes self-confidence and co-operation among learners.
- It makes control easier.

Step 2: Responsibility

When authority is granted, responsibility is created. Responsibility is the obligation of a subordinate to achieve objectives by performing assigned tasks. Accepting a task creates an obigation of performance and responsibility. For example, the principal assigns the teacher to teach Grade 12 learners, the teacher accepts the task and has the responsibility to teach these learners (Ferreira, Erasmus & Groenewald: 2003:345-347).

Step 3: Authority

This involves the rights inherent in a managerial postion to tell people what to do and to expect them to do it. Authority is delegated. For example, the principal is responsible for the results of the entire school and delegates

authority down the chain of command to the heads of departments and teachers, who are responsible to teach these learners (Ferreira *et al.*, 2003:345-347).

Step 4: Co-ordinating

Co-ordination is the process of achieving unity among independent activities. According to Macmillan (2002:308), co-ordination is a process of organising people or things in order to make them work together effectively. Co-ordination is required when two or more independent individuals, groups or departments have to work together to acheive a common goal (Ferreira *et al.*,2003:351).

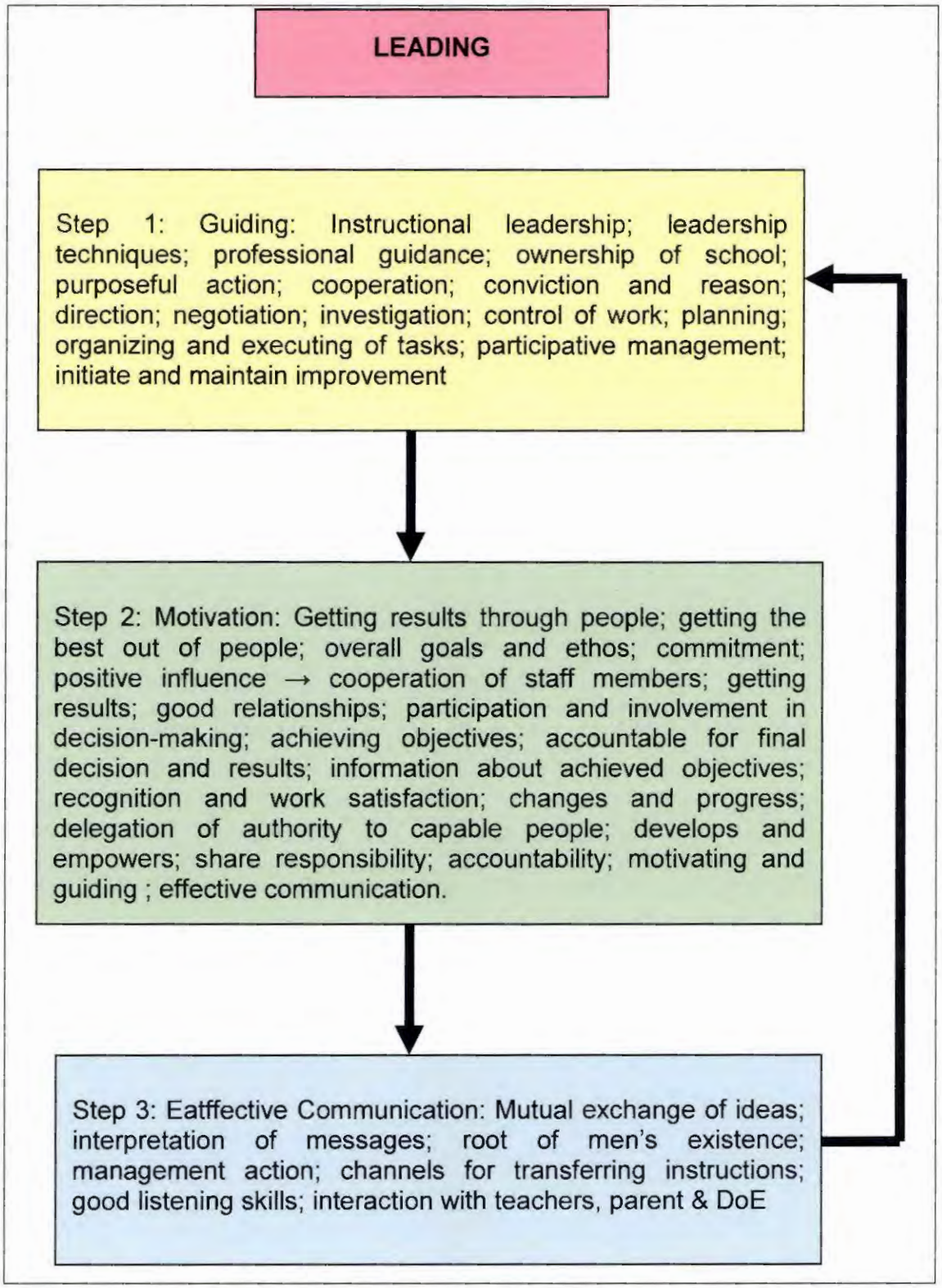
According to Dessler (2002), various methods can be used to achieve effecitve co-ordination:

- *Mutual adjustment*: this means achieving co-ordination by relying on face-to-face interaction.
- *Rules or procedures*: rules and procedures are useful for co-ordinating routine and recurring activities.
- *Divisionalisaion*: separating people into smaller groups and taking the coordination burden off the department, for example, the Science department in the school is divided into Biology adn Physical Science, and each division has a subject head who co-ordinates all the activities of the division. The head of department is in charge of both divisions.
- *Teams and committees*: many organisations achieve co-ordination by appointing interdepartmental committees, task forces or teams; for example, there is a committee at school that organises the disciplinary actions.

The purpose of co-ordination is to develop team spirit and teamwork so that everyone works towards the same goal, but this can only be done through effective administration (Van der Westhuizen, 2002:36).

5.8.4.4 Leading as management task of the principal

Figure 5.13: Leading (Van der Westhuizen, 1996)



Step 1: Guiding

True leadership involves the guiding task of the school principal and means that s/he should earn his/her leadership position. This is important since modern culture and a more sophisticated population does not provide the school principal with followers unless s/he deserves leadership (Van der Westhuizen, 1996:192). Leadership techniques could be acquired in the same way that knowledge is gained to enable the school principal to give professional guidance to teachers. School principals should therefore have a clear view of the needs, duties and responsibilities involved in guiding as a leadership task.

Van der Westhuizen (1996:193) maintains that the school principal as an instructional leader must get things done in and outside the school. This is not always easy, but as a democratic leader who does not limit others, does not force his/her will on others, does not oppose change, welcomes co-operation, does not fear that differences may arise, provides leadership by means of conviction and reason, does not seek his/her own gain, uses his/her authority to serve common progress and maintains and respects the ideals of those s/he is leading, the principal should lead to achieve goals with regard to the teaching of critical thinking to learners.

Step 2: Motivation

According to Van der Westhuien (1996:193) "motivation" can be defined as "getting results through people" or "getting the best out of people." The second definition is slightly preferable since "the best" which people can offer is not necessarily synonymous with "the results" which we might initially want from them, though it should be in line with the overall goals and ethos of the school (Morris, 1978:20). The school principal should be a motivating figure who ensures that teachers are working towards the goals of teaching critical thinking skills to learners. Teachers have been involved in setting these goals and should therefore be committed to achieving them. Motivation is important in the entire management and leadership action of the school principal because s/he positively influences the teaching and learning process towards

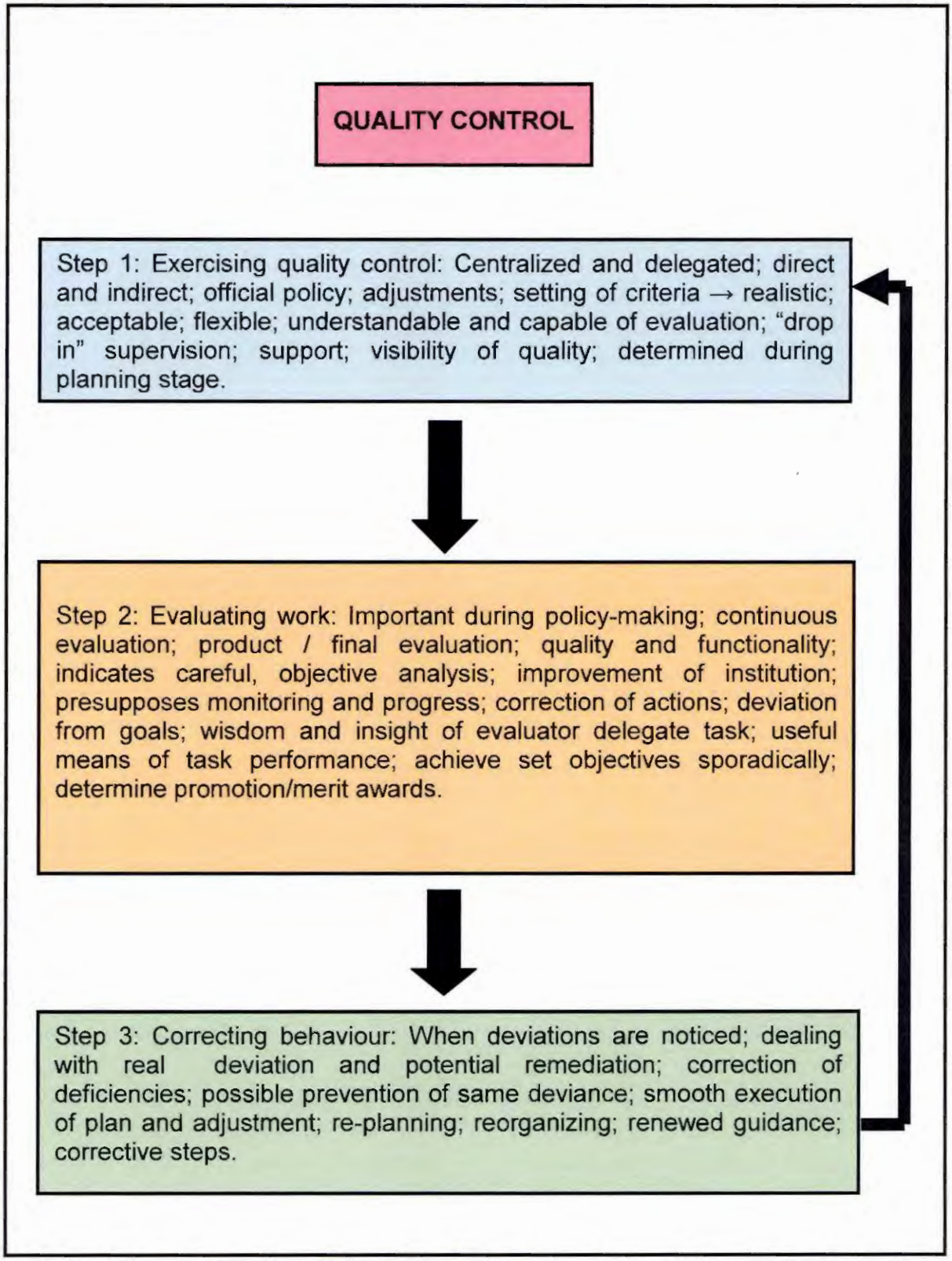
the teaching of critical thinking skills to learners. Teachers are also motivated through recognition and effective communication.

Step 3: Effective communication

Van Schoor (1977:13) describes communication as the mutual exchange of ideas and the interpretation of messages. He adds that the mutual exchange of ideas and interpretation of messages is not only the basis of all forms of communication, but is also the root of man's existence. Van der Westhuizen (1996:194) states that: "The school principal should make good use of this irreplaceable skill as part of his/her management action as a channel or vessel to reach and update all stakeholders regarding the intentions and progress of the teaching of critical thinking skills to learners. It is a vital task of the school principal to create channels for transferring instructions, commands and for receiving feedback. Good listening skills should be developed by the principal to assist him/her in his/her management task especially in his/her interaction with teachers, parents and the Department of Education .

5.8.4.5 Quality control as a management task of the principal

Figure 5.14: Quality control (Van der Westhuizen, 1996)



Step 1: Exercising quality control

It is the management task of the principal to ensure that quality control is centralized and delegated down to the deputy principal, HOD and teacher. This means that quality control should occur at all levels throughout the school. The school principal in his/her authorative position is ultimately responsible for the quality control of all delegated tasks. In this regard it can involve the training of teachers by the HODs. Quality control, like delegating, takes place hierarchically. This means that quality control can be exercised by delegating or directly. The school principal should therefore exercise quality control according to his vocation and authority, directly or indirectly. According to Souls (2005:42), the HOD (also the subject head) is more directly involved in exercising control and, in many cases, the daily control of the progress made in the teaching of critical thinking skills to learners.

The school principal should ensure that tasks regarding the teaching of critical thinking to learners are carried out effectively so that good standards can be set for what is expected and for how the tasks will be evaluated on the basis of critical thinking. Teachers should be made aware of what is expected of them. Van der Westhuizen (1996:195) continues to state that guidelines for task execution should be drawn up and be available. For instance, an educator should know that class visits are to take place, what will be noted and what criteria will have to be satisfied. Criteria that are set should be realistic, acceptable, flexible, understandable and capable of evaluation. Notwithstanding the aforementioned, "drop in" supervision can also assist educators in their daily task. The criteria for quality control (regarding the teaching of critical thinking skills to learners) are determined during planning and will be contained in the objectives, programmes, policy, rules and procedures of the school.

Step 2: Evaluating work

According to Van der Westhuizen (1996:196) evaluating work presumes all aspects of management during, especially, policy making and goal setting. Quality control also results in product and final evaluation of the teaching of

critical thinking skills to learners. Furthermore, evaluation identifies deficiencies and is an integrative part of the quality control task. Evaluation measures quality and functionality of tasks. Teachers' work (teaching of critical thinking skills) should therefore be carefully and objectively evaluated. The monitoring process being made with regard to goals and the correction of action that has deviated from the goal, are also presupposed by evaluation. Tasks of teachers concerning the teaching of critical thinking should be evaluated with wisdom and insight (Reynders, 1977:132).

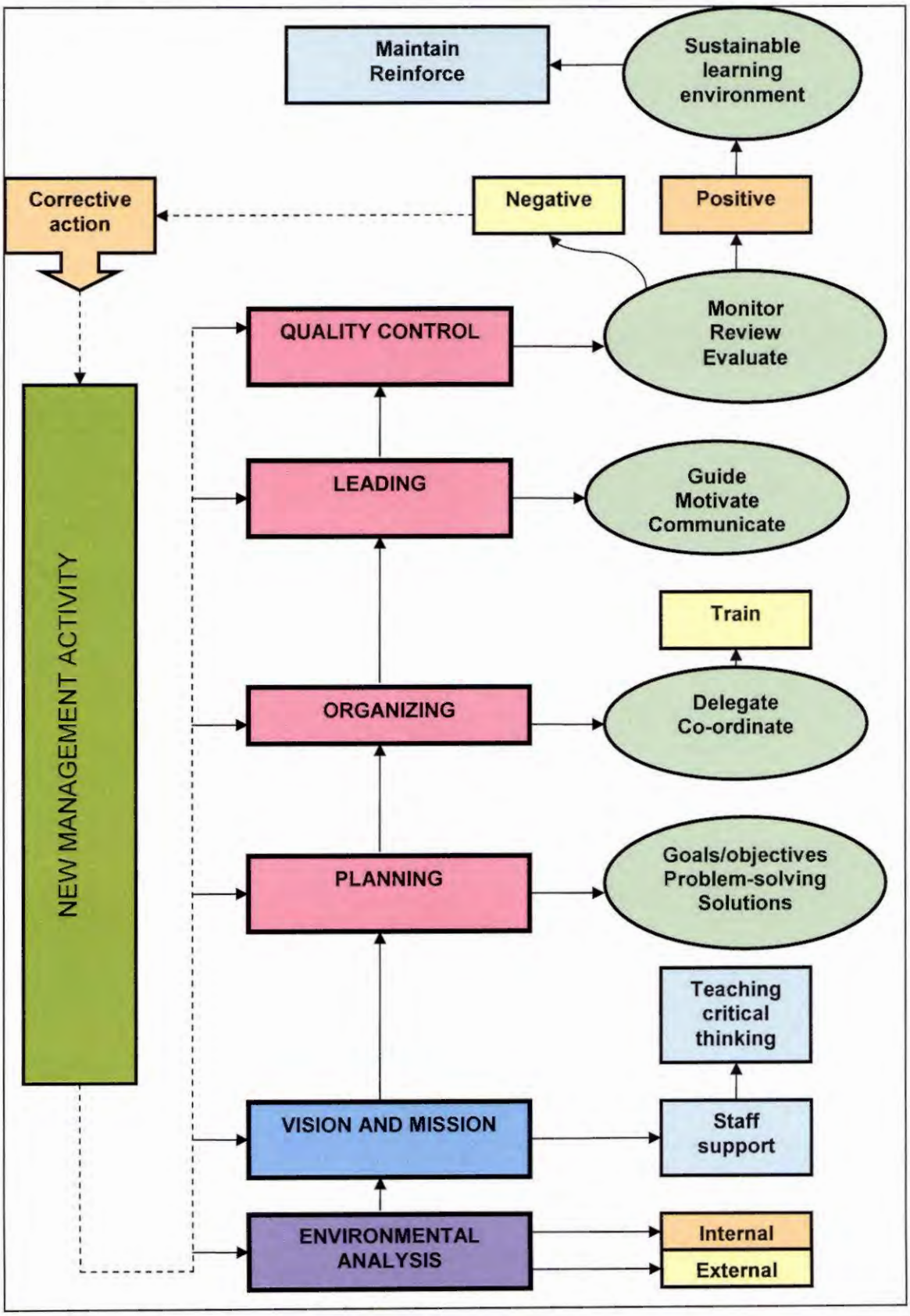
Step 3: Corrective behaviour

Corrective behaviour is taken when deviation from goals is noted and remediation takes place (Allen, 1964:343). In the case of deviating from the intended plan, goals and objectives set for the teaching of critical thinking skills to learners, the plan should be adjusted so that re-planning, re-organizing and renewed guidance and control measures and a new management activity can be executed. The right steps should be taken at the right moment (Van der Westhuizen, 1996:196).

5.8.5 A strategy for the implementation of the proposed model (MCT-ACT) for changing teachers' attitudes towards the value of teaching critical thinking skills

A strategy for the implementation of the proposed model (including elements of both the open and closed models) for changing teachers' attitudes towards the value of teaching critical thinking skills is illustrated in Figure 5.15.

Figure 5.15: A strategy for the implementation of the proposed model for changing teachers' attitudes towards the value of teaching critical thinking skills



The aim of change is always to meet goals through strategic and effective planning. Change management therefore lies at the heart of the process of changing teachers' attitudes towards the value of teaching critical thinking skills. However, to manage the internal (learning) environment in order to change teachers' attitudes towards teaching critical thinking skills, the principal also has to analyse the external environment within which the learning environment is active because the external environment impacts on the learning environment and its effectiveness. As the aim of the proposed model is to manage the process of changing teachers' attitudes towards the value of teaching critical thinking skills, the focus of the discussion that follows will be on the internal factors that have to be considered in order to implement the model successfully.

Various elements involved in changing teachers' attitudes towards the teaching of critical thinking skills, should be distinguished. Effective management of change requires that the principal should plan, organise, lead and control the process. Capabilities, values and the school culture are determined by people at the school as an organization and are continuously developing and changing. These elements, namely shared values, skills (ability to teach critical thinking), staff (values and attitudes) and organizational culture have a great impact on the successful management of change.

A strategy for the implementation of the proposed model for changing teachers' attitudes towards the value of teaching critical thinking skills will now be presented.

Environmental analysis

A thorough environmental analysis is the first step in the implementation of the MCT-ACT model. The principal needs to identify internal and external factors that could have an impact on the process of changing teachers' attitudes towards the teaching of critical thinking skills.

Factors that have to be considered in the external environment include policies and developments of the Department of Education, needs of the

school community, socio-economic changes and requirements of the work environment.

In the internal (learning) environment, shared values, the attitudes, knowledge and skills of teachers and the organizational culture should be analysed.

An investigation into the attitudes of teachers towards teaching critical thinking skills to learners has to be done. The principal should do this by making use of questionnaires, conducting interviews with individual teachers on different post levels, as well as focus group interviews with teachers teaching the same subject/learning area. As it will be essential for the principal to delegate management responsibilities to HODs and subject heads, the questionnaires and interviews for these teachers should also focus on their management skills.

It is necessary that an analysis should be done of teachers' knowledge of critical thinking skills. In order for this model to be implemented successfully, teachers should have a deep understanding of critical thinking skills and a positive attitude towards teaching it to their learners.

Vision and mission

The vision and mission statements of the school should include the aim of teaching critical thinking skills to learners. In a meeting where all stakeholders (SGB members) are present, the school's mission and vision statements should be re-formulated. It is of the utmost importance that the whole staff supports the focus on teaching critical thinking skills. Only when the principal has the support of the whole staff, can planning start.

Planning

After the mission and vision statements of the school have clearly been described and the principal has the support of the whole staff, goals and objectives can be formulated for the renewed focus on the teaching of critical thinking to learners. *Goal setting* is to improve the quality of teaching, in this context: teaching critical thinking skills, and it can be operationalized into

practical objectives. It should be evident that the set objectives are attainable. The execution of goals embodies what has been planned in the form of a policy that aims to achieve such goals.

Policy-making should serve as the basis of *decision-making* in the planning action of the principal. Policy guides the principal in the implementation of the proposed model for changing teachers' attitudes towards the teaching of critical thinking to learners. Existing policies such as classroom and subject/learning area policies should be compiled in accordance with the school policy, so that its value and implementation contribute to the successful implementation of the proposed model.

Some resistance during the process of teaching critical thinking to learners might be anticipated. The planning task of the principal should also make provision for the solution of problems. *Problem-solving* is therefore vital in the planning task. It is expected that the principal should have considerable insight when solving problems because the solutions to problems in the implementation of the MCT-ACT will ultimately determine the success of the process.

Organizing

During the organizing stage, the school principal *delegates* the task of teaching critical thinking skills to learners to HODs, Subject Heads and teachers in order to achieve the respective goals and objectives. HOD's and Subject Heads become *responsible* for designing an in-service training programme for teachers relevant to their subjects/ learning areas' needs regarding the teaching of critical thinking skills.

The principal uses his/her *authority* to delegate management duties regarding the teaching of critical thinking skills to learners to HoDs and Subject Heads. The execution of such delegated duties (without resistance) contributes to the development and empowerment of teachers in the teaching of critical thinking skills to learners.

The principal has to *co-ordinate* the delegated tasks. In the process of teaching critical thinking to learners, planning, guiding and control are interwoven and interdependent during the co-ordinating task of the principal.

Leading

In his/her leadership role, the principal should endeavour to achieve set goals and objectives and should give professional *guidance* to teachers regarding the teaching of critical thinking to learners.

The leading stage also involves *motivation* and effective communication. The school principal has to motivate teachers by giving incentives and recognizing their efforts towards teaching critical thinking skills. This is an effort to get the best results in line with the overall goals and ethos of the school. Through *effective communication,* instructions must be given and feedback regarding the teaching and learning of critical thinking skills must be obtained. Effective communication also creates a channel to keep the relevant stakeholders informed and is a vessel to monitor and review the progress of the teaching and learning of critical thinking skills.

Quality control

Monitoring and review of progress contributes to the *exercising of quality control.* The duties delegated to the HODs and Subject Heads, include to exercise quality control regarding the teaching of critical thinking skills directly in the classroom. This could help to set a good standard and to determine whether objectives, programmes, policy goals and procedures regarding the teaching of critical thinking skills to learners are achieved. Quality control results in the final evaluation of work. Should the *evaluation of work* deviate from the set goal(s), *corrective action* must be taken and remediation should take place. A new management activity must then be executed in the form of re-planning, re-organizing and renewed guidance. Should the feedback of evasion be positive, a sustainable learning environment that must be continuously monitored and reinforced, is expected.

5.8.6 Summary

Change management as a management task of the school principal aims to change teachers' attitudes towards the value of teaching critical thinking skills to learners. It is clear from the above discussion that no single management task should be absolutized. Effective planning should be responsive to the demands and needs of all stakeholders. Organizing creates order and harmony, and ensures cooperation at the school. The leading task of the school principal guides the school into the right direction and aims and objectives are attained through quality control.

5.9 CONCLUSION

Complicated processes can easily be understood through a model. This chapter set out to design a model for changing teachers' attitudes towards the value of teaching critical thinking. Two types of models were discussed with the aim of using some of their percepts in the design of this model. However, models have both benefits and limitations and are representations that should not be confused with reality. The proposed model focuses on five management tasks (change management, planning, organizing, leading, and quality control) of the school principal and can be implemented to achieve the aim of changing teachers' attitudes towards the teaching of critical thinking skills.

The next chapter will be the concluding chapter. In this chapter, a summary of the findings of the research will be presented and recommendations will be made.

CHAPTER SIX

SUMMARY, FINDINGS AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter represents a summary, findings and recommendations regarding the research aims; the literature study; the empirical research design; the data analysis, interpretation discussion of findings and a model for changing teachers' attitudes towards the teaching of critical thinking skills.

6.2 SUMMARY OF THE STUDY

In Chapter 1 an introduction to the problem statement, literature review, the research aim and objectives, method of research, contribution of the study and the provisional chapter division were represented.

In Chapter 2 the value of teaching critical thinking skills to learners was discussed. The value of teaching critical thinking skills to learners was identified under the following: critical thinking in the classroom, critical thinking in the workplace and critical thinking in real-life situations, critical thinking defined, models for teaching critical thinking skills to learners and what is required of teachers to teach critical thinking skills to learners.

Change management at schools as organizations was discussed under the following: defining change, the value of change and resistance to change. It became clear that school principals need to do more than just managing the process of change. The relation between change management and teaching critical thinking skills should be crystal clear. Change management might contribute positively to changing teachers' attitudes towards the value of teaching critical thinking skills to learners.

In discussing the relation between teaching critical thinking skills and change management, aspects of definitions of critical thinking were used as a guide to indicate what teachers should know to be able to teach critical thinking skills.

In Chapter 3 the research design and methodology were discussed. Various aspects of quantitative research design were explained, including the research method, the rationale for choosing the quantitative research method and the research-measuring instrument. The purpose of the quantitative study was to examine teachers' attitudes towards the value of teaching critical thinking skills.

In Chapter 4 the focus was on the data analysis and interpretation of the responses.

In Chapter 5 a model for changing teachers' attitudes towards the value of teaching critical thinking skills: a school management perspective was presented. The concept "MODEL" in conjunction with its benefits and limitations was outlined. This was followed by model design and types of models.

Possible models for changing teachers' attitudes towards the value of teaching critical thinking skills were also discussed and it was indicated how these models could possibly be used to provide guidelines for designing the model for changing teachers' attitudes towards the value of teaching critical thinking skills to learners.

Finally, a strategy for the implementation of the proposed model for changing teachers' attitudes towards the value of teaching critical thinking skills was presented.

6.3 FINDINGS FROM THE RESEARCH

The following section presents the findings regarding each of the three objectives of the research and the main findings from the data:

6.3.1 Findings from the literature study

- Teaching critical thinking skills to learners means that the thinking skills are integrated with the normal content of each learning area. The different forms of knowledge are not arbitrary devices, but are essential contexts for thinking (*cf. 2.3*).

- Teaching critical thinking skills involves generic operations that can be learned in themselves, apart form any particular knowledge domains and then transferred to or applied in different contexts (*cf. 2.3*). Critical thinking in everyday life is important for success and survival *(cf. 4.2.15; figure 4.9*). The teachers' job is to help learners develop their own critical perspectives and to confront learners with difficult choices that they have to make or to advocate a particular moral or ideological perspective that learners are encouraged to adopt *(cf.2.5*).

- To be able to teach critical thinking requires at least a basic knowledge of the strategies involved in critical thinking. If teachers are to teach learners the skills of critical thinking, the quality of the training that teachers themselves undergo becomes critical (*cf.2.5*). For teachers to help learners to think critically, they should themselves be able to think critically (*cf.4.2.20; figure 4.14*).

- Teachers need to know that critical thinking involves reasonable and reflective thinking (*cf.2.5.1*). Focusing avoids careless and thoughtless mistakes (*cf.4.2.12*). Critical thinking is needed for choosing the best solution to a problem (*cf. 4.2.3*). Critical thinking reflects back on what could have been done, based on one's experience or knowledge (*cf.4.2.10*).

- Teachers should strive to improve learner competency in critical thinking skills, teach from multiple perspectives and focus on linkages and similarities in content (cf.2.5.1). Critical thinking should be put into practice (cf.4.2.21; figure 4.15).

- Teaching critical thinking skills to learners allows interpreting, evaluating and viewing problems from different angles and creates possibilities and opportunities to find the best solution under various circumstances (cf.5.8.2.5; figure 5.12: step 1).

- Teaching learners to think critically inside and outside the classroom allows them to view issues from different perspectives and to assess

situations critically. Learners can then develop their own skills to look and think beyond the borders: they are analytical and aware of their surroundings (cf.5.8.2.5; step 2: figure 5.12).

- There is widespread evidence that change and renewal are two of the most important aspects of successful organizations (cf.2.6.1). This implies that schools are dynamic organizations (institutions) and should readily be treated as such (cf.4.2.22; figure 4.16).

- Some individuals are dynamic in their approach and adapt easily to changing environments (cf.2.6.3.1). This means that some individuals at the school do enjoy new challenges and new ways of doing things (cf.4.2.26; figure 4.18).

- Learners must make use of their knowledge and information for their own development and teachers should teach learners to think critically by developing more control and independence (cf.2.6.7). Learners should take responsibility for their own learning, while teachers make room for this challenge (cf.4.2.34; figure 4.25).

- Positive and active support should be given to the teaching corps (cf.2.7). This may contribute to a good and healthy change process at the school (cf.4.2.38; figure 4.29).

- Knowledge and understanding of learning areas form the basis of teaching critical thinking skills to learners (cf.2.7). Teachers' attitudes and beliefs regarding critical thinking skills influence the manner in which they teach (cf.4.2.39; figure 4.30).

- Strategic and good planning contributes to the aim/s of change being met through goal setting (cf.5.8.3). When prescribed goals are met, the aim of change contributes to improvement (cf. 5.8.2.5).

- The vision and mission statement of the school should guide stakeholders and keep them focused (cf. 5.8.3). The shared vision and mission

statement assist stakeholders in what their expected actions should be in the future (cf. 5.8.2.5).

- In his/her delegating task, the principal allocated the duty of in-service (re-) training to HODs and Subject Heads (cf. 5.8.3). Change should be facilitated and implemented by the principal in his/her capacity as a change agent (cf. 5.8.2.5).

- The principal should strive to get the best out of teachers through recognition of good practice (cf. 5.8.3). Good interpersonal relations and visible support from the principal could motivate teachers to initiate and implement change (cf. 2.8.2.5).

- The final evaluation of work should be the result of quality control (cf. 5.8.3). Respondents also see change as a process of testing and evaluation (cf. 5.8.2.5).

6.3.2 Findings from the empirical research

- Teachers indicated that learners have the ability to gather information themselves, use it effectively and recall it when needed. Teachers also argued that learners can be taught the ability to learn constructively in the presence and/or absence of the teacher. (cf.5.8.2.5, step 3: figure 5.12).

- Teachers acknowledged that learners live in an era of high technology and can retrieve information from all sorts of resources, while teachers (and parents) play a leading and guiding role by supplementing information (cf.5.8.2.5, step 3: figure 5.12).

- Teachers maintain that the home is the primary education institution that enables learners to have basic skills, knowledge and values. Teachers also realized that learners can think independently and can engage in critical thiking (cf.5.8.2.5, step 3: figure 5.12).

- Respondents have different views and opinions regarding critical thinking. This might lead to confusion of what critical thinking really means (cf. 4.2.; figures 4.1 to 4.7).

- It is depicted that teaching critical thinking skills to learners demands in-service training of teachers (cf. 4.2.8 to 4.2.18; figures 4.8 to 4.12). Teachers need to be able to assist learners, be able to think critically and put critical thinking into practice (cf. 4.2.19 to 4.2.21; figures 4.13 to 4.15).

- Change and renewal is of vital importance for the development and progress of the school as an organization due to the fact that it is a dynamic entity (cf. 4.2.22 to 4.2.33; figures 4.16 to 4.23).

- There should be a relationship between teaching critical thinking and change management at schools (cf. 4.2.34 to 4.2.40; figures 4.24 to 4.29).

- It is evident that the principal's role and support in the teaching of critical thinking are irreplaceable (cf. 4.3).

6.4 RECOMMENDATIONS

Recommendation 1

Learners should be taught how to think critically. A substantial body of important material such as concepts, principles and skills that are general and applicable to various subjects/learning areas should be taught in such a way that learners would be able to transfer and apply them in other relevant contexts.

Motivation

Particular forms of reasoning must be emphazised by teachers within their own subject/learning areas and then examples should be given of how these forms of reasoning can be applied both within and outside the particular subject/learning area.

Some skills are basic and common to most curriculum tasks, for example gathering information, finding main ideas, analysis, evaluation and synthesis. Furthermore, skills are repeatable and transferable within limits and a skill applies to a certain kind of task although tasks do not always have clear

boundaries. Skills typically consist of parts of strategies and methods that can be internalized and incorporated into a performance routine.

Recommendation 2

Teachers should be effectively educated regarding the basic structures of teaching critical thinking skills to learners.

Motivation

If teachers are not trained to teach critical thinking to learners, it will result in a situation within which most teachers have little understanding of what reflection is; what assumptions are; what influences or implications are. The aim to teach critical thinking to learners will not be achieved.

Recommendation 3

Teachers should know and understand the structure of their subjects/particular learning area(s).

Motivation

If teachers do not have knowledge of their learning areas, they will not be able, confident and willing to teach the application of critical thinking skills in such subjects/learning areas.

Recommendation 4

It should not be allowed by the DoE and moreover by the school principal, that schools stagnate and eventually decline. This means that schools should not fail to change and develop.

Motivation

Change and renewal is essential for the development of schools. The school as an organization has to be seen as a dynamic entity.

Recommendation 5

School principals should have adequate knowledge and information about the proposed change, should be professionally trained, should be exposed to in-service training relevant to the proposed change and should grant teachers the opportunity to participate in and influence the planning of changes, and should recognize the authority of teachers.

Motivation

School principals should be certain and clear about areas of responsibility and accountability. Certain teachers would be assigned to certain tasks which will affect the change process. The principal should also have administrative knowledge and apply adequate leadership.

Recommendation 6

Training programmes should aim to enrich the necessary knowledge, skills and attitudes for ensuring sustainable and holistic development and growth of teachers.

Motivation

Because the teaching and learning process is dynamic and change takes place almost daily, teachers should continuously be updated and re-skilled to ensure quality teaching and learning. This can be achieved through in-service training and workshops provided by the DoE.

Recommendation 7

Learners should not be seen as empty vessels to be filled with information and knowledge by teachers. Instead, teachers should build on existing knowledge, skills, values and experiences of learners.

Motivation

Most learners come to school with prior knowledge, experiences and certain skills.

Recommendation 8

Both teachers and learners should be creative, reflective, analytical and focussed in the entire teaching and learning process.

Motivation

Creativity allows both teachers and learners to express themselves by giving their own opinion and by justifying it. Reflectivity is based on one's knowledge and experience. Analysis involves the best options to be weighed to determine feasible and suitable solutions to problems. Focusing helps one to concentrate on a specific area and not easily be sidetracked and guarantees better and more acceptable conclusions.

Recommendation 9

Teachers should encourage learners to be open-minded and to attempt life challenges by implementing what they have learned.

Motivation

Critical thinking, especially outside the classroom, enables learners to deal with their own problems, situations or challenges and with making their own judgments by applying the knowledge they acquired in the classroom.

Recommendation 10

Teachers should, through critical thinking, encourage learners to make and understand a clear connection between subject/learning area content and the real world.

Motivation

Reality justifies and reflects learner performance and determines the success of lifelong learning, positive personality and good signs of maturity.

6.4.1 Recommendations for further research

The following topics might be considered for further research:

- The value of teaching critical thinking at primary schools
- The difference that critical thinking skills can make in learner performance
- How critical thinking can change learners' attitudes towards their school work
- The effective management of teaching critical thinking skills at schools
- A model that enhances and sustains critical thinking in specific subjects / learning areas.

6.5 CONCLUSION

All the relevant points discussed in the previous chapters have been summarized. Findings emanating from the entire research project have been highlighted and recommendations have been made. Recommendations for further research have also been made. It is hoped that the proposed model will assist the DoE, school principals and teachers to improve learner performance in the senior phase especially.

It has been proven throughout this study that critical thinking will encourage "good thinking" and "good thinking" will encourage "reading, writing and rising in excellence."

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ANNEXURE 1

PERMISSION TO CONDUCT RESEARCH

UMnyango WezeMfundo
Department of Education

Lefapha la Thuto
Departement van Onderwys

Enquiries : Shadrack Phele [MIRMSA]
Tel. no. : +27 11 355 0285

7 March 2008

Mr. Jacobus Abram Souls
121 Neptune Street
Ennerdale Extension 1
1830

Dear Mr. Souls

PERMISSION TO CONDUCT RESEARCH: PROJECT

The Gauteng Department of Education hereby grants permission to conduct research in its institutions as per application.

Topic of research	: "A model for changing teachers' attitudes towards the value of critical thinking skills: A school management perspective".
Nature of research	: PhD
Name of institution	: North West University [Vaal Triangle Campus]
Promoter	: Dr. JE Fourie

Upon completion of the research project the researcher is obliged to furnish the Department with a copy of the research report (electronic or hard copy).

The Department wishes you success in your academic pursuit.

Yours in Tirisano,

p.p. Shadrack Phele [MIRMSA]

Ms Mmapula Kekana
Chief Director: Information Systems and Knowledge Management
Gauteng Department of Education

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ANNEXURE 2

QUESTIONNAIRE

QUESTIONNAIRE: THE VALUE OF TEACHING CRITICAL THINKING SKILLS TO LEARNERS

This survey is part of a study regarding teachers' attitudes towards the value of teaching critical thinking skills to learners. Please provide the information requested to the best of your ability. Your anonymity is guaranteed (do not provide your name), and the material you submit will be treated confidentially. This information will NOT be used against you in any way.

SECTION A (a): GENERAL VIEW/OPINION OF CRITICAL THINKING

INDICATE YOUR ANSWER BY MARKING THE APPROPRIATE BLOCK ON A SCALE OF 1 TO 5:

1. Strongly Agree ***2. Agree*** ***3. Strongly Disagree***
4. Disagree ***5. Not Applicable***

1. To work with argumentative raw material requires that learners apply their critical thinking skills.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

2. Decision making do not require critical thinking.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

3. Critical thinking allows one to decide which solution is the most reasonable under circumstances.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

4. One is setting oneself for failure if one only sees one solution to a problem.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

5. Critical thinking does not play a role in the classroom because the new curriculum (NCS) does not allow it..

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

6. The learners can be taugh to:

	Strongly Agree	*Agree*	*Strongly Disagree*	*Disagree*	*Not Applicable*
6.1. Solve problems					
6.2. Think creatively					
6.3. Gather information					
6.4. Analyse information					
6.5. Draw appropriate conclusions					
6.6. Communicate their ideas effectively					

7. Foolish personal decisions can be made if one cannot think critically.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

SECTION A (b): TEACHING CRITICAL THINKING SKILLS TO LEARNERS

8. How would you define critical thinking?

9. Why do you think critical thinking should be creative?

10. Why do you think critical thinking should be reflective?

11. Why do you think critical thinking should involve analysis?

12. Why do you think critical thinking should be focused?

13. It is of vital importance for learners to think critically inside and outside of the classroom. Motivate your answer.

_____

_____

_____

14. It is important to integrate critical thinking skills with the normal content of the subject/learning area.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

Motivate your answer.

_____

_____

_____

15. It cannot be assumed that critical thinking that is addressed in school subjects will automatically transfer to everyday life.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

16. Critical thinking skills are repeatable and transferable.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

17. Critical thinking skills differ, depending on the subject area.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

Motivate your answer.

_____

_____

_____

18. Critical thinking skills can be taught as a set of general skills.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

SECTION B: TEACHING CRITICAL THINKING SKILLS TO LEARNERS

19. It is the duty of teachers to help learners to develop their critical perspectives.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

20. Teachers should be able to think critically.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

21. It is important to put critical thinking into practice.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

SECTION C: CHANGE MANAGEMENT IN SCHOOLS AS ORGANISATIONS

22. Change and renewal is essential for the development of a school.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

23. How would you define change?

_____

_____

_____

24. What change(s) would you want to see/make in your school concerning critical thinking?

_____

_____

_____

25. Your school has a clear picture of what quality is.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

26. Individuals in the school are willing to contribute to positive change.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

27. Individuals in the school look forward to taking part in new working and learning opportunities.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

28. Teachers are of the opinion that school principals' efforts to bring about change fail because they have not been exposed to in-service training relevant to the proposed change.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

29. In your view, what should the management task of the principal be as an agent of change regarding critical thinking?

_____

_____

_____

30. Resistance to change points to a need for more information on the aim of the intended change.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

31. Teachers' attitudes towards teaching critical thinking skills to learners can impact negatively on the implementation thereof in the classroom.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

32. Knowledge and understanding of any subject or learning area make teachers confident to teach the subject.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

33. The above has a positive impact on the attitude of teachers towards teaching critical thinking skills to learners.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

SECTION D: THE RELATION BETWEEN TEACHING CRITICAL THINKING SKILLS AND CHANGE MANAGEMENT.

34. Learners should take responsibility for their own learning.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

35. Teachers should aim to create opportunities for learners to come to tentative conclusions.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

36. Critical thinking should be a case of teaching learners to think critically rather than instructing them.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

37. The school activities revolve around the principal as the key figure who determines to a great extent the school's success and/or failures when change is implemented.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

38. The principal should support teachers in teaching critical thinking skills to learners.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

39. Teachers' attitudes and beliefs regarding critical thinking skills influence the manner in which they teach.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

40. Learners should be seen as empty vessels to be filled with information by the teacher.

Strongly agree	Agree	Disagree	Strongly Disagree	Not Applicable

Motivate your answer.