

THE ROLE OF CRITICAL THINKING SKILLS IN
PROMOTING QUALITY TEACHING AND LEARNING
IN THE FURTHER EDUCATION AND TRAINING
(FET) PHASE OF SECONDARY SCHOOLS IN
SOUTH AFRICA

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(DE III, ACE, Hons. B.Ed.)

A dissertation submitted in fulfillment of the requirements for
the degree

MAGISTER EDUCATIONIS

in

LEARNING AND TEACHING

in the

SCHOOL OF EDUCATIONAL SCIENCES

at the

VAAL TRIANGLE CAMPUS

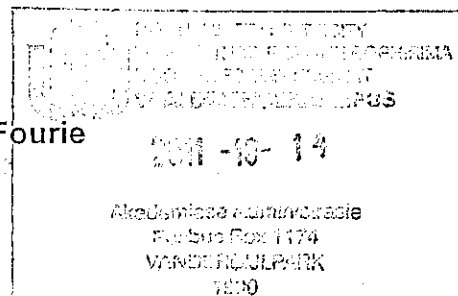
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2010



DECLARATION

I, MERINDA FELICIA COOPER declare that THE ROLE OF CRITICAL THINKING SKILLS IN PROMOTING QUALITY TEACHING AND LEARNING IN THE FURTHER EDUCATION AND TRAINING (FET) PHASE OF SECONDARY SCHOOLS IN SOUTH AFRICA is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

Signature: _____

Date: _____

DEDICATION

This work has been dedicated to my three boys, Grant, Curtley and Darryn who were my constant inspiration to complete this study. The love, understanding and support that they so unconditionally offered have truly been the 'wind beneath my wings'.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks and appreciation to the following:

- Firstly, I would like to thank God for the strength, determination and wisdom granted in making this study a success.
- My family for their support and encouragement.
- My sisters Jackie and Rozanne, also my nephew Warren on whom I could depend for their selfless support and encouragement throughout the study.
- My supervisor, Professor Elsa Fourie, for her professional guidance and valuable support throughout the study.
- The staff of the Representative Structures unit for their support, with a special thanks to Audrey Ntshangase and Gilbert Moloto who assisted so caringly during the study.
- Grant Nthangeni, for his moral support and motivation.
- The Department of Education for the permission granted to conduct this study.
- The principal and teachers of the school in the Johannesburg Central District that has been used as pilot study in the investigation.
- All principals and teachers of the schools in the Johannesburg South District that participated in the investigation.
- Jessica Elliott for her assistance that was a valuable contribution to the fulfilment of this study.

SUMMARY

The quality of education in especially the Further Education and Training phase (FET) is recognised as one of the most significant challenges facing the South African government. Low teacher morale, lack of parental involvement, learners' ignorance in taking responsibility for their own learning and other educational problems are all identified as contributing factors.

This study was undertaken to investigate how critical thinking skills can contribute to promoting quality teaching and learning in secondary schools with specific reference to the FET phase. The study also sought to make recommendations that will assist teachers to integrate critical thinking skills into the teaching and learning experiences in the FET phase.

The nature of quality teaching and learning, the nature of critical thinking skills and the correlation between the concepts to improve the quality of education were researched by means of a literature study. A quantitative research design followed, using questionnaires as research instrument.

From the research conducted, it was found that learners in the FET phase do not take responsibility for their learning and therefore many of these learners still do not perceive learning as important. However, effective learning could take place if learners are confident, independent, active participants and explore a variety of learning strategies. Teachers, on the other hand, should adopt particular forms of behaviour to foster certain types of learning.

The ability to teach critical thinking skills to learners poses a great challenge as many teachers are not trained to do so. This has a great influence on the exposure of an integrated constructivist method of teaching and learning and therefore inflicts on the delivery of quality teaching and learning in the FET phase of secondary schools in South Africa.

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CHAPTER ONE

INTRODUCTION AND STATEMENT OF THE PROBLEM

INTRODUCTION

The Minister of Education announced in August 2005 that quality in education has been recognised as one of the most significant challenges facing the South African government. Quality in education is regarded as a national priority that requires involvement and engagement throughout all levels of society (Human Sciences Research Council's (HSRC) Centre for Education and Quality Improvement (available at: <http://www.hsrc.ac.za>).

Responding to the Minister of Education's statement, the Human Sciences Research Council (HSRC) established the Centre for Education Quality Improvement (CEQI) in 2006. The primary purpose of CEQI is to support government and other key role-players (teachers, parents, learners, NGOs and donors) and to enhance decision-making processes for implementing relevant and effective strategies to improve education quality at all levels of the system.

Lethoko (1999:1) and Ngidi and Qwabe (2006:529) state that the poor matric results of the past number of years, the lack of learner discipline, the low teacher morale as well as other educational problems in some of the schools in South Africa have led to a general drive to improve the quality of teaching and learning and the overall quality of education in the country. According to the American Association of School Administrators (AASA) (1992:21) it is the responsibility of the principal to ensure that effective teaching and learning takes place. Dimmock and Wildy (1995:319) on the other hand, state that curriculum management is the responsibility of senior teachers and that there is a tight linkage between senior teachers and high quality teaching and learning.

According to Licata and Harper (1999:473) 'academic emphasis is a significant characteristic of effective schools'. Karpicke and Murphy (1996:27)

state that quality work can only be done when the goals of the school are clearly understood by all stakeholders.

According to Horton (1988:79) and Kruger (2003) quality teaching and learning mean that a teacher must teach not only content but also the functions required by the engagement with that content in order to make learning effective, meaningful, integrated and transferable. Grösser (2007) states that the role of the teacher therefore is that of planner, content transmitter and mediator of learning.

Tileston (2005:47) states that if learners are to be successful in life they must move beyond factual input to the processes involved in higher-level thinking, such as problem solving, decision making, experimental inquiry and investigation. She adds that learners should be moved from the simple to the complex. With the aim of creating quality teaching and learning, the Department of Education (DoE) implemented the Revised National Curriculum Statement in 1996. This curriculum laid the foundation for the achievement of quality teaching and learning by stipulating Critical Outcomes, Learning Outcomes and Assessment Standards and by spelling out the key principles and values that underpin the curriculum.

The Critical Outcomes of the curriculum stated in the National Curriculum Statement (General) (2003:2) require learners to be able to:

- identify and solve problems and make decisions using critical and creative thinking;
- work effectively with others as members of a team, group, organisation and community;
- organise and manage themselves and their activities responsibly and effectively;
- collect, analyse, organise and critically evaluate information;
- communicate effectively using visual, symbolic and/or language skills in various modes;

- use science and technology effectively and critically showing responsibility towards the environment and the health of others; and
- demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation.

Critical thinking skills are prominent in the Critical Outcomes where learners have to identify and solve problems and make decisions using critical and creative thinking, collect, analyse, organise and critically evaluate information and use science and technology effectively and critically showing responsibility towards the environment and the health of others.

In 2001, The *General and Further Education and Training Quality Assurance Act*, (Act No. 58 of 2001), established Umalusi which legislates quality assurance functions. Umalusi, the Council for Quality Assurance in General and Further Education and Training judges the quality and standard of examinations by determining the level of adherence to policy in implementing examination related processes, the cognitive challenge of examination question papers, the appropriateness and weighting of content in question papers in relation to the syllabus, the quality of presentation of examination question papers, the efficiency and effectiveness of systems, processes and procedures for monitoring the conduct of the examinations, the quality of marking as well as the quality and standard of internal quality assurance processes within the assessment body. Umalusi therefore has to determine the quality of content coverage that is whether learners are assessed on content and skills as prescribed in the syllabus and whether learners are intellectually challenged allowing for creative responses. Secondly, cognitive skills are assessed such as the learners' reasoning ability, their ability to communicate, compare and contrast, see casual relationships as well as to express an argument clearly.

Facione (2010) describes critical thinking as thinking that has a purpose (proving a point, interpreting what something means, solving a problem) but it can also be a collaborative, non-competitive endeavour. The author states

further that the core of critical thinking is that of interpretation, analysis, evaluation, inference, explanation and self-regulation.

Although many studies regarding the role of critical thinking skills in promoting teaching and learning have been identified (Tileston, 2005; Jeevanatham, 2005; Ngidi & Qwabe, 2006; Grösser, 2007) no studies, nationally and internationally that specifically focus on the FET phase, could be found.

This study therefore intends to investigate the role of critical thinking skills in promoting quality teaching and learning in the FET phase of secondary schools in South Africa. According to Halpern (2007;10), the development of critical thinking skills in learners means to enhance their meta-cognitive thinking abilities in order that they will be able to plan, monitor and evaluate their own critical thought. This will contribute positively to the quality of learning in secondary schools.

The researcher is of the opinion that if learners are taught to think critically, the quality of teaching and learning in the FET phase of secondary schools in South Africa would improve and higher quality educational results would be obtained.

1.1.1 Research paradigm

This study will be viewed from a positivist's research paradigm. The positivist worldview represents the traditional form of research and believes that causes most likely determine effects or outcomes preferring accurate, quantitative data by means of experiments (Creswell, 2009:7; Maree & Van der Westhuizen, 2007:33). As data will be gathered objectively during this research by means of numbers, there will be no personal involvement with the participants, making the positivist's research paradigm suitable for the purpose of this study.

- The basic assumptions of positivism can be summarised as follow:

Paradigm	Ontology (the realist stance)	Epistemology (how do we view the world)	Methodological view (methods of data collection)
Positivist perspective	<ul style="list-style-type: none"> • External reality is stable • That which is or can be known • General laws govern universe • There is only one objective reality • The object studied has ontological status and can be studied objectively 	<ul style="list-style-type: none"> • Knowledge is absolute • Through science truth is discovered and revealed • Definite cause and effect • Knowledge gained by verified facts • Modern 	<ul style="list-style-type: none"> • Scientific methods used • Focused on discovering and formulating general laws • Systematic data collection • Quantitative methods: experimental in nature

1.2 THEORETICAL FRAMEWORK

The constructivist approach to learning is grounded in the research of Piaget, Vygotsky, Dewey and Bruner. Conley, de Beer, Dunbar-Krige, Du Plessis, Gravett, Lomofsky, Merkel, November, Osman, Petersen, Robinson and Van der Merwe (2010) describe this method of learning as learning that emphasises the active role of the learner in building an understanding and making sense of information. They go further to state that the focus is on meaning-making and knowledge construction of the learning material, not merely memorising information. Constructivism is further endorsed by the critical outcome: 'the ability to identify and solve problems and making decisions by using creative and critical thinking' as proposed by the South African Qualifications Authority (SAQA 1997:7).

Constructivist learning therefore aims not only to transmit information but rather encourages knowledge formation and the development of

metacognitive processes for judging, organising and acquiring new information. The constructivist approach to learning focuses on encouraging learners to be active rather than passive participants of learning.

As the researcher firmly believes in the principles of constructivism, this study will be conceptualized in terms of and based on the following:

- Critical thinking
- The Further Education and Training phase
- The South African FET curriculum
- Quality teaching and learning

An in-depth literature study of relevant sources on these concepts will serve as background knowledge to the empirical study.

1.3 CONCEPT CLARIFICATION

1.3.1 Critical thinking

Critical thinking can be defined as high-level thinking which embraces features such as analysis, evaluation, reasonableness and reflection (Jeevanatham, 2005). This type of thinking can further be identified as a learner's willingness and ability to scrutinize and evaluate thinking in order to determine truth, accuracy or worth and to construct logical arguments to justify claims or assertions (Beyer, 1990). Critical thinkers therefore, approach information with a healthy scepticism about what is really true or accurate as well as with a desire to search through all kinds of evidence to find that truth. (Facione, 2009:5-7; Halpern, 2007:10; Giroux, 1978).

For the purpose of this research critical thinking will be regarded as thinking that involves the application of the following critical thinking skills:

- Identify and solve problems and make decisions using critical and creative thinking
- Collect, analyse, organise and critically evaluate information

- Solving problems
- Inductive and deductive reasoning
- Judging the validity of an argument
- Judging credibility
- Making inferences (Ennis, 1996).

1.3.2 The Further Education and Training (FET) phase

The National Qualifications Framework (NQF) consists of three phases, namely the General Education and Training phase, the Further Education and Training phase and the Higher Education and Training phase with different levels in each phase (National Qualifications Authority Act, 58 of 1995). The Further Education and Training (FET) phase forms the second phase of the NQF consisting of levels 2, 3 and 4 which is equivalent to Grades 10, 11 and 12 of formal schooling.

Education refers to an activity in which a learner is assisted in learning to know and to do certain things. The aim therefore is to acquire certain knowledge, skills and attitudes to fulfill responsibilities in *different* roles in life (Steyn, Steyn, de Waal & Wolhuter, 2002:34). Training, on the other hand, can be described as the intentional and planned activities through which the learner is equipped by the trainer with knowledge, skills and attitudes to function as an individual in a *particular* role of life (Steyn *et al.*, 2002:36).

1.3.3 The South African FET curriculum

The South African FET curriculum is based on the principles of social transformation and constructivist education. Social transformation aims at ensuring that the educational imbalances of the past are redressed and that equal educational opportunities are provided for all sections of the population. Constructivist education forms the foundation of the FET curriculum in South Africa. It strives to enable all learners to reach their maximum learning potential by setting the learning outcomes to be achieved by the end of every

learning process (DoE: 2003). This research will be grounded in the constructivist approach to teaching and learning.

The NCS curriculum requires of FET learners not to be seen as receptacles of learning. They should be encouraged to seek and reflect on new knowledge in the light of their experience and they should be given the opportunity to decide on the most effective way of integrating that knowledge into their own practice of learning. The teacher becomes an active facilitator of learning by working with the learner in a wide variety of learning opportunities (both formal and informal) to maximise the learning process. In this research teaching and learning will be regarded as a dynamic and interactive process – a partnership between teacher and learner.

1.3.4 Quality teaching and learning

In the context of this research, the quality of teaching and learning in secondary schools depends on a sound culture where all role players value the processes of teaching and learning, where practices reflect a commitment to teaching and learning, where resources needed are readily available to facilitate the processes and where the school is structured to facilitate these processes (Davidoff & Lazarus, 1997:43). The personal importance of learning to the learner, the development of self-efficacy in the learner and how learners feel about the learning are criteria that contribute to effective learning (Tileston, 2005:4-5). The different teaching styles and strategies that teachers use to accommodate different learning styles when conducting a learning experience, are all positive contributors to quality teaching and learning.

In Chapter two the concept 'quality teaching and learning' will be discussed in more detail.

1.4 LITERATURE REVIEW

1.4.1 Teaching and learning

According to Shuell and Moran (1994), learning is an active, constructive, communicative, cumulative, goal-oriented and self-regulated act of processing

information and experience into meaningful and useful knowledge and skills that can best be characterised in terms of problem solving.

Ester and Sciortino (1988:3) write as follows about teaching: "The Science of teaching tells us that specific acts of the teacher and certain defined learning environments will cause specific learner behaviours. Years of research on teaching have produced evidence that supports the judgment that specific controlled behaviours of teachers produce predictable results. This is the ultimate test of science, that well defined events consistently yield similar results".

The specific acts of the teacher in his/her effort to transfer relevant knowledge and skills to learners contribute to learners' constructive and active involvement in problem solving and critical thinking and enhance the quality of teaching and learning.

1.4.2 Quality teaching and learning defined

The Readers Digest Oxford Complete Wordfinder (1996) refers to 'quality' as a degree of excellence of a 'thing' -- in this regard, teaching and learning. Excellence refers to a mark, distinction, prominence, importance, superiority, dignity and nobility. It also refers to quality as a high social standing (people of quality).

Quality therefore demands effective teaching and constructive learning to ensure excellence and the holistic development of the learner. Quality teaching and learning, according to Resnick and Resnick (1997), can be defined as rational thinking. They go further to state that quality teaching and learning involve the ability to analyse information, extrapolate key points, generate a hypothesis, draw conclusions and find visible solutions. There should be a need for learners to create their own goals for learning. Wiggins and McTighe (1998) suggest that the work must be purposeful from the learner's point of view: "Regardless of how abstract the key ideas are or the learner's degree of naiveté about the subject, we as teachers must embody the goals in known, practical tasks and standards that the learner can understand from the beginning of the unit."

According to Newman and Wehlage (1993) "Knowledge is thin or superficial when it does not deal with significant concepts of a topic or discipline but is deep or thick when it concerns the central ideas of a topic or discipline". Therefore, for learners, knowledge is deep when they make clear distinctions, develop arguments, solve problems, construct explanation, and otherwise work with a relatively complex understanding.

Marzano (1992) describes the context of higher-level thinking as extending and refining knowledge. According to Tileston (2005:48) there are three basic reasons for using higher-order thinking in the daily instruction of learners: the need for *information literacy*, the need for *quality processes*, and the need for *quality outcomes*. She further states that "...these three reasons involve processes that require critical and creative thought, which requires learners to look at information frontward, backward and in ways never viewed before". The curriculum should therefore include opportunities for learners to utilize higher order thinking skills such as using both convergent and divergent processes and investigating real-world solutions to complex problems.

It seems that quality teaching and learning involve higher-level thinking and that learners have to be actively involved in problem solving and decision making, have to learn through experimental inquiry and investigation and have to think critically to solve complex problems.

1.4.3 Critical thinking defined

Scriven and Paul (2007) define critical thinking as "...self-directed, self-disciplined, self-monitored and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem solving abilities and a commitment to overcome our native egocentrism and sociocentrism". Tileston (2005:55) describes critical thinking as the ability to think at a complex level and to use analysis and evaluation processes. Critical thinking involves inductive thinking skills, such as recognizing relationships, analyzing open-ended problems, determining cause and effect, making inferences, and extrapolating relevant data. Deductive thinking skills are also part of critical

thinking as it includes solving spatial problems, using logic, constructing syllogisms and distinguishing fact from opinion. Other critical thinking skills include detecting bias, evaluating, comparing and contrasting.

According to Kennedy, Fisher and Ennis (1991), critical thinking skills involve abilities in addition to certain dispositions. These abilities include identifying a problem and its associated assumptions; clarifying and focusing the problem; analysing, understanding and making use of inferences; inductive and deductive logic; as well as judging the validity and reliability of assumptions, sources of data or information available.

Based on the arguments of the above mentioned authors, it seems that critical thinking skills involve problem solving, the ability to think at a complex level, analysis, evaluation, decision making, judgement, understanding, making use of inferences and enhancing inductive and deductive reasoning.

1.4.4 The role of critical thinking skills in quality teaching and learning

Critical thinking skills play an extremely important role to ensure quality in the teaching and learning process. According to Walsh and Paul (1988:13) critical thinking does not equal intelligence. It is a skill that can and needs to be improved in everybody. The reason for this, according to Paul (1992:4), is that all over the world solutions have to be found for deep rooted problems with regard to environmental damage, personal relationships, reduction of resources, global competition, personal goals and ideological conflict. Therefore, Haywood (1997:6) states that the modern working environment is increasingly demanding and requires effective critical thinking and problem-solving skills.

Jensen (1998) states that: "Today's teachers must think of themselves as catalysts for learning, not as live, breathing textbooks. Schools simply must create motivated, thinking, responsible and productive citizens for the next century". As Haberman (1996) rightfully says: "Star teachers lead learners to believe: 'It's you and me against the material'. Quitter and failure teachers lead learners to believe: 'It's the material and me against you'."

The researcher is of the opinion that critical thinking skills as a catalyst to promote quality teaching and learning is influenced by the teaching strategies used by teachers in order to achieve the desired learning outcomes of the curriculum and ultimately quality educational results.

Based on the above discussion, the problem of this research could be phrased in the following research questions:

- What is the nature of quality teaching and learning?
- What is the nature of critical thinking skills?
- What is the role of critical thinking skills in promoting quality teaching and learning?
- Which recommendations can be made to assist teachers to integrate critical thinking skills in teaching and learning in the Further Education and Training phase?

1.5 RESEARCH AIM AND OBJECTIVES

1.5.1 Aim of the research

The aim of this research is to investigate the role of critical thinking skills in promoting quality teaching and learning in secondary schools, and to make recommendations to assist teachers to integrate critical thinking skills in teaching and learning in the Further Education and Training phase in secondary schools in South Africa.

1.5.2 Objectives

The above aim can be operationalised into the following objectives:

- To determine the nature of quality teaching and learning
- To determine the nature of critical thinking skills
- To determine the role of critical thinking skills in promoting quality teaching and learning

- To make recommendations that will assist teachers to integrate critical thinking skills in teaching and learning in the Further Education and Training phase of secondary schools in South Africa

1.5.3 Research design

A review of the relevant literature and an empirical research will be done in the investigation.

1.5.3.1 Literature review

The literature review will include relevant resources. EBSCO and ERIC-searches of primary and secondary sources will be conducted to gather information with the aid of the following keywords: critical thinking, quality, quality teaching and learning, problem solving, high-level thinking, inductive and deductive reasoning, creative thinking, experimental inquiry.

1.5.3.2 Empirical research

1.5.3.2.1 Research method

Leedy and Ormrod (2005:95) refer to qualitative researchers as researchers that seek a better understanding of complex situations. They elaborate further that qualitative researchers tend to select participants who can best shed light on the phenomenon under investigation. They construct interpretative narratives from their data in a more personal style and often use the participants' own language and perspectives (2005:96-97).

According to Leedy and Ormrod (2005:95), quantitative researchers seek explanations and predictions that will generalize to other persons and places. The intent therefore is to establish, confirm or validate relationships and to develop generalisations that contribute to theory.

The research design for this study will be quantitative in nature. As this method of research involves acquiring information about one or more groups of people about their opinions, attitudes or previous experiences by asking them questions and tabulating their answers, the researcher is of the opinion

that this method is most suitable for the purposes of this research. The researcher does not intend to study people in their natural settings and therefore will not use a phenomenological research approach. The ultimate aim of using a qualitative research design will be to learn about a large population by surveying a sample of that population (Leedy & Ormrod, 2005: 183).

An empirical research will be conducted to determine the role of critical thinking skills in promoting quality teaching and learning in secondary schools in the Johannesburg South District of the Gauteng Province. Mayan (in Maree, 2008:295) explains data analysis as a continuous process of observing data patterns, constructing conjectures, data collecting in a deliberate manner from precisely selected individuals on targeted topics, refuting or confirming the conjectures, then continue analysing, by sorting, etc.

Descriptive statistics will be used for the part of the questionnaire related to the main research question and will be presented in numerical and graphical ways. Inferential statistics will be used for the parts of the questionnaire involved with the research question and the biographical details alternatively. Responses will be analysed, grouped and reported on according to the similarity of opinions of the participants.

1.5.3.2.2 Research instrument

According to McMillan and Schumacher (2006:131) a research instrument refers to a data collecting technique to gather information about the variables in the study.

Information from the literature review will be used to develop a structured questionnaire which will assist the researcher in gathering information on the role of critical thinking skills in promoting quality teaching and learning in the FET phase of South African schools.

McMillan and Schumacher (2006:195) regard the questionnaire as the most widely used technique for obtaining information from subjects. It is relatively economical, has the same questions for all subjects and can ensure

anonymity. Questionnaires can use statements or questions, but in all cases, the subject is responding to something written for specific purposes.

According to Leedy and Ormrod (2005: 185), paper-pencil questionnaires can be sent to large numbers of people, including those who live thousands of kilometres away. Respondents can respond to questions with the assurance that their responses will be anonymous and so they may be more truthful than they would be in personal interviews, particularly when they are talking about sensitive or controversial issues.

The questionnaire as research instrument will be discussed in detail in chapter three.

1.5.3.2.3 Quality criteria

- **Reliability**

According to Creswell (2009:231) reliability refers to whether scores to items in an instrument are internally consistent and whether there was consistency in test administration and scoring. Before the questionnaire will be administered to the sample, a preliminary questionnaire will be pre-tested with a selected number of respondents from the target population in respect of its qualities of measurement, appropriateness and clarity. These respondents will not form part of the research sample (Strydom & Delpont, 2005:331).

In order to ensure the reliability of the questionnaire a Cronbach alpha coefficient, which calculates the internal consistency of the different sections in the questionnaire, will be used (Pietersen & Maree, 2007:216). Items that strongly correlate with each other have a high internal consistency and the alpha coefficient will be close to one. If the consistency does not correlate strongly the alpha coefficient will be close to zero. An acceptable Cronbach alpha coefficient when working with a set of items would range between 0.7 and 0.8.

- **Validity**

Validity, according to Leedy and Ormrod (2005:92) is the extent to which a measurement instrument is representative of the content area (domain) being measured. In quantitative research it refers to whether meaningful and useful inferences from scores on particular instruments can be drawn (Creswell, 2009:233). In order to ensure that the questionnaire is adequate for measuring what it is supposed to measure, it will be assessed by the researcher's supervisor, experts in the field as well as by the Statistical Consultation Services of the North-West University, Vaal Triangle campus.

The researcher will also ensure that the questionnaire complies with the following validity criteria identified by Leedy and Ormrod (2005:97-99) and McMillan and Schumacher (2006:134-142):

Statistical validity

This refers to the appropriate use of statistical tests to determine whether indicated relationships are a reflection of actual relationships. The researcher will approach the Statistical Consultation Services at the North-West University, Vaal Triangle Campus, for assistance.

Internal validity

Internal validity explains the extent to which the questionnaire and the data it yields allow the researcher to draw accurate, true and correct conclusions (Leedy & Ormrod, 2005:99; Neuman, 2007:21). The questionnaire for this study will be assessed by the researcher's supervisor and the researcher will strive to produce findings that are believable and convincing.

External validity

External validity refers to the extent to which conclusions drawn can be generalized to other contexts (Leedy & Ormrod, 2005:99; McMillan & Schumacher, 2006:134). The researcher is aware of the fact that the research sample will not be representative of all FET educators in South Africa. Further

research will have to be conducted in order to generalize the findings ultimately.

Face validity

Face validity refers to the extent to which an instrument, on the surface, appears to be measuring a certain characteristic (Pietersen & Maree, 2007:217; Leedy & Ormrod, 2005:92). The researcher will ensure the face validity of the questionnaire by asking input from colleagues in the field of educational sciences.

Content validity

Content validity looks at the instrument's representation of a specific domain of knowledge (Pietersen & Maree, 2007:217; Leedy & Ormrod, 2005:92). The researcher will ensure the content validity of the questionnaire by formulating original questions that measure the specific field of knowledge.

Criterion validity

Criterion validity relates to the correlation of the measurement instrument's results with other related measurements' results (Pietersen & Maree, 2007:217; Leedy & Ormrod, 2005:92). As the researcher is not aware of any other similar questionnaires, the criterion validity of the research instrument is not applicable to this research.

1.5.3.2.4 Population and sample

Leedy and Ormrod (2005:204) refer to a research population as a larger group of people with respect to their characteristics of interests. McMillan and Schumacher (2006:119) on the other hand, describe a population as a group of elements or cases, whether individuals, objects or events, that conform to specific criteria and to which the intension is to generalize the results of the research.

The population for this research will comprise of all Further Education and Training (FET) educators at Secondary Schools from the Johannesburg South

District of the Gauteng Department of Education. The total population will be 910 ($N=910$) FET teachers. For this research, the researcher will make use of random sampling. According to Schumacher and McMillan (1993:161), it is the best way to choose a sample as it is unbiased and every member of the population has an equal chance of being chosen to be in the sample.

According to McMillan and Schumacher (2006:119) a sample is a collective group of subjects or respondents from whom the data are collected. From the 910 teachers, the researcher will draw a sample comprising of 10% of FET educators from Secondary Schools from the Johannesburg South District of the Gauteng Department of Education ($n = 91$). Seaborg, Grinnell and William (cited by Vermeulen, 1998:59) state that a 10% sample is adequate and well representative of the research population.

1.5.3.2.5 Statistical techniques

Collected data will be analysed and interpreted with the assistance of the Statistical Consultancy Services of the North-West University. Descriptive statistics such as frequencies, means and percentages will be used. Frequencies (f) indicate the number of times each score is attained (McMillan & Schumacher, 1993:195). The frequencies are converted into percentages (%). According to McMillan and Schumacher (1993:200) the mean is simply the arithmetical average of all the scores.

1.5.3.2.6 Ethical aspects

Permission to do the research will be obtained from the Gauteng Department of Education and also from the principals and teachers of the selected schools. Leedy and Ormrod (2005:102) state that any research should respect respondents' right to privacy, therefore the nature and quality of respondents' performance will be kept strictly confidential by giving each respondent a code number and by labelling each written document with a number other than the person's name.

1.6 PROCEDURE

1.6.1 Department of Education

Firstly, the necessary permission to do the research will be obtained in writing, from the Gauteng Department of Education.

1.6.2 Principal and teachers

The researcher will obtain permission for conducting the research from the selected school principals before teachers will be approached.

1.7 CONTRIBUTION OF THE STUDY TO THE FOCUS AREA (TEACHING AND LEARNING ORGANISATIONS)

This research intends to make recommendations to assist teachers to integrate critical thinking skills in teaching and learning to enhance the quality of teaching and learning in the FET phase, therefore contributing to the improvement of the quality of educational results.

1.8 CONCLUSION

In the next chapter the importance of critical thinking skills in promoting quality teaching and learning in the Further Education and Training Phase will be discussed.

CHAPTER TWO

THE IMPORTANCE OF CRITICAL THINKING SKILLS IN PROMOTING QUALITY TEACHING AND LEARNING IN THE FURTHER EDUCATION AND TRAINING (FET) PHASE

2.1 INTRODUCTION

According to Van der Westhuizen (2002:5) the main aim of an education system is to provide quality teaching and learning to its community. In order to achieve quality in education, the curriculum must include opportunities for learners to utilize higher order thinking skills, such as the ability to use both convergent and divergent processes to think critically and to investigate real-world solutions to complex problems.

As the South African FET curriculum is grounded in the principles of constructivism (DoE: 2003), the NCS curriculum requires that FET learners should be able to seek and reflect on new knowledge in the light of their experience and that they should be given the opportunity to decide on the most effective way of integrating that knowledge into their own practice of learning. The teacher should be an active facilitator of learning by working with the learner in a wide variety of learning opportunities (both formal and informal) to maximise the learning process. In this regard Rossouw (2009) defines expert teachers as persons who are characterised by their ability to interpret classroom activities critically, to identify and solve problems regarding their teaching practice and by their ability to make thoughtful or reflective instructional and classroom management decisions that are conducive to quality teaching and learning.

In this chapter, the nature of the further education and training (FET) phase, quality teaching and learning, critical thinking, critical thinking skills and the role of critical thinking skills in promoting quality teaching and learning in the further education and training phase will be discussed.

2.2 THE NATURE OF THE FURTHER EDUCATION AND TRAINING PHASE

2.2.1 A new structure for education and training

The National Qualifications Framework (NQF) represents a new approach to the organisation of education and training in South Africa. The NQF is an instrument for implementing an integrated approach to education and training and it provides opportunities to learn irrespective of age, circumstances and the level of education and training a learner may have. This is called life-long learning. The South African Qualifications Authority (SAQA) Act, (Act 58/1995), was passed in October 1995. This law gives SAQA the power to oversee and maintain the National Qualifications Framework.

The National Qualifications Framework consists of three phases, namely the General Education and Training phase, the Further Education and Training phase and the Higher Education and Training phase with different levels in each phase (National Qualifications Authority Act, 58 of 1995).

For the purpose of this study, the focus will be on the Further Education and Training phase.

2.2.2 The Further Education and Training (FET) phase

Further Education and Training is defined by age (15+), by what is taught (academic, technical, commercial and vocational education) and by site (e.g. senior secondary schools and technical colleges). At this level learners should be prepared for higher education, vocational education, careers and self-employment.

Further Education and Training (FET) forms the second phase of the NQF. It consists of levels 2, 3 and 4 of the NQF, the equivalent of Grades 10, 11 and 12 of formal schooling. The FET phase consists of all education and training programmes (DoE, 1998b:1.2). Providers in this phase are Senior Secondary Schools (within the school system it was known as the Senior Secondary Phase and it falls outside the area of compulsory and free education);

Technical Colleges (N1 to N3), Non-Governmental Organisations (NGOs), regional training centres, private providers and private colleges, private training centres, private companies, industry training centres and community colleges.

The Further Education and Training Certificate (FETC) is issued at the end of formal schooling, namely grade 12. Learners who reach this equivalent outside of formal schooling also receive the FETC certificate. This means that the last three years of the traditional school system forms part of FET with the implication that learning programmes in the FET phase are structured according to the 12 Organising Fields and not in terms of the General Education and Training (GET's) 8 Subjects. Qualifications at this level are apart from being accredited by then education department also accredited by SAQA that falls within the ambit of the Department of Labour.

The Critical Outcomes of the curriculum as stated in the National Curriculum Statement (General) (2003:2) require that learners in the FET phase should be able to:

- identify and solve problems and make decisions using critical and creative thinking;
- work effectively with others as members of a team, group, organisation and community;
- organise and manage themselves and their activities responsibly and effectively;
- collect, analyse, organise and critically evaluate information;

The Critical Outcomes of the curriculum indicate clearly that critical thinking skills are a prerequisite for quality teaching and learning as envisaged by the South African government.

2.3 QUALITY TEACHING AND LEARNING

According to Kruger (2003:207) a "culture of learning and teaching" is widely being referred to in the education context of South Africa. The author further states that it generally refers to a positive attitude of all role players towards teaching and learning and the presence of quality teaching and learning processes in schools.

Davidoff and Lazarus (1997:43) identify the following aspects of quality learning and teaching:

- All role players value the processes of teaching and learning.
- Practices reflect a commitment to teaching and learning.
- Resources needed to facilitate this process are available.
- The school is structured to facilitate these processes.

According to Chisholm and Vally (1996:1) "...ineffective learning and teaching is most pronounced in secondary schools..." and is characterised by the following observable features:

- Weak/poor attendance.
- Teachers do not have the desire to teach.
- Tensions among the various elements of the school community.
- Vandalism.
- Drug abuse.
- High dropout rate.
- Poor school results.
- Weak leadership, management and administration.
- Demotivation and low morale.
- Disrupted authority.
- A poor state of buildings, facilities and resources.

Kruger (2003:207) states that schools where quality learning and teaching prevail will display certain common characteristics such as a positive school climate, sound classroom environments, sound home-school relations, effective leadership, management and administration, neat buildings and facilities, availability of resources, high professional standards by teachers, healthy relationships among role players, order and discipline, quality instructional leadership and a shared sense of purpose.

According to Mayer, (2002:228-232) Oser and Baeriswyl (2001:1031), Munro (1999:151), Shuel and Moran (1994:3343), teaching and learning cannot be dealt with as separate entities and the relationship between teaching and learning is rather complex. Grösser (2007:39) states that a teacher must know what functions learners will require learning specific content and how learners can acquire these functions. Horton (1988:79) argues that the teacher becomes a strategist who constantly makes decisions about the substance of instruction, about particular procedures needed to acquire a function and about the conditions under which it is appropriate to apply a given function.

Prawat (1992:354) states that these learning functions provide the cognitive basis of learning and ensure that the learner is an active processor of information. The DoE (2002:11) further states that linking teaching to these learning functions, will enable teachers to reach the ideals of constructivist education, namely, a learner who is confident, independent and active, can reflect on and explore a variety of learning strategies and can learn more effectively.

2.3.1 Learning styles, strategies and approaches

Burton (2001:245) states that there is often confusion about what constitutes learning style as distinct from learning strategy. According to Riding and Cheema (1991), psychologists argue that a cognitive or *learning style* is considered to be a fairly fixed characteristic of an individual, which may be distinguished from *learning strategies*, which are ways in which learners cope with situations and tasks. They go further to state that learning strategies may

vary from time to time and may be learned and developed. Learning styles by contrast, are static and relatively in-built features of the individual.

According to the constructivist approach to learning, learning emphasises the active role of the learner in building understanding and in making meaning of information. The focus is on meaning-making and knowledge construction of the learning material, not merely memorising information. The South African FET curriculum endorses this approach to learning by requiring that learners in the FET phase should be able to "...identify and solve problems and making decisions by using creative and critical thinking" (SAQA 1997,7).

Jean Piaget's theory of learning is that children tend to order their actions or thinking into systems or structures called schemes. The scheme then becomes internalised as a mental representation of objects and events from experiences in the external world. Learners also tend to adapt to the environment. The two basic adaptation processes according to Piaget, are termed assimilation and accommodation. Assimilation involves trying to understand something new by fitting it to our existing schemes. Accommodation occurs when existing schemes are changed because something does not fit. Changes in thinking take place through the process of equilibration, which is the act of searching for a balance between assimilation and accommodation. Each new learning experience causes an imbalance or disequilibrium. Piaget believes that the development of thinking operations, such as the ability to compare and categorise, is the supreme characteristic of intelligence. According to Piaget's theory, learners in the FET phase have reached the formal operational stage, where learning becomes abstract. Vygostky (1896-1934) emphasises the social context of learning. The child acquires habits of thought and judgement largely through interacting with others. Cognitive activities such as problem solving are first learned in interpersonal settings and then become internalised, self-regulated skills that enable the learners to think and work more independently and no longer needs assistance from others. When learners work at their own level, the actual developmental level of the learner can be seen. When they work in collaboration with an adult, we see their potential development as they learn

with a competent, nurturing mediator. Vygotsky's notion of social context of learning has a number of implications for education. It emphasises working together with others in collaborative learning. It attributes a significant role to the parent, teacher or other educators and shows how learners can learn and progress to new levels with guidance from others. Guided learning can teach learners new ways to move beyond their 'taken-for-granted' way of looking at the world around them and open them to new possibilities.

Based on the above discussion, it is clear that learning in the FET phase should not only aim to transmit information but should encourage knowledge formation, active participation and the development of metacognitive processes for judging, organising and acquiring new information.

2.3.1.1 Learning style

According to Burton (2001:245), the understanding of how in-built features of learners affect the way they process information is important for teachers. Riding and Rayner (1998) propose that various conceptualizations can be grouped into two principal learning styles, namely:

1. *Wholist - Analytical style*: whether an individual tends to process information in wholes (wholist) or in parts (analytic)
2. *Verbal – Imagery style*: whether an individual is inclined to represent information while thinking verbally (verbalist) or in mental pictures (imager)

The two styles operate as dimensions, so a person may be at either end of the dimension or somewhere along it. Riding and Rayner (1991) further explain that these styles are involuntary, so it is important to be aware that classes contain learners whose habitual learning styles vary. Teachers in the FET phase therefore need to ensure that they provide a variety of ways in which learners' critical thinking skills can be developed and in which assessment can be done. It would, for example, not be sensible to present information only in written form. If illustrations are added, it would allow both verbalisers and imagers easier access to the information. Similarly, wholist

learners are assisted by having an overview of the topic before starting, while analytics benefit from summaries after they have been working on information (Burton; 2001: 245).

2.3.1.2 Learning strategy

According to Burton (2001: 246), *learning strategy* describes the ways in which learners cope with tasks or situations. These strategies develop and change as the learner becomes more experienced. Kolb (1985) describes two dimensions of learning strategy, namely perceiving and processing as the most widely known in the area of strategy theory. He further argues that these two dimensions interact and that, although learners tend to use their own preferred strategies, they could be trained to develop aspects of other strategies through experimental learning. According to Fielding (1996) and Bjorklund (2005) reflection enables the learner to create concepts which integrate their observations into logically sound theories at the 'abstract conceptualization' stage, which are then used to make decisions and solve problems at the 'active experimentation' stage. McCarthy (1987) argues that learners have a predilection for one of the stages. He further argues that teachers should provide learners with opportunities that ensure their use of stages in the cycle additional to their preferred one, in order to extend their learning strategies. This is also applicable to the teaching of critical thinking skills in the FET phase.

2.3.1.3 Learning approaches

According to Entwistle (1981), different approaches to learning such as being oriented towards discovering the meaning of a topic or being oriented simply to scratch the surface, can be described as different *approaches* to learning. Combinations of these orientations with extrinsic factors, such as the need to pass examinations or the love of a subject, were thought to lead to learning strategies which characterised certain approaches to study, from 'deep' to 'surface' levels of thinking. Biggs (1993) further explains that a learner's approach to learning is a function of both motive and strategy and that motives influence learning strategies. He goes on by stating that a learner

with an instrumental (surface) motive is likely to adopt reproducing or rote-learning (surface) strategies. Learners in the FET phase should not be engaged in such strategies as it is expected of them to be engaged in higher order thinking. Deep motive results from an intrinsic desire to learn can inspire the use of deep strategies wherein understanding and meaning are emphasized, as is required by the FET curriculum.

According to Burton (2001:247), learners whose motives and strategies are compatible with the demands made by learning tasks are likely to perform well. She goes further to state that learners are less successful where motives and strategy are incompatible with task demand, for example, a learner with a deep approach to learning is constrained by superficial task design such as a requirement for short answers, while a learner with an achieving motive may be deterred if s/he is set very long-term, vague objectives. In order to promote the use of critical thinking skills in the FET phase, the researcher is of the opinion that learners should be motivated towards a deep approach to learning. Burton also states that effective learning, if defined in terms of understanding and permanence, is linked with deep and deep-achieving approaches, which can be taught.

According to Turner (2001:252) and Schunk (2004:257) *active learning* occurs when the learner has some responsibility for the development of the learning activity. Educators in the FET phase should realize that a sense of ownership and personal involvement is essential for achieving quality learning. According to the Department of Education (DoE, 1996), FET learners should be able to organise and manage themselves and their activities responsibly and effectively. Active learning can be defined as purposeful interaction with ideas, concepts and phenomena that can involve reading, writing, listening, talking or working with tools, equipment and materials, such as paint, wood, chemicals, etc. In simple terms it is learning by *doing* as opposed to learning through *being told*. The FET curriculum requires that learners be actively involved in learning through, for example collecting, analysing and critically evaluating information (DoE, 2003).

Addison and Burgess (2000:31) and Slavin (2003:257-258) claim that active learning is equal to experiential learning. Experiential learning is *also* active learning but with the additional feature of critical reflection upon both action and the results of action. This is also required of learners in the FET phase (DoE, 2003). Only where learners are 'engaged actively and purposively in their own learning is the term experiential appropriate'.

Turner also identifies the advantages of active learning as including greater personal satisfaction, more interaction with peers, promotion of shared activity and team work, greater opportunities to work with a range of learners and opportunities for all members of the class to contribute and respond. He states further that active learning is supportive of co-operative learning and not competitive learning. This constructivist view is also held by the South African Department of Education (DoE, 2003) as it encourages mutual respect and appreciation of the viewpoint of others.

According to Turner (2001:252), teachers should support learners' learning by identifying clearly defined tasks which have purpose and relevance to them. Relevance according to Turner may arise because of personal interest. Motivation can be intrinsic or extrinsic. The following can be regarded as advantages of active learning:

- Learners co-operate with other learners.
- Group work is often used.
- Curriculum development involves the learner.
- Teachers use a greater variety of teaching methods.
- The learner 'owns' the ideas and the product.
- The learner contributes ideas to the development of the work.
- The learners are active in their own learning.
- The responsibility for the learning is shifted to the learner.
- Self discipline is needed by the learner.
- Process skills become important learning goals.

- Resource-based learning methods are used frequently.
- The teacher is a guide, not a provider.

This list draws attention to a number of features of quality teaching and learning. It also emphasises the importance of critical thinking skills embedded in a constructive approach to teaching and learning, for promoting quality teaching and learning in the FET phase. The way learners learn, the role of the teacher and what the learners learn (knowledge, process, skills and attitudes) impact on quality teaching and learning.

2.3.1.4 The personal importance of learning to FET phase learners

In order for FET learners to be successful in the learning, the learning must have personal importance. Marzano (2001a) explains it this way: "What an individual considers to be important is probably a function of the extent to which it meets one or two conditions: it is perceived as instrumental and satisfying a basic need or it is perceived as instrumental in the attainment of a personal goal".

Tileston (2005:4) states that anyone who has ever been in a classroom in which the emotional climate was one of tension or fear should know how learners feel about learning is so important. Jensen (1997) states that: "The brain stem is the part of the brain that directs behaviour under negative stress; and is the most responsive to any threat. When threat is perceived, excessive control is released into the body causing higher-order thinking to take a backseat to automatic junctions that may help one to survive." Goleman (1995) states that when a learner is under stress, s/he cannot remember, learn or make decisions clearly because "stress makes us stupid."

Some examples of threat in the FET classroom according to Jensen (1998) include anything that embarrasses a learner, unrealistic deadlines, a learner's inability to speak a language, inappropriate learning styles and an uncomfortable classroom culture.

To avoid stress and embarrassment of learners, there must be adequate time for the learning to take place and learners should be given regular feedback

(Tileston 2005:3-4). This means that learners should be given enough time to process information. It is also important for the teacher to give regular feedback on the achievements of the learners especially in the FET phase and to motivate them to improve on their shortcomings in the learning experience. Hattie and Timperley (2007:81) states that feedback is information provided by the teacher about aspects of the learners' performance or understanding. Such information generally aims to correct, clarify, make suggestions or encourage learners. According to Hattie and Timperley (2007), effective feedback must answer three major questions asked by a teacher or a learner: 'Where am I going?', 'How well am I doing?', and 'Where to next?' Providing clear feedback on the learning goals set by the teacher may also result in learners setting their own 'reasonable goals' in tracking their performance in relation to the attainment of these learning goals so that adjustments in effort, direction and even strategy can be made as needed (Locke & Latham 1990 in Hattie and Timperley, 2007).

2.3.2 Teaching styles and strategies

Leask (2001: 268) describes **teaching style** as the way in which a learning experience is conducted. It is built from the behaviour of the teacher and the strategy chosen to ensure that the planned learning takes place and that the lesson outcomes are achieved. The author further describes **teacher behaviour** as the demeanour of the teacher and the way the teacher relates to learners; for example, a teacher may choose to be distant, to be friendlier or to convey enthusiasm for the subject. The teachers therefore indicate their expectations to learners through their behaviour when teaching in a class. Teachers also adopt particular forms of behaviour to foster certain types of learning. For example, when teaching critical thinking skills to learners, a FET teacher has to be a facilitator of learning where the teacher's role is both to help individuals to contribute fully and to ensure that the group functions effectively. It is essential that the teacher conveys enthusiasm when attempting to develop the critical thinking skills of FET learners, as required by the FET curriculum.

Teaching strategy, according to Leask (2001:269) means the choice and range of teaching methods used for a lesson for example, a teaching strategy for a drama lesson might include the methods of individual enquiry (learner research), discussion and learner demonstration. When critical thinking skills are taught to learners in the FET phase it will be appropriate to start with a didactic method, setting out what is to be done in the lesson and then to move on to a facilitator/learner-centred method, as learners do the work then return to a more formal method at the end of the lesson to make sure that the intended learning has taken place.

2.3.3 Teaching strategies that address different learning styles

According to Sousa (1997) schools of the past relied heavily on lectures as the primary teaching method. He goes further explaining that many teachers assume that learners learn auditorily, yet brain research has shown that most do not learn that way. This also applies to learners in the FET phase. Only 20% of learners learn auditorily while the other 80% learn either visually or kinesthetically.

2.3.3.1 Auditory learners

According to Jensen (1998) auditory learners are those who remember best the information that they hear and discuss. These learners make up about 20% of the classroom. They like lectures, adapt well to it, and tend to be successful in traditional schools. However, in supporting the constructivist approach to teaching and learning, Jensen goes further to state that for auditory learners however, in order for the information to have personal meaning, it must be discussed with others or talked through by the learner: just hearing and taking notes is not enough. He adds that although these learners learn best by hearing, even they grow weary in a straight lecture format. Sousa (1995) and others' work shows that all of us tend to drop out mentally after 15-20 minutes of lecture. It will therefore be necessary to allow for discussion as well as application when teaching critical thinking skills to FET learners. When teaching auditory learners, Tileston (2005:19) states that differentiation does not mean that teachers must teach the same lesson in

several ways, but rather that they must use a variety of strategies. It also means that for learners who do not "get it" the first time, a different approach – one more compatible to that learner – should be employed the second time. Jensen (1997) states that slow learners will not "get it" until they are taught in the modality most comfortable for them. It is therefore important that teachers accommodate the different modalities of FET learners in their teaching of critical thinking skills.

2.3.3.2 Visual learners

According to Tileston (2005:20) the second type of learning modality is visual. Visual learners are those who need a mental model that they can see. One of the most effective tools for visual learners is the non-linguistic organizer, so called because it relies on structure rather than a lot of words to convey meaning. These organizers help learners understand and remember difficult concepts such as sequencing, comparing, contrasting and classifying. While these are good teaching strategies for any learner, they are very important tools for visual learners.

According to the researcher such organisers are essential for the teaching of critical thinking skills to all FET learners as it will help the learner to:

- connect or relate new information to prior knowledge by taking information that they know and placing it in a concrete model, allowing learners to be able to transfer abstract thoughts to concrete ideas more easily;
- use information in understanding the opinions of others;
- organise and analyse information;
- assess learning and demonstrate creativity;
- depict relationships between facts and concepts: generate and organise ideas for writing: relate new information to prior knowledge;
- store and retrieve information;
- assess learner thinking and learning; and
- depict relationships between facts and concepts.

2.3.3.3 Kinesthetic learners

Tileston (2005:24) describes the third group of learners as kinesthetic learners and explains that such learners learn best through movement and touching. For these learners in the FET phase teachers should provide opportunities to go outside, to go on field trips, or to role play. When teaching critical thinking skills through the constructivist approach, teachers could provide opportunities to move around in the classroom or to change groups.

In conclusion it can be argued that when critical thinking skills are taught to learners in the FET phase, teachers should consider the different learning styles of learners. When teachers use different teaching styles and strategies, it will become easier for learners to understand and master critical thinking skills and to integrate it into learning as well as everyday real-life experiences.

According to the literature that has been studied (*cf.* 2.3.1) the quality of teaching and learning is reflected in a positive school climate and a sound classroom environment. This is possible when the correct learning styles, strategies and approaches are implemented so that all learners can participate fully in the learning process. Teaching styles and teacher behaviour impact on the choice of teaching strategies which should address the different learning styles needed for quality education. It is vital that teachers determine how learners learn in order to adapt accordingly so that quality education can be realised in the FET phase.

In the next section critical thinking and critical thinking skills will be discussed.

2.4 CRITICAL THINKING DEFINED

Ennis (1991:6) describes critical thinking as 'reasonable reflective thinking that is focused on deciding what to believe or do. He further states that critical thinking is by definition "...an important part of the process of problem solving". Lipman (1988:39) states that 'critical thinking is skillful, responsible thinking that facilitates good judgement because it (a) relies upon criteria, (b) is self-correcting, and (c) is sensitive to context'. Splitter (1999:93) expresses the view that " ...in learning to think critically, we learn to structure our experiences

in ways which are (i) reflective and self-corrective, (ii) governed by reasons and criteria and (iii) directed towards the making of judgements about the world”.

Through the Critical Outcomes of the South African FET curriculum as stated in the National Curriculum Statement (General) (2003:2), the South African government requires that learners become critical thinkers.

Learners in the FET phase can become critical thinkers through using critical thinking skills. These skills are prominent in the Critical Outcomes of the curriculum as learners have to identify and solve problems and make decisions using critical and creative thinking, collect, analyse, organise and critically evaluate information and use science and technology effectively and critically showing responsibility towards the environment and the health of others.

According to Beyer (1985) critical thinking can be defined as the assessing of the authenticity, accuracy and/or worth of knowledge, claims and arguments. The author further states that critical thinking represents a willingness (a predisposition) and the ability to scrutinize and evaluate thinking in order to determine truth in order to construct logical arguments to justify claims or assertions.

Paul (1985:37) defines critical thinking as “...learning how to ask and answer questions of analysis, synthesis, and evaluation...” as well as “...the ability to reach sound conclusions based on observations and information” (1998: 50).

Elder (2007) describes critical thinking as self-guided, self-disciplined thinking which attempts to reason at the highest level of quality in a fair-minded way. She further states that learners who think critically use the intellectual tools that critical thinking offers such as concepts and principles, in order to be able to analyse, assess and improve critical thinking.

Jeevanatham (2005) explains critical thinking as high-level thinking with the following features: analysis, evaluation, reasonableness and reflection, which

operate in terms of criteria; is self-corrective and sensitive to context; and allows one to make judgements about the world.

Based on the above mentioned authors' views regarding critical thinking, it is clear that there are distinctive levels through which critical thinking develops. Bloom's (1956) taxonomy for the cognitive domain consists of six levels:

Level 1: Knowledge – this level involves recall of specific facts or other information. The focus on knowledge outcomes is thus the act of remembering, or the recall of verbal information. The transfer of knowledge and the remembering thereof is one of the key aspects in the FET phase as learners are examined on factual application at the end of each learning experience.

Level 2: Comprehension – this level is the first level of understanding. At this level a statement must not only be recalled, but its meaning must be understood. This level implies that learners read, analyse and interpret information and respond accordingly to questions asked based on the information presented.

Level 3: Application – this refers to the ability to use information in new situations. Information used in the application phase would include general ideas, rules, methods, principles or theories that must be remembered and applied. Learners in the FET phase can therefore apply knowledge in everyday situations such as analysing, judging credibility of information or evaluate such information in order to make decisions.

Level 4: Analysis – this refers to the ability to break down a whole into its component parts. In this way the elements embedded in a whole are identified and the relations among the elements are recognised. This is a valuable critical thinking skill especially in the FET phase as this skill requires of learners to carefully take information apart and make sense of such information.

Level 5: Synthesis – this level refers to the ability to put elements together to form a new whole, for instance, writing an essay. In the FET phase, this skill could be regarded as very important throughout the curriculum as the learning

comprise of different elements related to one another to form one unit, e.g. the water cycle in Geography or the digestive system in Life Sciences.

Level 6: Evaluation – at this level judgements are made, based on certain criteria. This critical thinking skill demands reflection on achievements and shortcomings as well as how and where to improve to determine the quality of teaching and learning in the FET phase.

It is evident that critical thinking skills are embedded in Bloom's levels of thinking. After the analysis of the views of different authors as well as the expectations as set out in the South African FET curriculum, the researcher is of the opinion that if the following critical thinking skills are addressed in the FET curriculum, quality teaching and learning will be promoted:

2.4.1 Problem-solving

According to Tileston (2005:55) problem-solving involves sequential skills for solving complex problems and incorporates the ability to see and analyse underlying causes. The author further states that these skills are necessary because learners must have higher-order thinking skills in order to perform quality learning processes. O'Tuel and Bullard (1993) argue that "...process is as important as product (outcome) in education". It should be noted that the words 'as important' not 'more important than' are used. This according to O'Tuel and Bullard, is because learners need an information base upon which to build. Meyers (1986) criticizes the general problem-solving approach to critical thinking as one that assumes "...that critical thinking begins with a problem and ends with a solution," thus leaving no space for "...aesthetic elements of critical thinking – the pleasure of playing around with ideas". Playing around with ideas, according to Meyers (1986) has serious implications, and the author believes that any subject should introduce learners to the problems of a discipline, the things for example that science doesn't know as a way of motivating critical thinking. According to Brookfield (1987), Meyers (1986) and Shor (1987), the classroom is a highly interactive place where the teacher must not only guide the learning experience but also challenge learners without intimidating them.

According to Killen (1996), an important reason for having learners solve problems is to help them gain insights that will enable them to understand the subject better and to look at it from different perspectives. Van der Horst and McDonald (1997:139) state that problem-solving is an ideal strategy to use in conjunction with co-operative learning. The researcher agrees with this statement and wants to argue that teachers in the FET phase should adopt a constructivist approach to learning. In order to achieve the benefits of co-operative learning as a teaching strategy teachers need to encourage their learners to discuss with one another what they understand the problem to be, how they feel about the problem and the various steps involved in their attempt to solve the problem.

Van der Horst and McDonald (1997:139) outline the advantages of using problem-solving as a teaching strategy as follows:

- It provides a challenge to the learners in order to develop their critical thinking skills.
- It engages learners actively in learning to construct knowledge.
- It helps learners to develop new knowledge and to feel responsible for their own learning therefore it regulates learning.
- It teaches learners that their solutions to problems should be explainable and justifiable.
- It shows learners that subjects can be viewed as ways of thinking and doing things that make sense.
- It develops critical thinking in analysing the problem and seeking for best possible solutions.
- It keeps learners' natural curiosity alive by constantly seeking for 'new' knowledge in the form of problem solving and decision making.
- It gives learners the opportunity to apply their knowledge in order to see that the knowledge has real-world applications.
- It helps learners to integrate the knowledge they gain from the different subjects.

- It engages them in learning long after the formal lesson is over.
- The familiar learner question: "Why do we need to know this?" is often replaced with "What do we need to know?" or "What do we need to find out?"

The skill of problem-solving can be a positive contributor to quality teaching and learning in the FET phase as learners can be actively engaged in seeking explainable solutions to problems, it would allow them a sense of responsibility for their own learning and create opportunities for learners to construct their own knowledge.

2.4.2 Induction and deduction

Tileston (2005:53) and Ennis (1991) describe *induction* as the ability to take what is known and then to predict what is not known. Induction is an important higher-level skill that assists learners to make informed decisions about their world throughout life. This means that learners' existing knowledge about a fact or phenomenon is used to introduce them to 'new' knowledge.

Deduction on the other hand as explained by Tileston (2005:53), differs from induction in that induction is based on possible conclusions drawn by observation and facts whereas deduction is based on rules and principles that lead to absolutes. Induction deals with the unknown, deduction deals with what is known based on the principles involved. According to Klenk (1983) deductive arguments can be categorical, conditional or linear.

Both inductive and deductive reasoning are critical thinking skills that FET learners have to apply to ensure that new information is transferred successfully by teachers and perceived without prejudice by learners.

2.4.3 Judging an argument's validity

According to Jeevanantham (2005), the faculty that critical thinking does provide one with, is the ability to make judgments, a critical thinking skill. Ecker (1997:22) states that a good teacher gets "...his/her learners to make judgments about their own work and about the visual arts and artifacts to be

found in their culture". Mellville Jones (1999) goes further to state that critical thinking is based on the assumption that it is a technical tool which provides learners with the ability both to analyse the arguments of others and to construct their own sound arguments. Learners in the FET phase must be able to judge in order to be able to interpret meaning, to understand logical structure and to detect fallacious arguments. The rationale underlying this critical thinking skill is that it fulfils three functions:

- It introduces the learners to an awareness of the structure of the argument.
- It provides the learner with techniques for analysing and evaluating the argument.
- It encourages an attitude of mind which enables the learner to consider spoken and written discourse from a logical point of view.

Scriven (1976) describes the following as the steps (that according to the researcher all teachers in the FET phase should teach their learners) in the procedure by which one executes the critical thinking skill of judging an argument's validity:

- Clarify the meaning of all major words.
- Identify the stated and implied conclusions.
- Identify the structure of the argument.
- Identify any unstated assumptions.
- Identify and critique any premises and inferences.
- Seek other relevant arguments.
- Evaluate the quality of the argument in the light of the results of the preceding steps.

If learners are taught to judge the credibility of arguments in the FET phase, it would instil in them a sense of identifying validity, structure and assumptions made with regard to the argument. Critical analysis of arguments is important in the delivery of quality teaching and learning as learners would always strive

to interpret meaning as well as to analyse and evaluate the credibility of such an argument.

2.4.4 Analysis and evaluation

The procedure to analyse and evaluate, according to Beyer (1992), involves two distinct types of thinking: firstly analysis of some data - taking it apart to find specific clues relevant to a particular analytical purpose (as when one searches a document to find any clues of bias) and to identify whatever pattern may exist among the clues found. Secondly, some evaluation is required – some judgement about the extent to which the clues and patterns of clues, if found, match significantly the type of critical thinking feature sought. He goes further to state that engaging in these two kinds of thinking (analysis and evaluation) is what critical thinking is all about.

Teaching FET learners the critical skills of analysis and evaluation should enhance their ability to break down information into smaller, manageable pieces and make sense of it. This would assist them in understanding information better and therefore make learning easier for them. Evaluation on the other hand, should provide an opportunity to assess how well the information was analysed and interpreted and where improvement is necessary. When learners are able to do so, quality teaching and learning can be promoted.

2.4.4.1 Analysis

Facione (1990:14; 2009: 5-7, 10) defines analysis as the ability to "...identify the intended and actual inferential relationships among statements, questions, concepts, descriptions or other forms of representations intended to express beliefs, judgements, experiences, reasons, information, or opinions". It also includes other critical thinking skills, namely:

- proficiency in examining ideas with a view to determine the role of various expressions in the context of arguments, reasoning or persuasion;
- the defining of terms;
- the comparison or contrasting of ideas, concepts and statements;

- the identification of issues or problems and the determination of their component parts; as well as
- the identification of all conceptual relationships of these parts to each other as well as the whole (Facione, 1990:14; 2009: 5-7,10).

Given a text such as, "exempli gratia", a passage from a newspaper editorial, the learner must be able to determine whether the author thereof intended it as an expression of reasons for or against a given claim or opinion; or, in the case of a commercial announcement, to identify claims that are being advanced along with reasons presented in their support (Facione 1990:15). The researcher believes that learners in the FET phase who have mastered the skill of analysis will be able to detect arguments by determining whether or not a set of statements, descriptions, questions etc. is intended to express a reason in support of, or contesting some claim, opinion or point of view.

2.4.4.2 Evaluation

Facione (1990:15, 2010) defines evaluation as the capacity to assess the credibility of a statement or representation that accounts for, or describes a perception, an experience, a situation, judgement, belief or opinion, as well as the assessment of the logical strength of inferential relationships among statements, descriptions, questions, etc.

According to Facione (1990:16), other critical thinking skills involved in evaluation are:

- the ability to assess claims by recognizing those factors that are relevant to the assessment of the degree of credibility that can be ascribed to, a source of information or opinion; to assess the contextual relevance of questions, information, principles, rules, procedural directions, etc; to assess the acceptability and level of confidence to place in the probability of truth of an opinion, belief, judgment, etc. He further explains that evaluation is the ability: "...to recognise the factors which make a person a credible witness regarding a given event or a credible authority on a given topic; to determine if a given principle of conduct is applicable to deciding

what to do in a given situation; to determine if a given claim is likely to be true or false based on what one knows or can reasonably find out"; and

- the ability to assess arguments by judging whether the conclusion of an argument is justified in the light of the acceptability of the premises as true (deductively certain), or very probably true (inductively justified); to anticipate or raise questions or objections, and to assess whether these point to weaknesses in the argument in question; to decide whether an argument relies on doubtful or false assumptions or presuppositions; to discern between reasonable and fallacious inferences; to judge the strength of the premises, assumptions, consequences and the like of an argument in order to establish its acceptability.

According to Bloom's levels of thinking (*cf.*2.4) learners in the FET phase should be able to analyse and evaluate. It is therefore important that teachers create learning experiences through which learners can master these critical thinking skills.

2.4.5 Decision making

Decisions about belief or action, according to Ennis (1991), generally occur in the context of some problem and should have some basis. This basis can consist of observations, statements made by some source, and/or some previously-accepted propositions. On this basis an inference to a decision is made. Such inferences according to Ennis (1991) can be of three basic kinds: inductive, deductive and value judging. He goes further to state that in order to make and check the merit of the decision, the inferrer should exercise a group of critical thinking dispositions, should be clear about what is going on and be able to 'suppose' other points of view. A defence of the decision should always be available and must often be presented to others, orally or in writing.

Zechmeister and Johnson (1992:217) propose a systematic model for managing the information needed to make good decisions. They acknowledge that their model incorporates all the best features that research into critical thinking skills has developed over the years:

- Acknowledge that a problem exists.
- Refine and elaborate the definition of the problem.
- Clarify the goals.
- Generate alternative solutions.
- Narrow the alternatives.
- Evaluate the alternatives.
- Decide on an alternative.
- Give the chosen alternative a chance.

Learners in the FET phase should be able to make sound decisions. The researcher wants to advocate that teachers should use the model of Zechmeister and Johnson to teach their learners the skill of decision making.

According to Pienaar (1998) and Zechmeister and Johnson (1992) decisions are often complex because there are no clear-cut right or wrong answers and because decisions involve the processing of a great deal of information. He further states that the ability to make good decisions is often regarded as the hallmark of critical thinking.

According to Zechmeister and Johnson (1992:314), the difference between decision making and problem solving is that when the task requires the learner to select the best alternative from among several possibilities then it is decision making, as opposed to when the learner has to generate alternatives, which is problem solving.

If learners in the FET phase are taught to make good decisions they will become responsible citizens who will always make decisions about the importance of learning and would therefore contribute to the quality of teaching and learning.

2.4.6 Making inferences

According to Facione (1990:16, 2010) inference relates to the skill of identifying and securing those elements that are needed to draw reasonable

conclusions. He explains further that it involves proficiency in informing conjectures and hypothesis, considering the relevant information and to extracting the consequences emanating from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions and other forms or representation.

Facione (1990:17) refers to the following critical thinking skills that need to be used when making inferences:

- The capability to query evidence by recognising premises which require support, as well as to judge information relevant to ascertaining the acceptability, plausibility, merits, etc. of a question, issue, theory, hypothesis, statement or alternative. In the development of an argument in support of an opinion, the ability to judge what background information will be useful is of great importance. In this regard it can be argued that FET learners should be taught how to formulate alternatives to resolve a problem, to postulate a series of suppositions regarding a question, to devise different plans to achieve some objective; to draw out presuppositions and predict possible consequences of decisions, positions, policies, theories and beliefs (Facione, 1990:17).
- The expertise to draw conclusions by applying appropriate modes of inference in determining what position, opinion or point of view one should support on a given matter or issue; to establish (on sound logical grounds) the inferential relationships, consequences and presuppositions implied in statements, descriptions, questions and opinions applying all types of reasoning (analogical, arithmetical, dialectical, scientific); to ascertain which of a number of conclusions is most strongly warranted or supported by the evidence at hand, or which should be discarded or deemed less plausible. FET learners should be able to "...carry out experiments and apply appropriate statistical inference techniques in order to confirm or disconfirm an empirical hypothesis; given a controversial issue (the ability) to examine informed opinions, consider various opposing views and the reasons advanced for them, gather relevant information and formulate

one's own considered opinion regarding that issue; (the ability) to deduce a theory by using prescribed rules of inference" (Facione, 1990:17).

The researcher believes that the integration of the critical thinking skill of making inferences into the teaching and learning experience in the FET phase, should allow learners to reason in order to draw reasonable conclusions. The ability to reason would extend their thinking abilities as they would be requested to seek for relevant information pertaining certain subjects to justify their conclusions.

2.4.7 Ability to judge credibility

Ennis (1996:62) states that good judgment is required in deciding whether each of the criteria in a given situation is satisfied, and for deciding on the relative importance of each criterion. Powers and Enright (1987:669) support this view by stating that the evaluation of the credibility or reliability of a source is of critical importance in educational research. As FET learners should be able to judge credibility, it can be argued that they must also master the following critical thinking skills that according to Pienaar (1998) form the basis of judging credibility:

- Background and knowledge: the person should have background training and appropriate experience for making the statement.
- Lack of apparent conflict of interest: the person should have no apparent conflict of interest.
- Agreement with others equally qualified: the person should be in agreement with other people who also satisfy the criteria of judging credibility well or better.
- Reputation: the person should have a good reputation for being right and telling the truth in general, and especially in the area of concern.

In order to promote quality teaching and learning in the FET phase, the critical thinking skill of judging credibility would allow learners to decide on the credibility of information. This means that teachers should be confident and

well knowledgeable on the subject matter taught in order to contribute to the quality of teaching and learning.

It appears from the above discussion regarding critical thinking skills that the link between critical thinking skills and the delivery of quality teaching and learning is very strong. According to Faccione (2010), critical thinkers in the FET phase, can be characterised as learners who are inquisitive with regard to a wide range of issues, alert to opportunities to use critical thinking skills, have trust in the process of reasoned inquiry, shows self-confidence in their own abilities to reason, are open-minded regarding divergent world views, understand the opinion of other people, are honest in facing their own biases, prejudices, stereotypes or egocentric tendencies and can make or alter judgements. The importance of critical thinking skills also comes to the fore in the South African FET curriculum where the critical outcomes require learners to identify and solve problems, make decisions by using critical and creative thought, collect, analyse, organise and critically evaluate information.

When skills such as problem-solving, decision making, making inferences, inductive and deductive reasoning, analysis and evaluation, judging credibility and judging the validity of an argument are integrated with teaching and learning strategies, it should result in quality teaching and learning in the FET phase.

The role of critical thinking skills in quality teaching and learning (with reference to the South African FET Curriculum) will now be discussed.

2.5 THE ROLE OF CRITICAL THINKING SKILLS IN QUALITY TEACHING AND LEARNING

According to Balin, Case, Coombs and Daniels (1999), most curriculum materials at secondary school level require that learners analyse, synthesise and evaluate as well as create new 'products' such as original oral and written pieces and artistic work. Learners are therefore expected to apply appropriate critical thinking skills to accomplish these tasks. According to Balin *et al.* (1999) "...the goal of education should be to teach learners to do

tasks well by increasing their capacity and inclination to make judgments by reference to criteria and standards that distinguish thoughtful evaluations from sloppy ones; and fruitful classification schemes from trivial ones". It is for this reason that critical thinking should be characterised not in terms of procedures to be carried out, but in terms of the standards a performance must fulfill to be regarded effective.

The above views are supported by the aims of the South African FET Curriculum that will now be discussed.

2.5.1 The South African FET Curriculum

According to the Department of Education DoE: (2003), the adoption of the Constitution of the Republic of South Africa (Act 108 of 1996) provided a basis for curriculum transformation and development in South Africa. The preamble states that the aims of the Constitution are to:

- heal the divisions of the past and establish a society based on democratic values, social justice and fundamental human rights;
- improve the quality of life of all citizens and free the potential of each person;
- lay the foundations for a democratic and open society in which government is based on the will of the people and every citizen is equally protected by law; and
- build a united and democratic South Africa able to take its rightful place as a sovereign state in the family of nations.

The Constitution further states that "...everyone has the right to further education which the State, through reasonable measures, must make progressively available and accessible".

The South African FET curriculum (DoE:2003), lays the foundation for the achievement of these goals by stipulating Learning Outcomes and Assessment Standards and by spelling out the key principles and values that underpin the curriculum.

The South African FET curriculum is based on the following principles (DoE 2003):

- Social transformation
- Constructivist education

Constructivist education forms the foundation of the curriculum in South Africa. It strives to enable all learners to reach their maximum learning potential by setting the learning outcomes to be achieved by the end of the education process. Constructivist education encourages a learner-centered and activity-based approach to education. The South African FET curriculum builds its Learning outcomes for Grade 10-12 on the Critical and Developmental outcomes that were inspired by the Constitution and developed through a democratic process (DoE: 2003).

- High knowledge and high skills
- Integration and applied competence
- Progression
- Articulation and portability
- Human rights, inclusivity, environmental and social justice
- Valuing indigenous knowledge systems
- Credibility, quality and efficiency

The kind of learner, that is envisaged is therefore one who will be imbued with the values and act in the interests of a society based on respect for democracy, equality, human dignity and social justice as promoted in the Constitution. The learner emerging from the Further Education and Training phase must demonstrate achievement of the Critical and Developmental Outcomes. Subjects in the Fundamental Learning Component of the FET curriculum collectively promote the achievement of the Critical and Developmental Outcomes, while specific subjects in the Core and Elective

Components of the curriculum individually promote the achievement of particular Critical and Developmental Outcomes (DoE: 2003).

In addition to the above, learners emerging from the Further Education and Training phase must:

- have access to, and succeed in, lifelong education and training of good quality;
- demonstrate an ability to think logically and analytically, as well as holistically and laterally; and
- be able to transfer skills from familiar to unfamiliar situations.

The kind of teacher that is envisaged for quality teaching and learning is a contributor to the transformation of education in South Africa. The South African FET curriculum visualises teachers who are qualified, competent, dedicated and caring. They should be able to fulfill the various roles outlined in the Norms and Standards for Teachers. These include being mediators of learning, interpreters and designers of Learning Programmes and materials, administrators and managers, scholars, researchers and lifelong learners, community members, citizens and pastors, assessors and subject specialists (DoE: 2003). The South African FET curriculum outlines competencies expected from the learning experience at the end of the FET phase. Learners should exit the phase with the ability to think logically and analytically. Higher-order thinking such as problem-solving, decision making, collecting and analysing of information that must be implemented in everyday complex situations is addressed in the South African FET curriculum. The achievement of the above expectations is dependent on teachers who understand the constructivist approach to teaching and learning and who understand and value the role of critical thinking skills in promoting quality teaching and learning in the FET phase of secondary schools in South Africa.

2.6 CONCLUSION

This chapter outlined the importance of critical thinking skills in promoting quality teaching and learning in the South African Further Education and

Training (FET) phase in secondary schools. To teach critical thinking skills to learners requires of a teacher to become a strategic decision-maker and to constantly adopt different teaching styles and strategies to accommodate different types of learning. Since learners perceive and process learning differently, careful lesson planning (integrating critical thinking skills) should be adhered to at all times. Learners should be motivated to participate actively in the learning process and to take ownership of their learning to become skillful critical thinkers.

In the next chapter the research design and methodology will be discussed.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The specific aim of this study was highlighted in chapter one, namely to investigate the role of critical thinking skills in promoting quality teaching and learning in the Further Education and Training (FET) phase in secondary schools in South Africa. The literature study in chapters one and two formed the framework for the empirical investigation.

A brief discussion of the research design follows.

3.2 RESEARCH DESIGN

This research was conducted by means of a literature review and an empirical investigation.

3.2.1 Empirical research

The research design was quantitative in nature. According to Neuman (1994:30) a quantitative research method is a data collection technique that determines numbers. Leedy and Ormrod (2005:94) state that quantitative research is generally used to answer questions about relationships among measured variables with the purpose of explaining, predicting and controlling phenomena. This approach is sometimes called the traditional, experimental or positivist approach. Babbie (1998:360) describes quantitative research as the matter used in social research, which provides the researcher with numerical data. Gay and Airasian (2003) and Johnson (2001) support this by stating that some scholars use the term survey research to refer to any form of descriptive, quantitative research. Leedy and Ormrod (2005:183) substantiate that survey research involves acquiring information about their characteristics, opinions, attitudes or previous experiences by asking them questions and tabulating their answers. As the questionnaire includes a number of open-ended questions, the research design also had a qualitative

element. Leedy and Ormrod (2005:95) refer to qualitative researchers as researchers that seek a better understanding of complex situations. They elaborate further that qualitative researchers tend to select a few participants who can best shed light on the phenomenon under investigation. They construct interpretative narratives from their data in a more personal style and often use the participants' own language and perspectives Leedy and Ormrod (2005:96-97).

3.2.2 Literature review

The literature review includes relevant resources such as libraries and the internet. EBSCO and ERIC - searches of primary and secondary resources were conducted to gather relevant information with the aid of the following key words: critical thinking, quality, quality teaching and learning, problem solving, high-level thinking, inductive and deductive reasoning, creative thinking, experimental enquiry.

The literature review focussed on the FET phase of secondary schools in South Africa, quality teaching and learning, critical thinking, critical thinking skills and the role of quality teaching and learning in the FET curriculum.

3.2.3 The research instrument

For the purpose of this study, a structured questionnaire was used as the research instrument. Best and Kahn (1993:230) describe a questionnaire as a self-report instrument to gather data about variables of interest to the researcher. A questionnaire consists of a number of questions or items that a respondent reads and answers. According to Leedy and Ormrod (2005:183), a survey research involves acquiring information about one or more groups of people about their opinions, attitudes or previous experiences by asking them questions and tabling their answers. In this study, a survey has been conducted with teachers from secondary schools teaching in the FET phase in the Johannesburg south district.

According to Fraenkel and Wallen (1990:336) a questionnaire has both advantages and disadvantages which will be outlined next.

3.2.3.1 Advantages of a questionnaire

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.

3.2.3.2 Disadvantages of a questionnaire

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.

For the purposes of this research the advantages of a questionnaire outweigh the disadvantages. The researcher has therefore decided to use a structured questionnaire as the research instrument.

3.2.3.3 The design of the questionnaire

Leedy and Ormrod (2005:190) state that questionnaires should be carefully developed to encourage respondents to be co-operative and yield responses

that the researcher can use and interpret. The questionnaire that was used for this study was designed by taking the following guidelines of the authors into consideration:

- The questionnaire should be as brief as possible and solicit only that information essential to the research project.
- Use simple, clear, unambiguous language: write questions that communicate exactly what you want to know.
- Check for unwarranted assumptions made in your questions, therefore consider very simple questions.
- Check for consistency.
- Determine in advance how the responses will be coded.
- Keep the respondent's task simple, the instrument should be as simple to read and respond to as possible.
- Provide clear instructions by communicating exactly how you want people to respond.
- Give a rationale for any items of which the purpose may be unclear.
- Make the questionnaire attractive and professional looking.
- Conduct a pilot test by giving the questionnaire to at least half a dozen friends or colleagues to see whether they have difficulty in understanding any items, and
- Scrutinise the almost-final product carefully to make sure it addresses your needs to make sure that every question is essential for you to address the research problem.

The questionnaire that was used in this research consists of three sections.

- Section A consists of thirteen (13) Lickert scale items. These questions focused on quality teaching and learning.

- Section B consists of eight (8) Lickert scale items. These questions were structured to elicit responses regarding the respondents' understanding of critical thinking skills.
- A total of fourteen (14) items are used in Section C. This section is constructed in such a way as to elicit responses that would give an indication on the role of critical thinking skills in quality teaching and learning. In this section 4 open-ended questions were asked to invite respondents to elaborate more on their choice or opinion. The last question was an ordinal question in which the respondents have to rate statements between a scale of 1 – 6 according to their view of importance.

According to Creswell (2009:231) the reliability of a questionnaire refers to whether scores to items in an instrument are internally consistent and whether there was consistency in test administration and scoring. In order to ensure the reliability of the questionnaire that was used in this research, a Cronbach alpha coefficient, which calculates the internal consistency of the different sections in the questionnaire, was done (Pietersen & Maree, 2007:216). The items correlated with each other as a Chronbach alpha coefficient percentage of 7.4 were confirmed. It can thus be assumed that the questionnaire has had a high internal consistency.

Validity

Validity, according to Leedy and Ormrod (2005:92) is the extent to which a measurement instrument is representative of the content area (domain) being measured. In quantitative research it refers to whether meaningful and useful inferences from scores on particular instruments can be drawn (Creswell, 2009:233). In order to ensure that the questionnaire is adequate for measuring what it is supposed to measure, it was assessed by the researcher's supervisor, experts in the field as well as by the Statistical Consultation Services of the North-West University, Vaal Triangle campus.

The researcher also ensured that the questionnaire complied with the following validity criteria identified by Leedy and Ormrod (2005:97-99) and McMillan and Schumacher (2006:134-142):

- Statistical validity
- Internal validity
- External validity
- Face validity
- Content validity

3.2.3.4 Pilot study

The preliminary questionnaire was pre-tested with a selected number of respondents from the target population in respect of its qualities of measurement, appropriateness and clarity. Leedy and Ormrod (2005:110) see a pilot study as an excellent way to determine the feasibility of the study. For the pre-test a sample of individuals from a population similar to that of the research subjects were selected. In order to identify errors, the questionnaire was distributed to a sample of teachers ($n = 10$) teaching in Grades 10 – 12, from the Johannesburg Central district that did not form part of the population. The respondents were encouraged to answer the questions as honest as possible to allow the researcher to make amendments where needed. Amendments, as suggested by the respondents, were made. This contributed to the validity of the questionnaire.

3.2.3.5 Population and sample

According to Leedy and Ormrod (2005:204), a research population refers to a larger group of people with respect to their characteristics of interest. McMillan and Schumacher (2006:119) describe a population as a group of elements or cases whether individuals, objects or events, that conform to specific criteria and to which the intention is to generalise the results of the research.

The population for this research comprised of all Further Education and Training (FET) teachers in Secondary schools in Gauteng ($N=910$).

Oliver (1997:38) describes a sample as a smaller research group, which is considered to be typical of the target population as a whole. According to

Vermeulen (1998:52) the size of the sample has to be reasonably small for reasons of time and cost, while being large enough to ensure adequate representation. Vermeulen (1998:520) states that the following should determine the sample size:

- The larger the population, the smaller the percentage of that population the sample needs to be.
- The size of the sample will be influenced by the relative homogeneity and heterogeneity of the population.

With the abovementioned taken into consideration, a sample of 10% of the population of FET teachers in the Johannesburg South district ($n=91$) was randomly selected. Six secondary schools were randomly selected and fifteen FET teachers per school formed part of the research sample.

3.2.3.6 Distribution of the questionnaire

The questionnaire was distributed taking into account an appropriate time for respondents to respond. A first good impression should be made in presenting a well presented, uncluttered and neatly typed questionnaire that would speak of relaxation and motivate people to respond. A covering letter accompanied the questionnaire. According to Leedy and Ormrod (2005:193) a carefully and thoughtfully composed covering letter should stress the concern of the recipient rather than any selfish interest of the sender. According to Best and Kahn (1993:241) the covering letter should be aimed at orientating and reassuring respondents of confidentiality and anonymity. These suggestions were adhered to in this research.

3.2.3.7 Response rate

A total of 91 questionnaires were distributed to 6 secondary schools in the Johannesburg South District. Of this number, 42 (46.2%) were returned. According to De Vos, Strydom, Fouché and Delport (2005:195), a minimum of 30 respondents are enough to perform basic statistical procedures. The response rate of this research therefore provides a quantity of data large

enough to draw valid and reliable conclusions and generalisations about the perceptions of teachers in the Johannesburg South district of the Gauteng Province.

3.3 ETHICAL ASPECTS

Leedy and Ormrod (2005:101) state that within certain disciplines such as the social sciences, education, criminology, medicine and similar areas of study, the use of human subjects in research is quite common. They further state that whenever human beings are the focus of the investigation, the researcher must look closely at the ethical implications of what s/he is proposing to do. They suggest that research respondents should be informed about the whole process, know what is going to happen and how the process is going to affect them.

Permission to do the research was obtained from the Gauteng Department of Education and also from the principals and teachers of the selected secondary schools. The data obtained, as well as the names of the respondents who took part in the research, were treated as confidential. The objectives and aims of the research were explained before they entered into this research:

- **No harm to respondents**

No activities in which respondents took part exposed them to physical, emotional or psychological harm. Respondents were not subjected to unusual stress, embarrassment or loss of self-esteem (Leedy & Ormrod, 2005:101).

- **Informed consent**

Respondents have been clearly informed of the aim and process of the research. At no stage was any respondent forced to partake in the study and was informed of their right to withdraw from the research should they wish to. Consent was obtained from the schools and teachers who agreed to participate in the study.

- **The right to privacy of respondents**

Every respondent's right to privacy was respected and under no circumstances did the research report reveal the response or behaviour of a particular respondent. The nature and quality of respondents' performance were kept strictly confidential. Code numbers were used to assure the anonymity of respondents (Leedy & Ormrod, 2005:102).

- **Deception of respondents**

Respondents were fully informed about the aim and process of the study. According to Corey, Corey and Callanan (1993: 230), deception refers to the withholding of information or offering incorrect information in order to ensure participation when respondents would otherwise refuse to.

- **Release of findings**

The researcher presented the findings in a complete and honest fashion, without misinterpreting what has been done or intentionally misleading others about the nature of her findings. Under no circumstances did the researcher fabricate data to support a particular conclusion (Leedy & Ormrod, 2005:102). The researcher has taken great care in avoiding duplication, which could be regarded as plagiarism.

3.4 CONCLUSION

The research design and method in which the research was conducted was described and the procedure followed in collecting relevant information from respondents has been outlined. The next chapter will present the analysis and interpretation of the data collected.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

This chapter presents a report of the empirical investigation conducted to determine the role of critical thinking skills in promoting quality teaching and learning in the curriculum of the FET phase in South Africa.

A total of 91 questionnaires were distributed among 6 secondary schools in the Johannesburg South district of the Gauteng Department of Education. Of this number, 42 (46.2%) returned the questionnaire.

According to De Vos, Strydom, Fouché and Delpont (2005:195), a minimum of 30 respondents are enough to perform basic statistical procedures. The response rate therefore implies that valuable deductions can be made from the data.

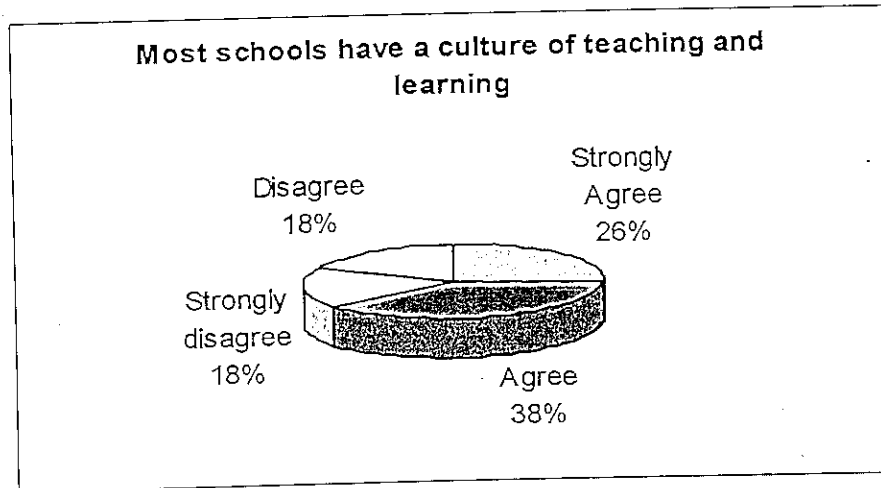
In the discussion that follows, the researcher will present an analysis and interpretation of the data obtained from the empirical research. The discussion will focus on the sections as in the questionnaire, namely quality teaching and learning (Section A), critical thinking skills (Section B) and the role of critical thinking skills in quality teaching and learning (Section C).

The researcher first analysed and processed the data manually. Numbers according to responses were then transferred onto an excel spreadsheet, processed and tabled in graphs. Each question will individually be analysed and interpreted by the researcher according to the statistics presented.

4.2 SECTION A: QUALITY TEACHING AND LEARNING

4.2.1 Question 1: Most of the schools have a culture of teaching and learning

Figure.4.1: Most of the schools have a culture of teaching and learning



In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

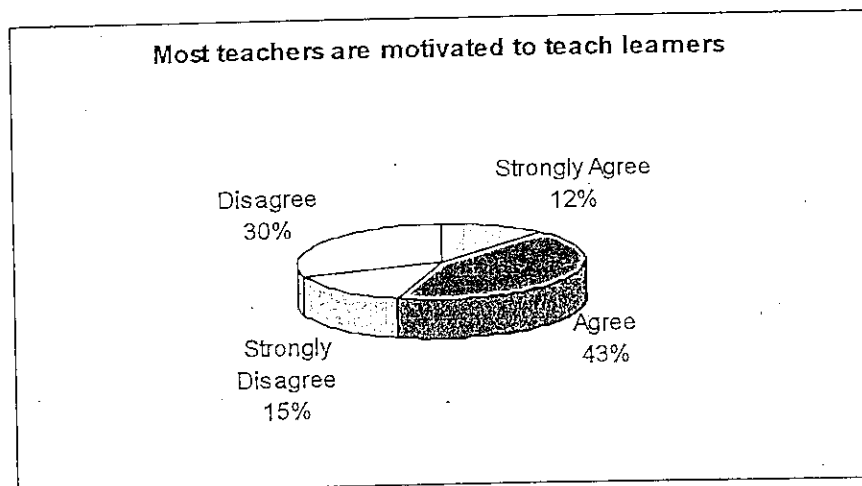
The majority (62%) of the respondents indicated that they agree that most schools have a culture of teaching and learning, while 36% of respondents disagreed.

From the responses it can be derived that teachers think that in most schools a culture of teaching and learning is evident. It is still disturbing to note that 36% of the respondents disagree with the statement. The lack of a sound culture of teaching and learning in many South African schools might be due to limited resources, the poor state of some school buildings, overcrowded classrooms, poor teacher-learner-parent relationships and a lack of management skills (*cf.* 2.3). School buildings need to be inviting to learners, classrooms clean and adequately resourced, both learners and teachers should maintain commitment towards teaching and learning, parents should

be involved in the teaching and learning of their children and principals should be adequately trained to manage the school as an organisation.

4.2.2 Question 2: Most of the teachers are motivated to teach learners

Figure 4.2: Most of the teachers are motivated to teach learners



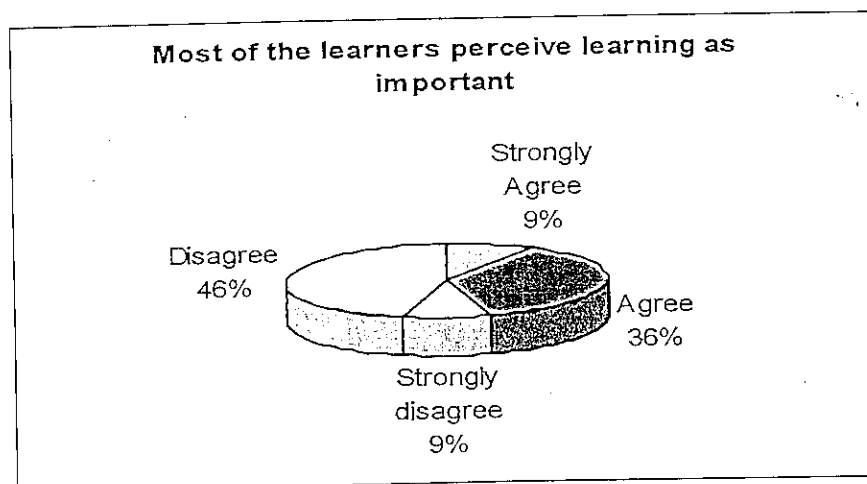
A disappointing 12% of respondents indicated that they strongly agree that most teachers are motivated to teach learners, while 43% agree with the statement. In contrast to the respondents who agree, 15% of the respondents strongly disagree and 30% disagree that teachers are motivated to teach learners. It is disturbing to note that 45% of the respondents indicated that teachers are not motivated to teach learners. Teachers who are not motivated to teach learners are in no position to encourage these learners to engage actively in the learning experience or take ownership of their own learning in order to achieve excellent results. An assumption can be made that teaching and learning will not be as effective as it could have been if teachers were motivated.

If teachers are not motivated learners will most probably become bored and will show no interest in the subject matter which can result in poor academic results. School principals need to take the lead in encouraging and motivating teachers to deliver their best, irrespective of un-conducive teaching and learning circumstances. In this regard, the researcher is of the opinion that a

performance reward system for teachers needs to be put in place by the principal and SGB of the school and ensure sustainability thereof.

4.2.3 Question 3: Most of the learners perceive learning as important

Figure 4.3: Most of the learners perceive learning as important



In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

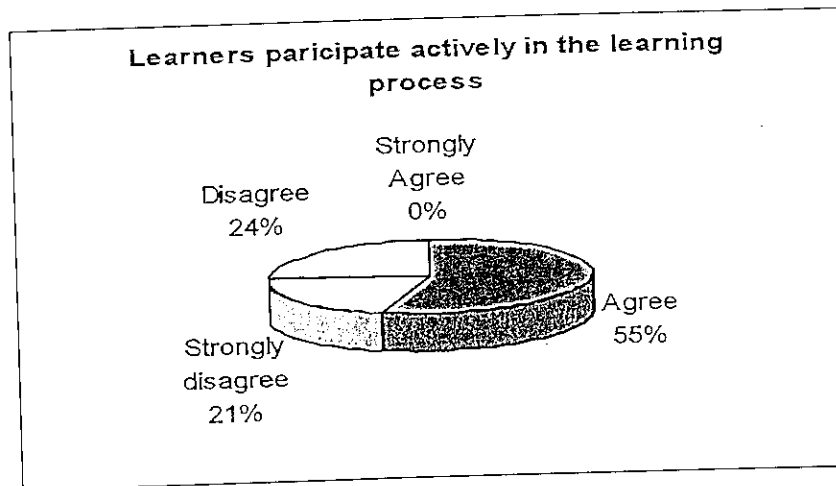
A total of 45% of the respondents said that they agree that learners perceive learning as important. The remaining 55% indicated that they disagree that learners do not see learning as important.

The fact that 55% of the teachers indicated that learners do not perceive learning as important, might mean that these learners do not perceive learning as satisfying a basic need, nor do they perceive learning as instrumental in the attainment of a personal goal (cf. 2.3.1.4).

According to the researcher, the importance of learning should be continuously emphasised by both teachers and parents in order for learners to feel inspired and comfortable to set their own goals and to reach their goals at the end of every learning experience.

4.2.4 Question 4: Learners participate actively in the learning process

Figure 4.4: Learners participate actively in the learning process



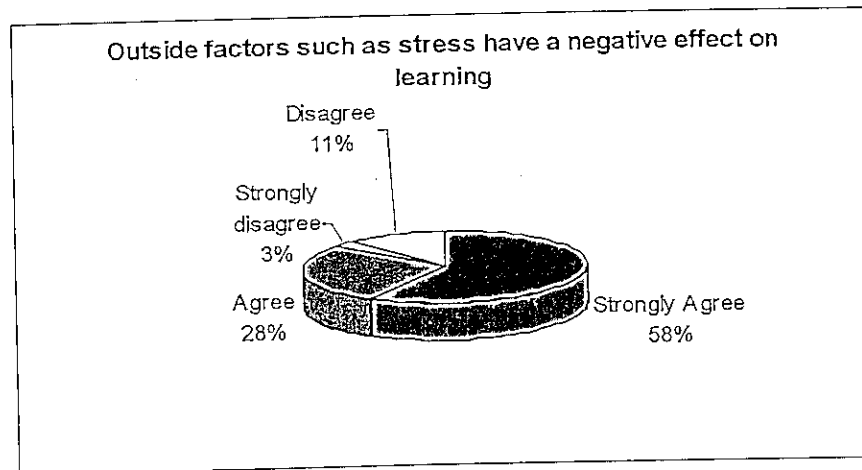
In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

55% of the respondents agree while the remaining 45% disagree with this statement.

Teachers should prepare lessons that are interesting, focused and that can engage learners in the learning experience. The lesson should reflect critical thinking skills such as learning how to ask and answer questions of analysis, synthesis and evaluation as well as the ability of learners to reach sound conclusions based on observations and information (cf. 2.4). Learners should feel valued and appreciated for their input and should not listen to the teacher only. It is of concern that 45% of the respondents indicated that learners do not participate actively in the learning process as non-active participation by learners is consequential to non-involvement of learners in purposeful interaction with learning material (cf. 2.3.1.4).

4.2.5 Question 5: Outside factors such as stress have a negative effect on learning

Figure 4.5: Outside factors such as stress have a negative effect on learning



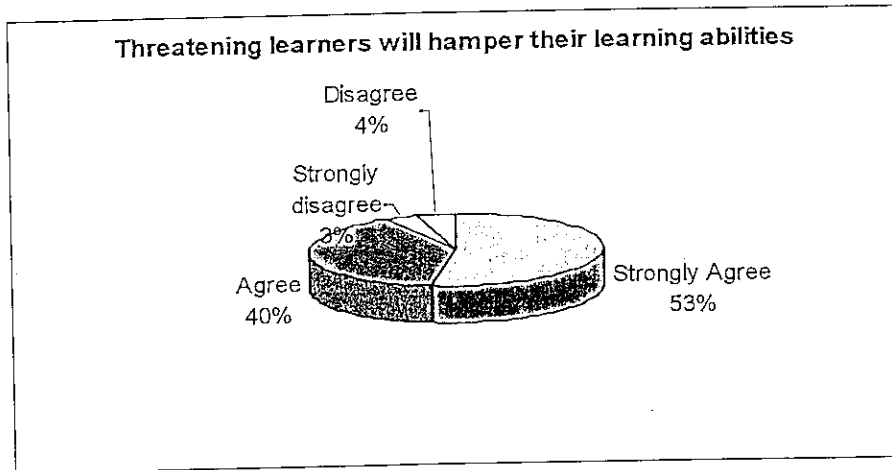
The majority of respondents (58%) stated that they strongly agree with this statement, 28% indicated that they agree, while the remaining 14% disagree and strongly disagree with the above statement.

Judged by the responses, it seems that teachers are aware that learners cannot remember, learn or make good decisions when they are under stress (*cf.* 2.3.1.4).

The small number of respondents who said that they disagree with the statement, might have experienced that learners who know the subject matter well and are motivated to reach their goals would not allow any outside factors to interfere in their journey to success.

4.2.6 Question 6: Threatening learners will hamper their learning abilities

Figure 4.6: Threatening learners will hamper their learning abilities



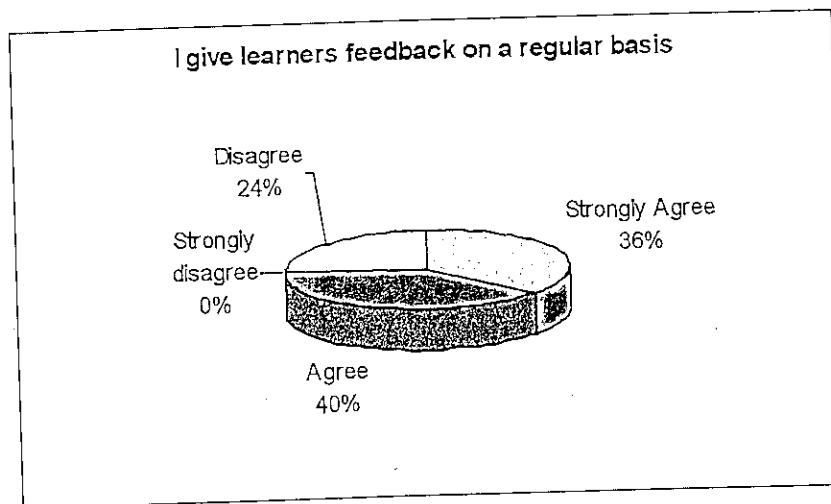
In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

An astonishing 93% of the respondents whole-heartedly agreed that when learners feel threatened, it hampers their learning abilities. The remaining 7% of the respondents indicated their disagreement with the statement.

The researcher is of the opinion that threat in any situation would lead to learners not being supported to deliver according to their full potential. When teachers humiliate learners, they will withdraw from the learning experience and even from school. Teachers should instead create a comfortable classroom environment where learners can feel safe and eager to learn.

4.2.7 Question 7: I give learners written feedback on a regular basis

Figure 4.7: I give learners written feedback on a regular basis



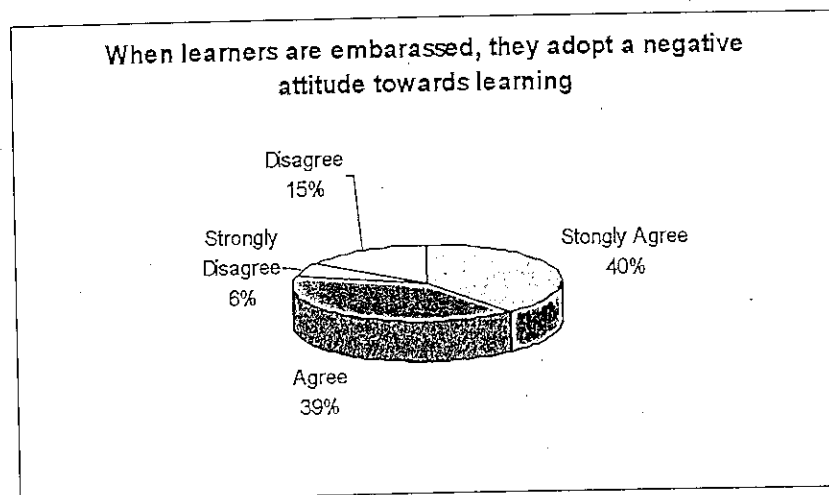
In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

A great number of respondents (76%) indicated that they agree they give learners written feedback on a regular basis, as opposed to 24% of the respondents who indicated that they do give feedback on a regular basis.

The data indicates that most teachers value the achievements of learners and want to correct shortcomings in the learners' learning experience (*cf.* 2.3.1.4). The feedback given to learners should be given as soon as possible after the completion of a task. By doing so, the teacher corrects, clarifies and makes suggestions or encourages learners (*cf.* 2.3.1.4). Regular feedback to learners could also help teachers in terms of their achievements and could indicate where to improve to make the subject matter understandable and achievable for all learners.

4.2.8 Question 8: When learners are embarrassed, they adopt a negative attitude towards learning

Figure 4.8: When learners are embarrassed, they adopt a negative attitude towards learning

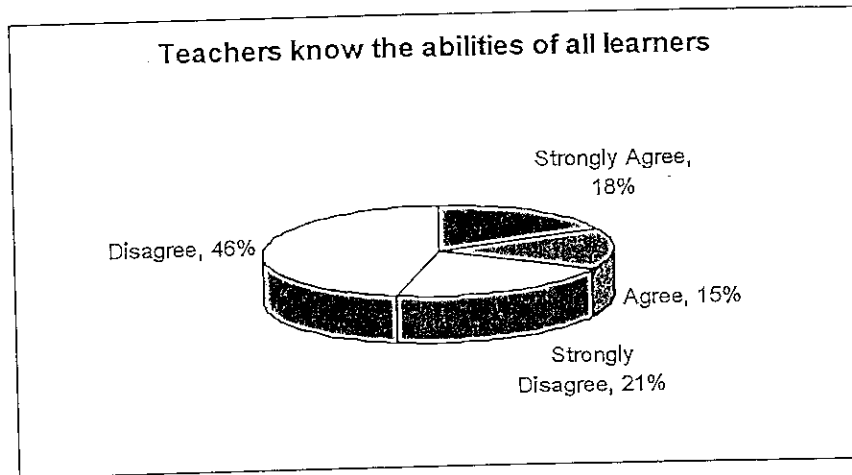


The majority (79%) of respondents strongly agree and agree with the above statement. A small number (6%) of the respondents said they strongly disagree and 15% of the respondents indicated that they disagree that learners adopt a negative attitude when they are embarrassed.

Although the majority of teachers seems to be aware of the fact that embarrassment has a negative impact on the learners' learning, the data indicates that it still happens in some classrooms. This is supported by literature that indicates that teachers often set unrealistic deadlines, embarrass learners because of their inability to speak a language fluently and therefore create an uncomfortable classroom culture (cf. 2.3.1.4). The researcher wants to suggest that teachers should be more flexible and realistic in their approaches towards learners, taking into account the immediate circumstances of learners and adapt accordingly in order to create trust and respect between teachers and learners.

4.2.9 Question 9: Teachers know the abilities of all learners

Figure 4.9: Teachers know the abilities of all learners



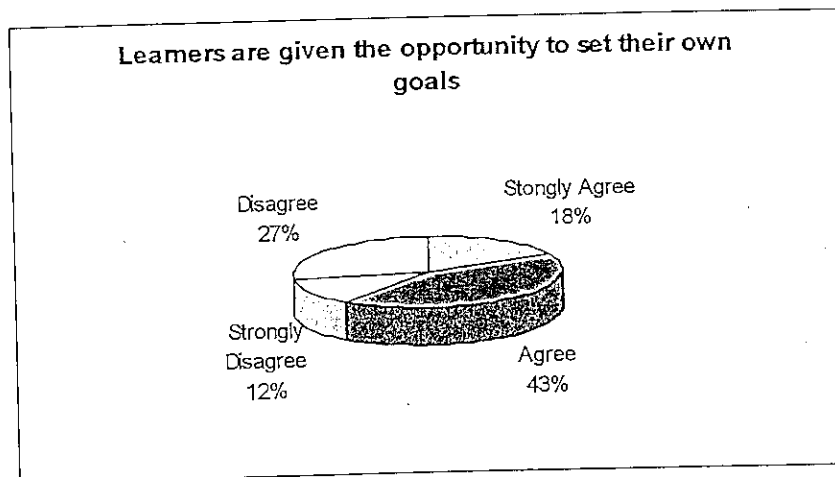
In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

A reasonable number (33%) of the respondents said that they strongly agree and agree that teachers know the abilities of all learners while 67% indicated that they strongly disagree and disagree with the statement.

Teachers are constantly confronted with overcrowded classrooms (*cf.* 2.3). It is difficult for teachers to know the abilities of all learners, unless the same teacher teaches the learners throughout the FET phase. The researcher suggests that in order for a teacher to know the abilities of all learners, s/he should teach, in a specific subject, the same learners throughout the FET phase. The teacher will then have an opportunity to become aware of the abilities and needs of the learners. In this manner different teaching strategies could be used to cater for the diverse needs of learners.

4.2.10 Question 10: Learners are given the opportunity to set their own goals

Figure 4.10: Learners are given the opportunity to set their own goals



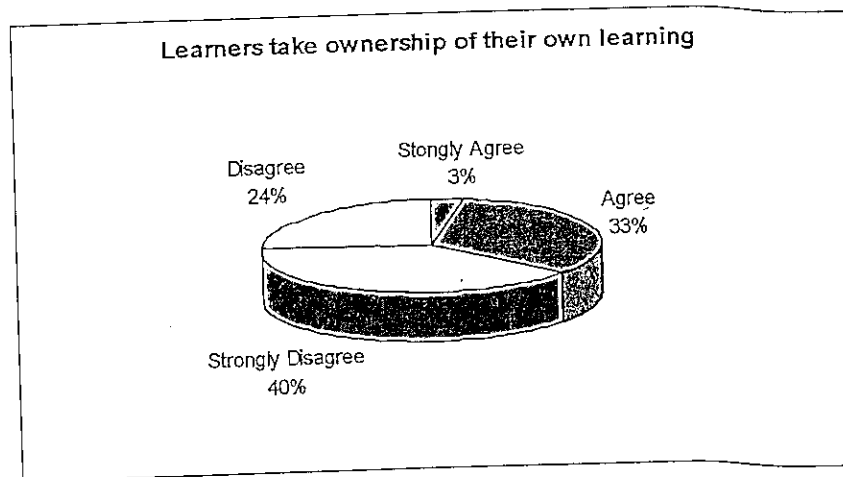
The greater number (43%) of the respondents indicated that they agree that learners are given the opportunity to set their own goals, and 18% strongly support the statement. 27% of the respondents, however, said that they disagree, followed by 12% who strongly disagree.

The data indicates that most teachers give learners the opportunity to set their own goals (*cf.* 2.3.1.4). Learners, who get the opportunity to set their own goals, will most probable take responsibility for achieving those goals.

Of the 61% teachers who indicated that learners get the opportunity to set their own goals, 50% indicated that learners do not perceive learning as important (*cf.* figure 4.3). The researcher is of the opinion that learners who do not appreciate the importance of learning will not value the opportunity afforded to them to set their own goals. These learners would still have a negative attitude towards learning. However, teachers should not give up on them but should constantly motivate and praise every little effort they attempt instead of ignoring them and having them feel rejected and unworthy.

4.2.11 Question 11: Learners take ownership of their own learning

Figure 4.11: Learners take ownership of their own learning



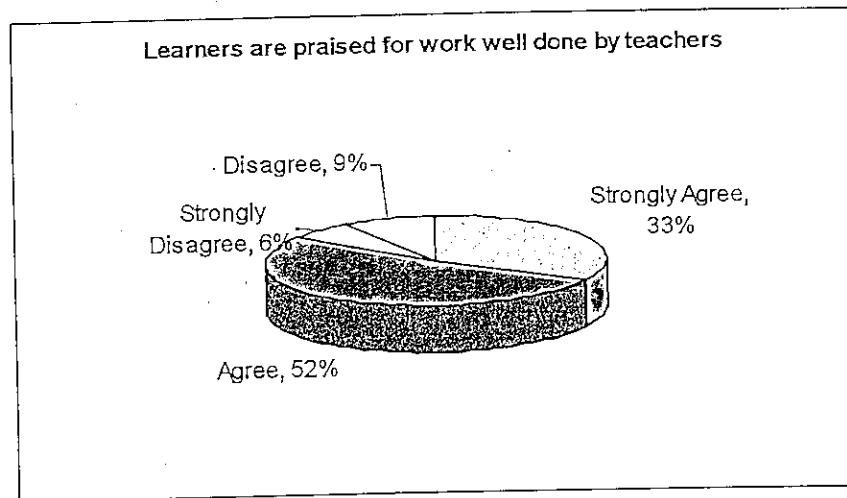
In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

Only 36% of the respondents indicated that learners take ownership of their own learning. A disappointing 64% of the respondents disagreed with the statement.

It is disturbing to note that only 36% of teachers indicated that learners take ownership of their own learning. These learners could probably be those learners who have the ability to work independently and are driven by their own commitment and desire to succeed. Learners who do not take ownership of their own learning (as indicated by 63% of the teachers) need constant encouragement from teachers and parents to take responsibility for their own learning in order to succeed.

4.2.12 Question 12: Learners are praised for work well done by teachers

Figure 4.12: Learners are praised for work well done by teachers



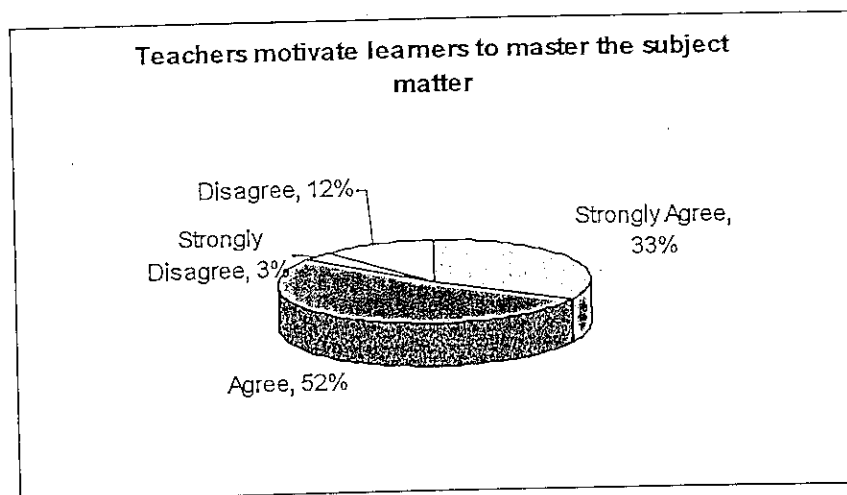
In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

The majority of respondents (85%) indicated that that teachers praise learners for work well done. Only 15% of respondents indicated they think teachers do not praise learners when they have done well in tasks assigned to them.

It is positive to note that most teachers know that praise is a method of positive reinforcement for learners; therefore, they encourage learners to better their performance and to adopt a positive attitude towards learning.

4.2.13 Question 13: Teachers motivate learners to master the subject matter

Figure 4.13: Teachers motivate learners to master the subject matter



In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

An overwhelming 85% of respondents whole-heartedly agree that teachers motivate learners to master the subject matter. This is an indication that teachers know that mastering the subject matter in the FET phase of secondary schools, is vital. According to the researcher, the quality of achievements by learners determines the rating of the competency of the teachers in their various subjects and therefore teachers motivate learners to master the subject matter.

The remaining 16% of the respondents who said that they disagree with the statement indicates that some teachers have no interest in the learners' performance.

In conclusion, the researcher is of the opinion that some schools still struggle to create an environment conducive to teaching and learning. This could be the result of poor management and leadership at some schools and also the lack of commitment by some teachers. (cf. 2.3)

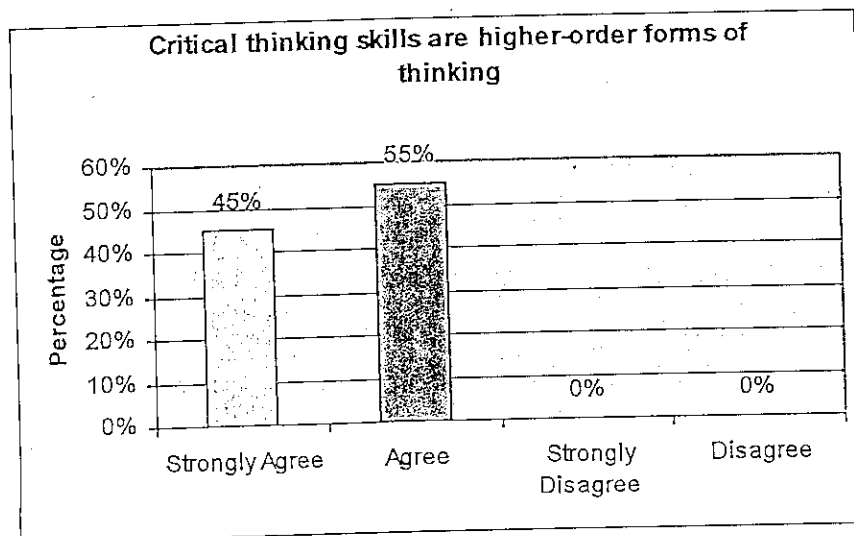
The fact that some teachers are not motivated leads to learners not experiencing learning as important and as a result, learners do not feel encouraged enough to participate actively in the learning experiences. Factors such as stress, threat and embarrassment of learners lower their self-esteem and self-confidence and contribute to teaching and learning of poor quality (cf. 2.3.1.4).

The fact that most teachers do not know the abilities and needs of all learners could be the reason for a great number of learners not taking ownership of their own learning. This might create a situation in which learning and achievement become less important for the learner. However, a positive conclusion that can be made is that most teachers praise learners for work well done and constantly motivate them to master the subject matter. This positive approach by teachers is an indication of caring behaviour and a commitment to steer learners to new achievable heights.

4.3 SECTION B: CRITICAL THINKING SKILLS

4.3.1 Question 14: Critical thinking skills are higher-order forms of thinking

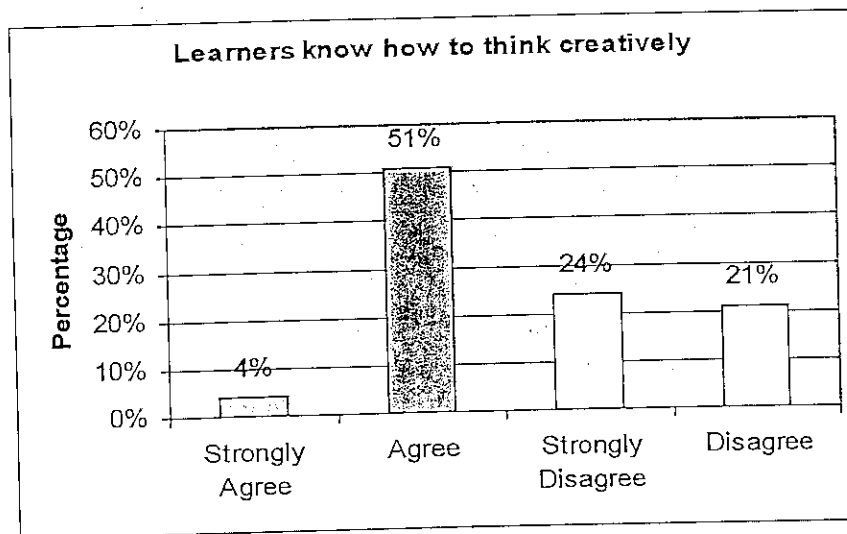
Figure 4.14: Critical thinking skills are higher-order forms of thinking



Unanimously all respondents indicated that critical thinking skills are higher-order forms of thinking (45% strongly agreed and 55% agreed with the statement). It can therefore be assumed that teachers know that high-level thinking involves skills such as analysis, evaluation, reasonableness and reflection, which operate in terms of criteria, are self-corrective and sensitive to context and allow learners to make judgements about their worlds (*cf.* 2.4).

4.3.2 Question 15: Learners know how to think creatively

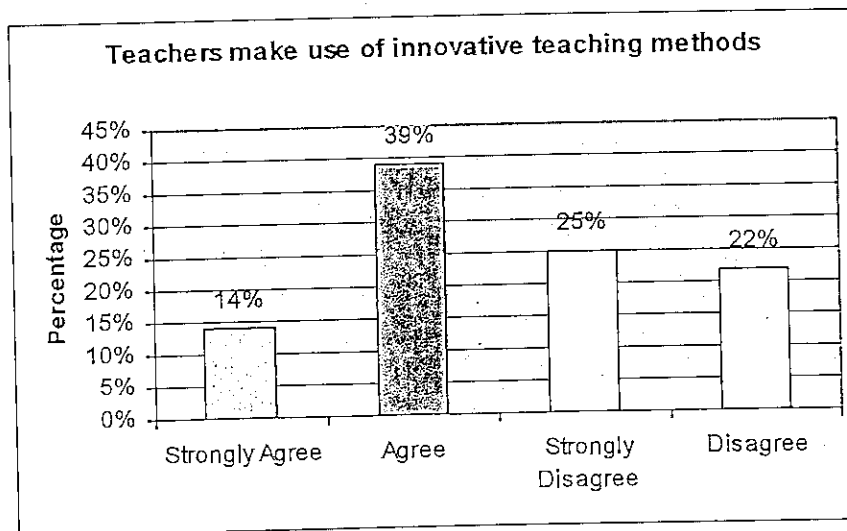
Figure 4.15: Learners know how to think creatively



A very small group (4%) of respondents said that they strongly agree with the statement and 51% of respondents agree that learners know how to think creatively. The remaining 45% of the respondents indicated that they strongly disagree and disagree respectively with the statement. It is of concern that 45% of teachers are of the opinion that learners in the FET phase cannot think creatively. According to the researcher, these teachers might not present learning material that is challenging enough to allow learners to think creatively. Learners are therefore not given the opportunity to express their own thoughts or are not stimulated enough to communicate their opinions through debate, discussion or constructive engagement with the learning material.

4.3.3 Question 16: Teachers make use of innovative teaching methods

Figure 4.16: Teachers make use of innovative teaching methods

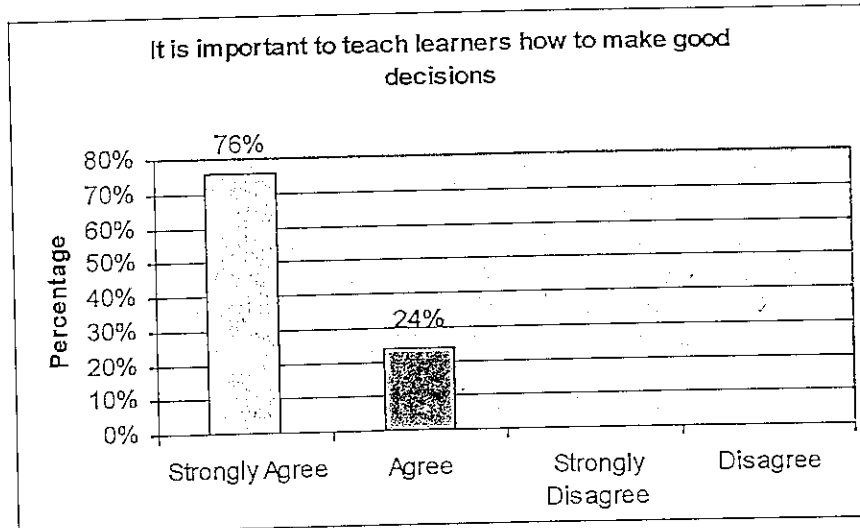


A mere 14% of the respondents indicated that they strongly agree with the statement and 39% said that they agree that teachers use innovative teaching methods. The advantage of using innovative teaching methods is that learners are engaged project based learning in the context of complex, real-world problems (*cf.* 2.5.2.1). Teachers who use innovative teaching methods should be commended for the effort that they put into teaching practice that aims at improving teaching and learning towards ensuring academic results of high standards.

The 25% of respondents who indicated that they strongly disagree, along with the 22% who disagree with the statement that teachers make use of innovative teaching methods, calls for intervention. Teachers need training in order to enable learners to benefit from innovative teaching methods and to broaden their critical thinking abilities.

4.3.4 Question 17: It is important to teach learners how to make good decisions

Figure 4.17: It is important to teach learners how to make good decisions

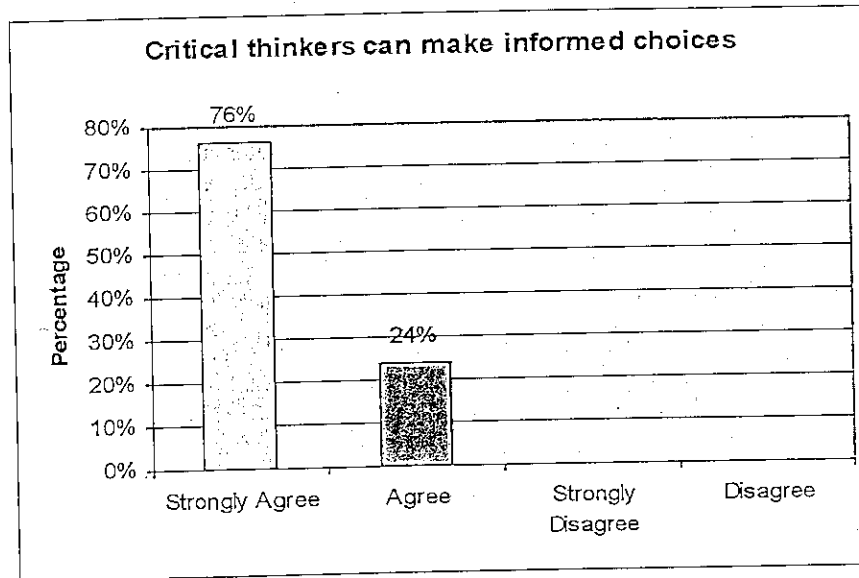


All the respondents (100%) said that they strongly agree or agree that it is important to teach learners how to make good decisions. This unanimous agreement is a clear indication that all teachers are aware of the complexity of decision making which involves the processing of a great deal of information. The ability to make good decisions is often regarded as the hallmark of a critical thinker (*cf.* 2.4.5).

The researcher is of the opinion that in order for learners to make good decisions, teachers need to adopt a systematic questioning technique that investigates learners' ability to make assumptions, communicate their viewpoints, determine consequences and find evidence that relate to the phenomenon. When learners know the sequential steps to be followed in order to make good decisions, it will soon become second nature when confronted with new problems.

4.3.5 Question 18: Critical thinkers can make informed choices

Figure 4.18: Critical thinkers can make informed choices

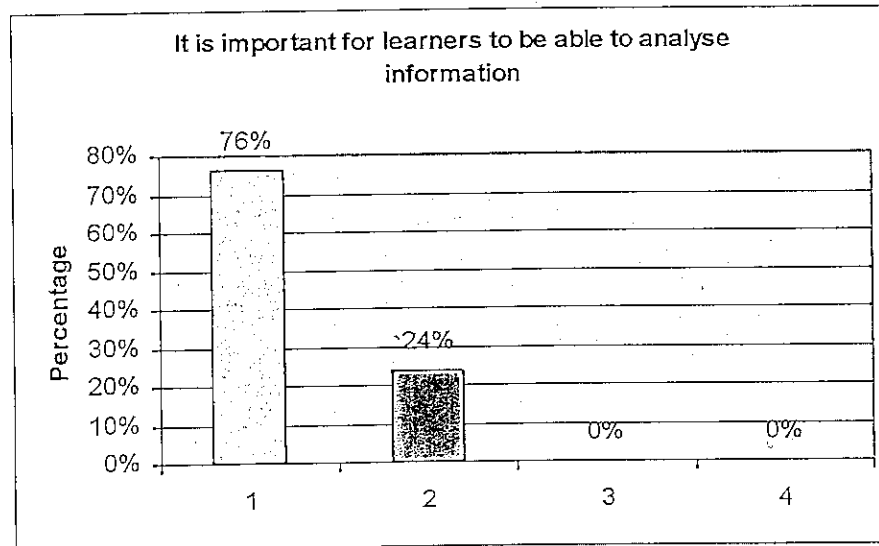


The majority of respondents (76%) said that they strongly agree and 24% indicated that they agree that learners who think critically can make informed choices. From the responses it can be assumed that teachers have knowledge of induction as a critical thinking skill that enables learners to use what is known and then to predict what is not known. Induction is an important higher-level thinking skill that assists learners to make informed choices about their world throughout life (*cf.* 2.4.2). This critical thinking skill is based on possible conclusions drawn by observation and facts and means that learners who can make informed choices do not presuppose but make choices according to factual evidence.

All teachers agreed that it is important to teach learners to make good decisions (*cf.* Figure 4.17). All teachers (100%) agree that critical thinkers can make informed choices. It seems that teachers are aware of the fact that when learners are taught the skill of decision-making, they will be able to make informed choices as well.

4.3.6 Question19: It is important for learners to be able to analyse information

Figure 4.19: It is important for learners to be able to analyse information

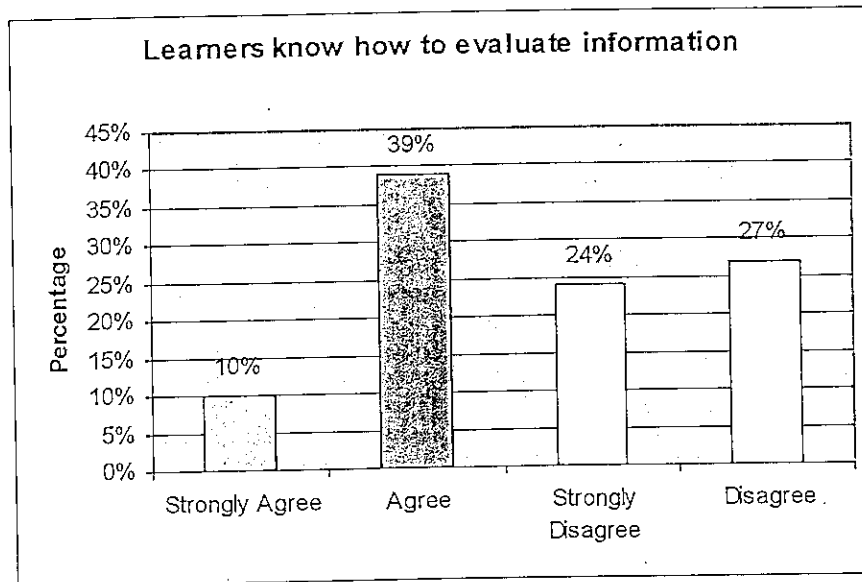


An overwhelming 76% of the respondents indicated that they strongly agree with the statement, while 24% said that they agree that learners should know how to analyse information. The data indicates that all teachers realise the importance of analysis of information which will guide learners to express beliefs, judgements, experiences, reasons, information and opinions (*cf.* 2.4.4.1) to enhance their critical thinking abilities.

The researcher is of the opinion that learners, who can analyse information, should be able to reason, make assumptions and draw reasonable conclusions. They would be equipped to distinguish between fact and opinion, judge good from bad and therefore will be in a position to make the best possible decisions. Critical analysis of information would also improve their ability to evaluate such information effectively and will lead to methodically sound decision making. Learners would demonstrate a clear understanding of what their options are and would be able to select the best option after weighing all the options.

4.3.7 Question 20: Learners know how to evaluate information

Figure 4.20: Learners know how to evaluate information



In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

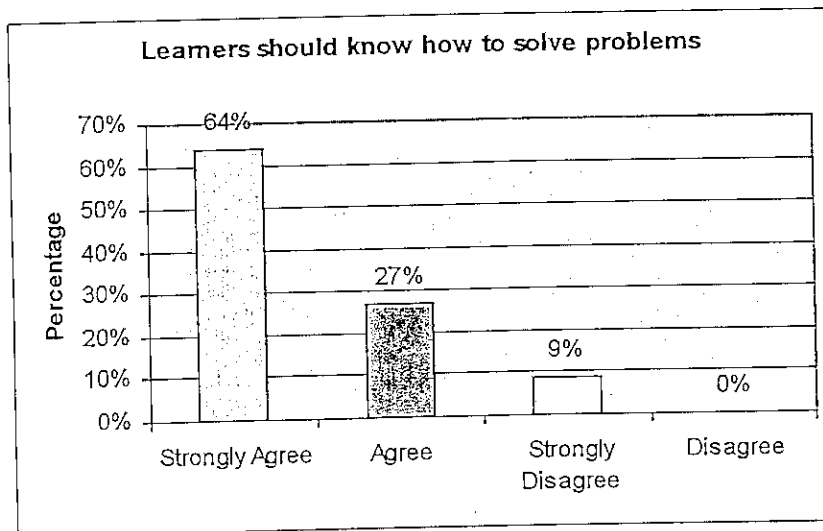
Forty-nine percent (49%) of the respondents agree and 51% disagree that learners know how to evaluate information. Learners who know how to evaluate information have the ability to do an assessment of the credibility of information; know how to judge arguments and know whether claims are true or false (cf. 2.4.4.2). This means that learners will be able to evaluate the consequences of their actions (learning) in order to determine whether such actions are acceptable or not. These learners have an advantage over learners who cannot reason and cannot draw reasonable conclusions.

Although teachers unanimously agreed that learners should be able to analyse information, the researcher is of the opinion that it is impossible for learners to be able to analyse information without being able to evaluate the credibility of such analysis. The data shows that less than 50% of learners know how to evaluate information. Learners who do not know how to evaluate information will not know how to judge credibility, and will not be able to distinguish fact from opinion, etc. It seems that teachers regard analysis of

information more important than the evaluation thereof. However, evaluation is a critical thinking skill that needs to be addressed effectively by all teachers.

4.3.8 Question 21: Learners should know how to solve problems

Figure 4.21: Learners should know how to solve problems



In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

A substantial number (91%) of the respondents agree that learners should know how to solve problems. This indicates that the majority of teachers acknowledge the impact of the learners' problem solving abilities on understanding the learning material. Knowing how to solve problems would enable learners to understand the subject better and to look at it from different perspectives (cf. 2.4.1). Learners with problem solving abilities are more organised and directed in their learning.

The small number (9%) of respondents who disagree with the statement indicates that these teachers think that learners need not know how to solve problems. This might be an indication that some teachers have not mastered the skill of problem solving themselves and can therefore not teach their learners how to do so.

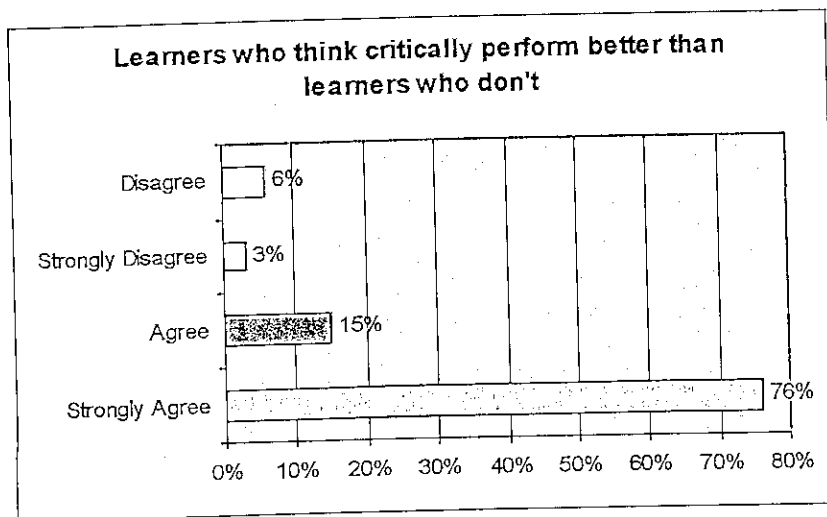
In conclusion, the data indicates that 50% of teachers do not make use of innovative teaching methods. As a result, many learners cannot think critically. The researcher is of the opinion that although all FET teachers agree that learners should know how to solve problems in order to make good decisions and informed choices, the approach to teaching these skills remains a challenge.

Most of the teachers agree that critical thinking skills are higher order forms of thinking and that learners who are able to think critically can make good decisions and informed choices. However, it appears that teachers understand the importance of critical thinking skills but that many teachers do not teach these skills to learners. This leads to a situation where learners make poor decisions (such as not seeing learning as important), poor choices (i.e. setting unrealistic goals) and are unable to solve problems effectively.

4.4 SECTION C: THE ROLE OF CRITICAL THINKING SKILLS IN QUALITY TEACHING AND LEARNING

4.4.1 Question 22: Learners who think critically perform better than learners who don't

Figure 4.22: Learners who think critically perform better than learners who don't

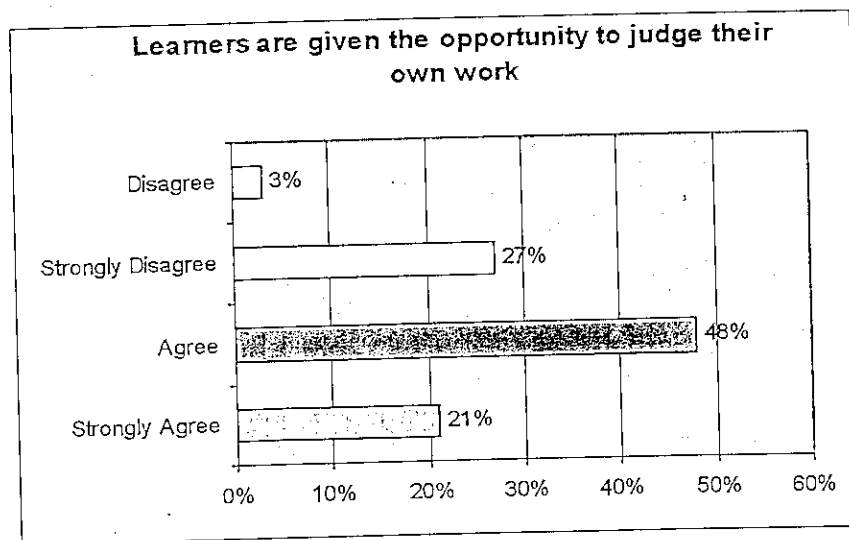


In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

An astounding 91% of the respondents stated that learners who think critically perform better. An assumption can be made that these teachers know that learners should be able to engage in higher level thinking skills such as problem solving, analysing, evaluating, decision-making, etc. A further assumption is that the 9% of respondents who indicated that they disagree with the statement might be of the opinion that learners do not have to think critically if they know the subject matter. The researcher is of the opinion that such teachers might still believe in parrot learning.

4.4.2 Question 23: Learners are given the opportunity to judge their own work/ performance

Figure 4.23: Learners are given the opportunity to judge their own work/ performance

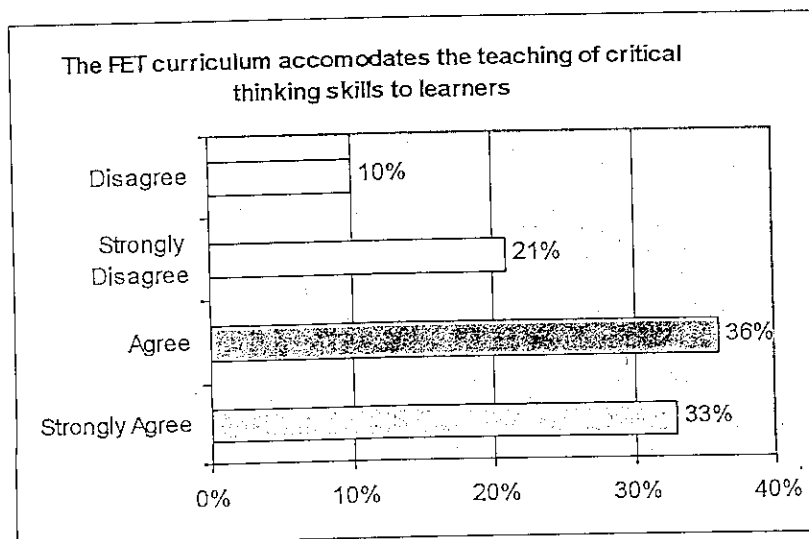


An average number (21%) of the respondents indicated that they strongly agree with the statement, while 48% agree with the statement. The other 27% of the respondents said that they strongly disagree, followed by only 3% who disagree that learners are given the opportunity to judge their own performance.

The majority of teachers are of the opinion that learners are given opportunities to judge their own work. However, it is of concern that 30% of the respondents indicated that they are of the opinion that teachers do not grant learners the opportunity to be the judge of their own performance. The researcher wants to argue that such teachers deprive learners from engaging in the process of analysing and evaluating, leaving no room for learners to reflect and to improve on their work. These learners remain dependent on judgements made by teachers. 91% of teachers have reason to believe that learners who are equipped with critical thinking skills are better performers (*cf.* Figure 4.22). However, only 69% create opportunities for learners to judge their own performance. According to the researcher, the data shows that many learners are not given the opportunity to analyse, evaluate and reflect on their performance. The data also indicates that teachers think that they know what critical thinking skills are and that they believe they teach their learners these skills, but that they actually do not know what critical thinking skills are and that they do not have the ability to teach it to their learners.

4.4.3 Question 24: The FET curriculum accommodates the teaching of critical thinking skills to learners

Figure 4.24: The FET curriculum accommodates the teaching of critical thinking skills to learners

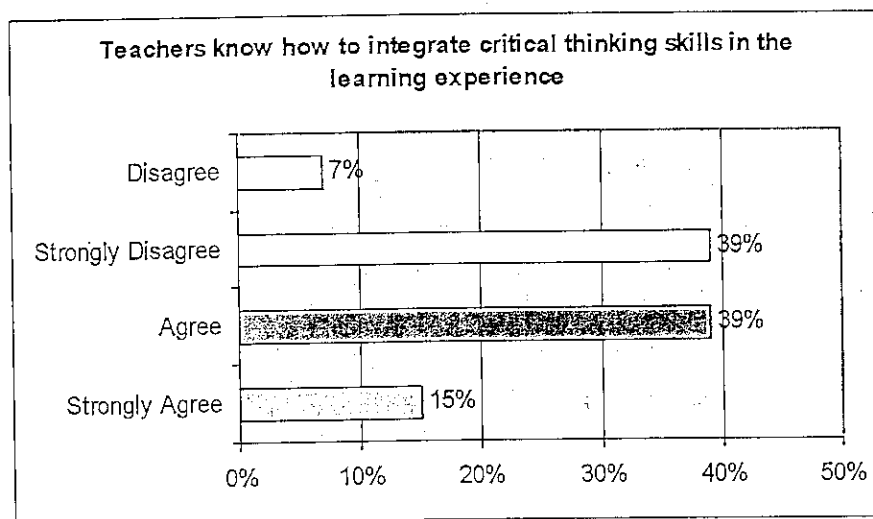


A third (33%) of the respondents said that they strongly agree, while 36% of the respondents indicated that they agree that the teaching of critical thinking skills is accommodated in the FET curriculum. It is surprising to note that only 69% of teachers are aware of the fact that the critical outcomes, as prescribed in the South African FET curriculum focus on critical thinking skills (*cf.* 2.5.1).

21% of the respondents strongly disagree and 9% disagree that the FET curriculum accommodates the teaching of critical thinking skills. It seems that these teachers were never trained to implement the FET curriculum or that they just choose to ignore the critical outcomes that underpin the curriculum. This cannot be taken lightly and needs some serious intervention.

4.4.4 Question 25: Teachers know how to integrate critical thinking skills in the learning experience.

Figure 4.25: Teachers know how to integrate critical thinking skills in the learning experience



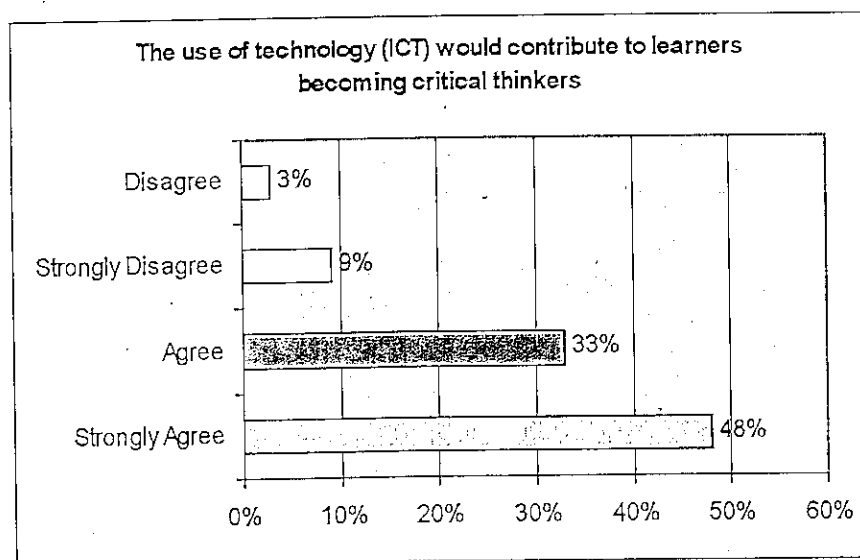
In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

Just more than half (54%) of the respondents indicated that teachers know how to integrate critical thinking skills in the learning experience as opposed to 46% who said that they disagree.

It is rather disturbing to note that almost half of the respondents indicated that teachers do not know how to integrate critical thinking skills in teaching and learning. This calls for serious intervention by the Department of Education to train and empower teachers regarding critical thinking skills and the skilful implementation thereof.

4.4.5 Question 26: The use of technology (computers) would contribute to learners becoming critical thinkers

Figure 4.26: The use of technology (computers) would contribute to learners becoming critical thinkers



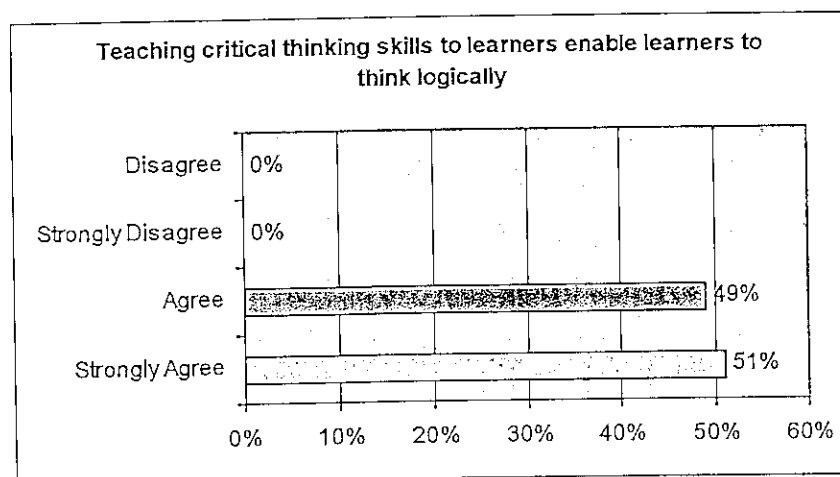
The majority (48%) of the respondents strongly agree, 33% agree and 9% of the respondents said that they strongly disagree, while 3% indicated that they disagree that the use of technology would contribute to learners becoming critical thinkers. Although not all schools are equipped with computers to expose learners to the use of type of technology to search for information, teachers should encourage learners to visit, for example internet cafés and libraries in order to be able to bring useful information to class.

The fact that an overwhelming 81% of respondents feel that the use of ICT can contribute to learners becoming critical thinkers, might indicate that teachers are aware of a rapidly changing technological world and that they

feel that the use of technology will contribute to learners becoming critical thinkers. According to the researcher, the use of ICT can contribute to the ability of learners to seek for and select useful information, to analyse and evaluate information and to make decisions based on the importance and usability of the information gathered.

4.4.6 Question 27: Teaching critical thinking skills to learners enable learners to think logically

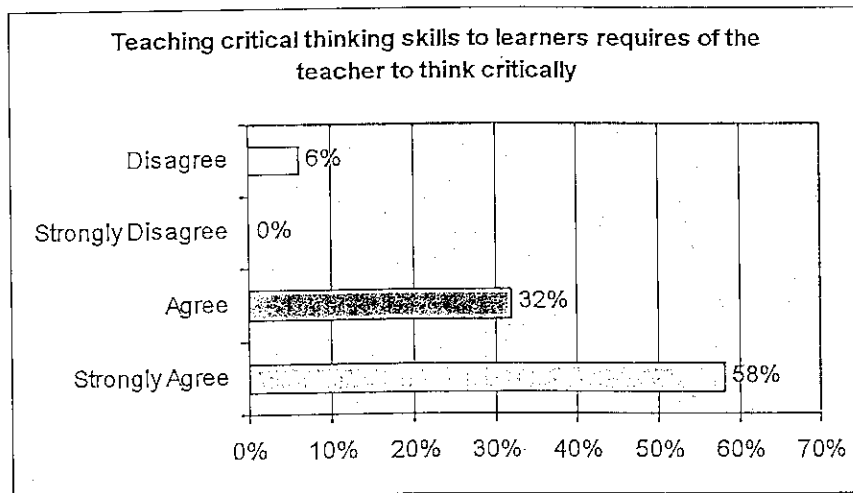
Figure 4.27: Teaching critical thinking skills to learners enable learners to think logically



As the South African FET curriculum requires of learners who exit the FET phase to have the ability to think logically, analytically, holistically and laterally (cf. 2.5.1) it is positive to note that all respondents indicated that they strongly agree or agree with this statement.

4.4.7 Question 28: Teaching critical thinking skills to learners, requires of the teacher to think creatively

Figure 4.28: Teaching critical thinking skills to learners, requires of the teacher to think creatively

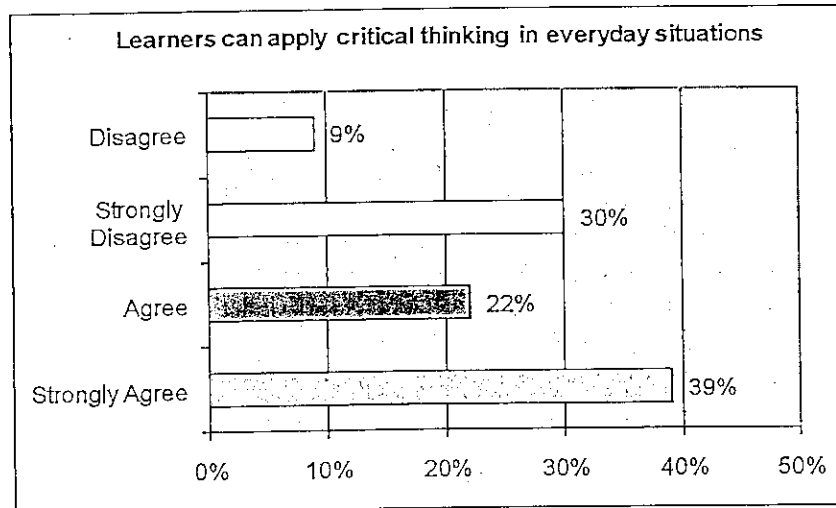


The majority (58%) of the respondents indicated that they strongly agree, 32% said that they agree while the remaining 6% indicated that they disagree with the statement.

It is positive to note that the majority of respondents value creativity in the teaching and learning experience. The researcher is of the opinion that creative teaching would give learners the opportunity to approach information with an open mind and would encourage them to express their own ideas and give meaningful input.

4.4.8 Question 29: Learners can apply critical thinking skills in everyday situations

Figure 4.29: Learners can apply critical thinking skills in everyday situations

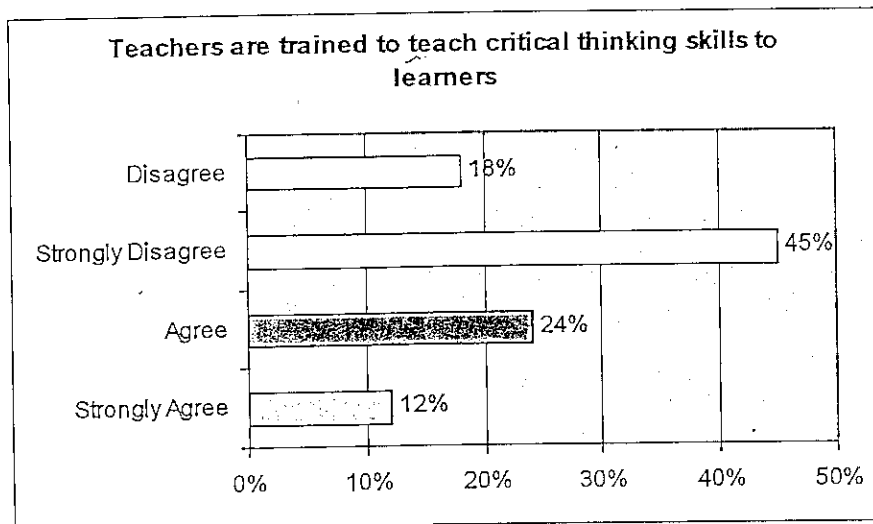


39% of the respondents strongly agree and 22% agree that learners can apply critical thinking skills in everyday situations. 30% of the respondents, however, indicated that they strongly disagree, while 9% said that they disagree with the statement.

It is clear that most teachers are confident that learners can apply critical thinking skills in everyday situations. It is of concern that 39% of the teachers state that learners cannot apply critical thinking skills in everyday situations. This could imply that learners do not have the ability to make rational choices to decide between good or bad, to evaluate the worth of achievements, to distinguish right from wrong and to make judgements that hold value for their future (cf. 2.4.5).

4.4.9 Question 30: Teachers are trained to teach critical thinking skills to learners

Figure 4.30: Teachers are trained to teach critical thinking skills to learners



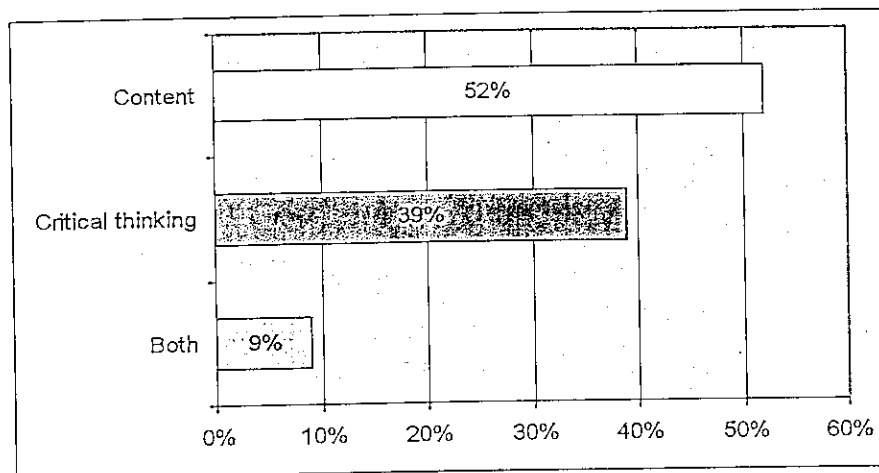
In this discussion strongly agree and agree will be combined, so will strongly disagree and disagree.

36% of the respondents indicated that teachers are trained to teach critical thinking skills to learners. 63% of the respondents said that teachers are not trained to do so. One respondent did not answer the question.

It is disconcerting to note that the perception that teachers are not trained to teach critical thinking skills to learners is held by 63% of the respondents. This finding is supported by literature that indicates that many teachers do not know how to teach critical thinking skills to their learners.

4.4.10 Question 31: When teaching FET learners, do you focus more on teaching content or critical thinking skills?

Figure 4.31: Do you focus more on teaching content or critical thinking skills?



More than half (52%) of the respondents said that they focus more on teaching content. This might be due to the fact that many teachers (63%) are not trained to teach critical thinking skills to learners and do not know how to approach the teaching thereof. Another reason for the focus on content might be the fact that learners are assessed on content at the end of the year. A small group (9%) of the respondents stated that their focus leans more towards the teaching of critical thinking skills than content. This might imply that these teachers put more emphasis on the teaching of critical thinking skills than content instead of teaching both.

Teachers need to be empowered to integrate the teaching of critical thinking skills with content, as these are regarded as equally important. 39% of respondents indicated that teachers focus on both critical thinking skills and content when teaching learners in the FET phase. This implies that these teachers integrate critical thinking skills in their lessons.

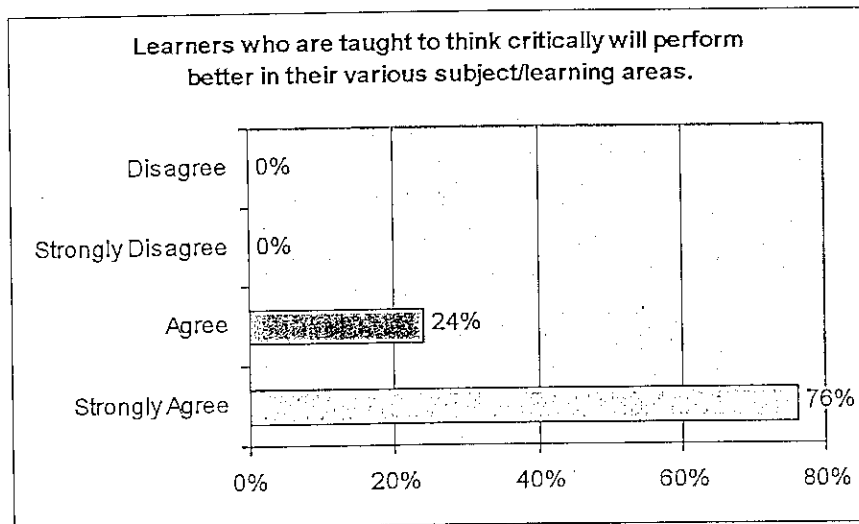
4.4.11 Question 32: If a learner cannot think critically, what would the implications be in his/her life?

This question was asked as an open-ended question

- The majority (60%) of the respondents indicated that learners who cannot think critically would not be able to make good decisions and would not be able to make informed choices.
- A number (20%) of the respondents said that learners who cannot think critically would not be able to solve problems and might become overwhelmed by the complexities of such problems. These learners would become less interested in their surroundings and circumstances and would find it difficult to think logically and analytically. The respondents further state that these learners will withdraw from society.
- Another group (12%) of the respondents claim that learners would adopt a non-challenging lifestyle, not having confidence or courage to rise above the rest, remain followers and average citizens. This means that such learners would seldom be aspiration driven. The respondents further added that these learners would be misused by others and would not contribute positively towards the economy of the country. Living below the 'breadline' is what they would be content with.
- A small group (8%) of the respondents said that learners who cannot think critically would find it difficult to understand subject content and would not be able to answer questions. That would have a great impact on their adulthood. They will remain poor performers and will not be able to achieve in anything that they attempt to do. Sadly, their lives will constantly remain full of challenges without them having the ability to seek for solutions.

4.4.12 Question 33: Learners who are taught to think critically will perform better in their various subjects. Motivate your choice

Figure 4.32: Learners who are taught to think critically will perform better in their various subjects



A great number (76%) of the respondents strongly agree that learners who are taught to think critically perform better in their various subjects or learning areas. 24% of the respondents agree with the statement. The responses might indicate that these teachers believe that learners should go beyond 'recall', would be better placed to answer questions requiring application, analysis, synthesis and evaluation, would be able to work independently and be curious to know more, would experience learning as important and interesting and will ultimately deliver good results.

4.4.13 Question 34: What can you do to enhance the teaching of critical thinking skills in your subject?

This question was asked as an open-ended question.

The responses to this question can be summarized as follows:

- 35% of the respondents suggest that teachers should provide learners with more opportunities to do research in order to solve problems. According to one respondent, learners must feel free to question the teachers' methods

of teaching without the teacher feeling threatened or intimidated. The respondents state that they would also present learning materials that are more challenging to learners in order to evaluate their critical thinking abilities.

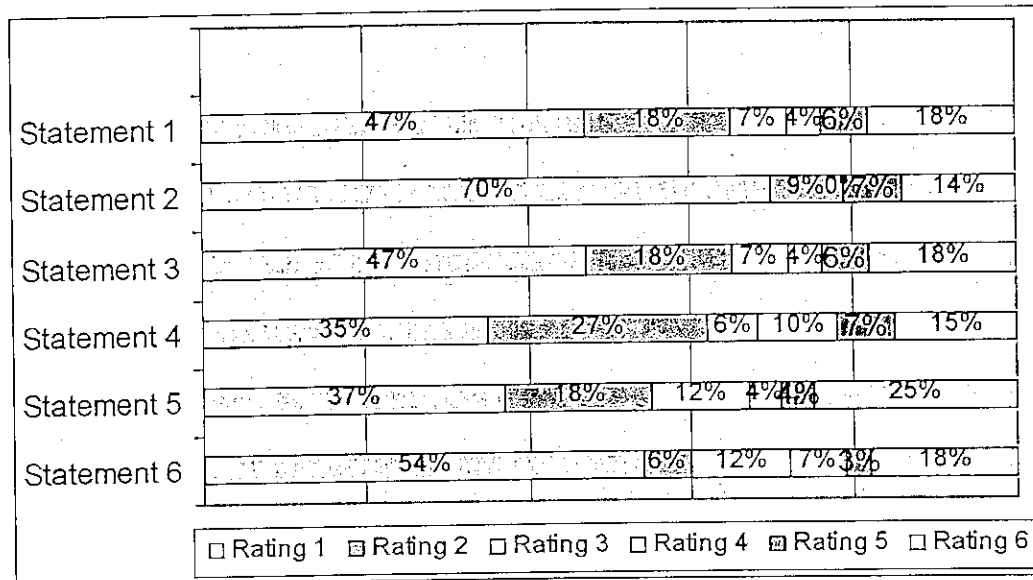
- Another group (53%) of the respondents indicated that teachers should be more creative in their teaching strategies. The strongest proposed suggestion is that an integrated approach to learning should be adopted. This implies that teachers should teach critical thinking skills in all subjects so that learners can relate to different critical thinking skills in different subjects and apply the skill throughout.
- A small group (12%) of respondents emphasised group work in order for learners to share ideas and learn from one another. According to these respondents learners should be encouraged to read more to enhance their ability to summarise, analyse, evaluate and compare.

4.4.14 Question 35: Rate the importance of each of these statements on a scale of 1 -6 with 1 being critically important and 6 not important

- 1 - Critically important
- 2 - Very important
- 3 - Moderately important
- 4 - Important
- 5 - Less important
- 6 - Not important

The figure below illustrates the overall rating of the respondents with regard to each statement.

Figure 4.33: Overall rating of the respondents



4.4.14.1 Statement 1: Gradually introduce learners to new critical thinking skills

Rating	1	2	3	4	5	6
Percentage	47%	18%	7%	4%	6%	18%

47% of the respondents indicated that it is critically important to introduce learners gradually to new critical thinking skills, followed by 18% who regarded the statement as very important while 18% indicated that the statement is not important and the remaining 17% rated the statement between 3 and 5.

It is disturbing to note that 18% of the respondents indicated that it is not important to gradually introduce new critical thinking skills to learners. The researcher wants to state that this can cause confusion since many of the critical thinking skills link with one another and therefore learners need to know how to analyse and evaluate before they will be able to, for example, make an informed decision or to solve a problem.

4.4.14.2 Statement 2: Create a comfortable classroom environment

Rating	1	2	3	4	5	6
Percentage	70%	9%	0%	0%	7%	14%

The majority of respondents (70%) agreed that it is very important that teachers create a comfortable classroom environment. Only 16% of the respondents rated the creation of a comfortable classroom environment between 2 and 5. This might indicate that some teachers do not think that a comfortable classroom environment is critically important, but that it has some influence on quality teaching and learning.

A disappointing 14% of the respondents indicated that it is not important at all to create a comfortable classroom environment within which quality teaching and learning can take place. This might be an indication that these teachers do not know how to create a comfortable classroom conducive to teaching and learning. The researcher is of the opinion that a comfortable classroom environment does not only refer to physical resources but also to the positive attitude of the teacher towards teaching as well as engaging learners actively in the learning process.

4.4.14.3 Statement 3: Expose learners to experiential learning

Rating	1	2	3	4	5	6
Percentage	47%	18%	7%	4%	6%	18%

47% of respondents indicated that to expose learners to experiential learning is critically important. Experimental learning creates opportunities for learners to apply their critical thinking abilities. 18% of the respondents stated that it is less important, but still rated it at 2 (Very important). 17% of the respondents rated the statement between 3 and 5, which shows that it is not critically important, neither is it not important to expose learners to experiential learning.

14% of the respondents, however, said that it is not important to expose learners to experiential teaching. The data might indicate that these teachers do not know what experiential learning is.

4.4.14.4 Statement 4: Engage learners in group discussions

Rating	1	2	3	4	5	6
Percentage	32%	27%	6%	9%	6%	14%

32% of the respondents indicated that it is critically important to engage learners in group discussions and 27% rated the statement as very important (2). This shows that most teachers (59%) realise the need for group discussions and implies that they support the constructivist approach to teaching and learning.

14% of the respondents stated that it is not important to engage learners in group discussions. According to the researcher, this is evident of teachers who prefer independent learning and who are not able to manage group discussions effectively, or who still believe in 'rote learning'.

4.4.14.5 Statement 5: Allow learners to judge the importance of information

Rating	1	2	3	4	5	6
Percentage	37%	18%	12%	4%	4%	25%

37% of the respondents rated the statement as being critically important, while 18% indicated it as very important. Such teachers would encourage learners to judge the credibility of information and this will strengthen their ability to make judgements about their world.

20% of the respondents rated the statement between 3 and 5. This implies that some teachers do allow learners to judge the importance of information, but would probably not do so on a regular basis

25% of the respondents said that it is not important for teachers to allow learners to judge the importance of information. The researcher wants to argue that this might be evident of teachers who want to tell learners what is important or not, not giving them an opportunity to make their own judgements.

4.4.14.6 Statement 6: Provide challenges to learners

Rating	1	2	3	4	5	6
Percentage	54%	6%	12%	7%	3%	18%

The majority of the respondents (54%) indicated that it is of critical importance to provide learners with challenges while 6% of the respondents regard the statement as very important. The data might imply that many teachers provide learners with challenges in order to create opportunities for them to apply critical thinking skills.

22% of the respondents indicated that providing challenges to learners is neither critically nor very important. The data might indicate that these teachers do not provide learning material challenging enough for learners to apply their higher order thinking skills to 'outsmart' the challenge.

The lowest percentage (18%) of the respondents rated the statement as not important. This might be an indication that teachers do not trust learners to be creative enough to find solutions to the challenges posed by the learning material.

Regarding the role of critical thinking skills in quality teaching and learning, the data revealed that most of the teachers are of the opinion that learners who can think critically will perform better in their various subjects. About 70% of teachers give learners the opportunity to judge their own performance in order to allow learners to reflect on their strengths and challenges. Thirty percent of the teachers are not aware that the FET curriculum addresses critical thinking skills through the critical outcomes as prescribed by the FET curriculum. Many

teachers still do not know how to integrate critical thinking skills in a learning experience but agree that the use of an ICT infused curriculum would enhance the ability of learners to become critical thinkers. All teachers agree that the teaching of critical thinking skills would enable learners to think logically and that the teaching of critical thinking skills requires of teachers to think creatively and innovatively.

The majority of teachers (63%) are not trained to teach critical thinking skills. These teachers focus more on teaching content. Teachers understand the critical thinking skills of learners can be enhanced by teaching them how to solve problems, analyse, evaluate and compare learning material and to expose learners to challenges.

4.5 CONCLUSION

This chapter presented the data analysis and interpretation of the research data.

In Section A, quality teaching and learning was discussed. Section B dealt with critical thinking skills. In section C the role of critical thinking skills in promoting quality teaching and learning was discussed.

It is important for teachers to integrate critical thinking skills in the teaching and learning process in their venture to deliver teaching and learning of exceptional quality. It is unfortunate that many teachers are not trained to teach critical thinking skills to learners, therefore they only teach content. Their lack of knowledge in how to integrate critical thinking skills in the learning experience is a call for concern. Although most teachers regard motivation and praise as reinforcement for learner achievement as important, they lack the drive to do so. Education starts in the classroom, yet many teachers would rather threaten learners instead of creating a comfortable, relaxed classroom atmosphere where the teaching of critical thinking skills can be enthusiastically presented by the teacher, eagerly absorbed by the learners and confidently applied in everyday situations.

The next chapter will present the summary, findings and recommendations of this research.

CHAPTER FIVE

SUMMARY, FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents a summary of the four preceding chapters. Firstly, a summary is presented of the statement of the problem, the review of the literature as well as the research aims and objectives as highlighted in chapters 1, 2 and 3. A summary of the findings of the research as revealed in chapter 4 will then be presented. Finally, recommendations will be made regarding the role of critical thinking skills in promoting quality teaching and learning in the FET phase of secondary schools in South Africa.

5.2 SUMMARY

Chapter 1 outlined the rationale of the study, which included aspects such as the problem statement (*cf.* 1.1), aims (*cf.* 1.3.2) and research design (*cf.* 1.3.3). This chapter aimed to inform the reader about the content of the research project which focused on the role of critical thinking skills in promoting quality teaching and learning in the Further Education and Training (FET) phase of secondary schools in South Africa.

The second chapter focused on three aspects. Firstly, the Further Education and Training (FET) phase and what it entails, secondly, quality teaching and learning and the values thereof and lastly the role of critical thinking skills in promoting quality teaching and learning in secondary schools. The first part of the study highlights the structure for education and training (*cf.* 2.2.1), phases of the National Qualifications Framework (*cf.* 2.2.2), the Further Education and Training (FET) phase (*cf.* 2.2.3) and the concepts education and training (*cf.* 2.2.4).

The second part of chapter 2 outlined quality teaching and learning with reference to learning styles, strategies and approaches (*cf.* 2.3.1), criteria for successful learning (*cf.* 2.3.2) and different teaching styles and strategies (*cf.*

2.3.3) to enhance the quality of teaching and learning. Numerous critical thinking skills have also been discussed (*cf.*2.4).

Chapter 3 outlined the empirical research design, the research instrument, pilot study and ethical aspects of the study (*cf.* 3.2).

In chapter 4 the data analysis and interpretation was presented by means of graphs and tables, detailing frequencies, percentages and rankings. The different categories of data collected were described.

In the next section the main findings from the literature study and the empirical research will be presented.

5.3 FINDINGS FROM THE RESEARCH

5.3.1 Findings from the literature study

5.3.1.1 Findings related to the nature of quality teaching and learning.

Finding 1: Many schools still need to either create or restore a positive culture of teaching and learning in order for effective teaching and learning to take place (*cf.* 2.3).

Finding 2: Many teachers do not teach as effectively as they should because they do not feel motivated to teach. This leads to a situation where many learners do not perceive learning as important and therefore do not have the necessary inspiration to attain their own personal goals (*cf.* 2.3.2.1).

Finding 3: Teachers should plan and execute their lessons in a way that reflects critical thinking skills such as knowing how to ask and answer questions of analysis, synthesis and evaluation in order for all learners to be able to engage fruitfully and participate actively in every learning experience presented to them (*cf.* 2.4).

Finding 4: Regular written feedback by teachers will positively contribute to learners' self esteem and will enhance their ability to become better performers (*cf.* 2.3.1.4).

Finding 5: When learners are stressed, embarrassed or threatened, it influences their learning ability negatively. Teachers should avoid a classroom in which the emotional climate is that of tension or fear (*cf.* 2.3.1.4).

Finding 6: Many learners in the FET phase do not take ownership or responsibility for their own learning. The onus rests on the teacher to keep them informed (*cf.* 2.3.1.4).

Finding 7: Teachers must use praise as positive reinforcement for work well done by learners at all times (*cf.* 2.3.2.2).

Finding 8: Teachers should give learners the opportunity to set their own goals to increase their self-esteem and to set goals that are long term in nature (*cf.* 2.3.2.1).

5.3.1.2 Findings related to the nature of critical thinking skills.

Finding 9: Critical thinking skills are higher-order forms of thinking. It can therefore be assumed that FET teachers should know that high-level thinking that involves skills such as analysis, evaluation, reasonableness and reflection, which operate in terms of criteria, are self-corrective and sensitive to context and allow learners to make judgements about their worlds (*cf.* 2.4).

Finding 10: When learners are taught critical thinking skills, they are exposed to higher order forms of thinking such as analysis, evaluation, reasonableness and reflection and that would allow learners to make judgements about world (*cf.* 2.4).

Finding 11: Learners who are taught to think critically, will be able to make informed choices about their own education and will be good decision makers (*cf.* 2.4.5).

Finding 12: Teachers must teach learners how to analyse and evaluate information so that they can be in a position to judge arguments, assess the credibility of information and know whether claims are true or false (*cf.* 2.4.4).

Finding 13: When learners know how to solve problems they would approach any problem systematically and will look at it from different perspectives (*cf.* 2.4.1).

5.3.1.3 Findings related to the role of critical thinking skills in teaching and learning in the Further Education and Training (FET) phase

Finding 14: Learners who are able to think critically are equipped with higher order thinking abilities such as problem solving, analysing, evaluating, decision making, etc., which enables them to perform better and achieve quality academic results (*cf.* 2.4).

Finding 15: Teachers should provide learners with opportunities to judge their own work in order for them to reflect on their challenges and to work on learning strategies in order to improve their overall performance (*cf.* 2.4.3).

Finding 16: Many teachers did not undergo training to understand the implementation of the critical outcomes. Teachers do not know how to integrate critical thinking skills in the learning experience.

Finding 17: Teachers and learners are not exposed to an ICT infused curriculum. This impact negatively on the ability of learners to apply critical thinking skills in everyday situations (*cf.* 2.5.1).

Finding 18: Teachers who teach critical thinking skills to learners successfully, think creatively and make use of more constructivist teaching methods in their approach to teaching and learning (*cf.* 2.5.1).

5.3.2 Findings from the empirical research

5.3.2.1 Findings related to quality teaching and learning

Finding 19: The majority (62%) of the respondents indicated that that most schools have a culture of teaching and learning (*cf.* Figure 4.1). This is not supported by the finding from the literature study (*cf.* Finding 1) that indicates that many schools still need to either create or restore a positive culture of

teaching and learning in order for effective teaching and learning to take place (cf. 2.3).

Finding 20: 45% of the respondents indicated that teachers are not motivated to teach learners (cf. Figure 4.2). This finding is supported by literature that indicates that many teachers do not teach effectively because they are not motivated to teach (cf. Finding 2).

Finding 21: 55% of the respondents indicated that learners do not see learning as important (cf. Figure 4.3). This finding corresponds with Finding 1 that is based on the literature study.

Finding 22: 45% of the respondents disagree that learners participate actively in the learning experience (cf. Figure 4.4) although literature indicates (cf. Finding 2) that learners should participate actively in learning experiences.

Finding 23: The majority of the respondents stated that outside factors such as stress, embarrassment and threat have a negative effect on learning (cf. Figure 4.5). Literature also indicates that these factors impact negatively on quality teaching and learning (cf. Finding 5).

Finding 24: 64% of the respondents indicated that learners do not take ownership of their own learning (cf. Figure 4.11). Literature supports this finding (cf. Finding 6).

5.3.2.2 Findings related to the nature of critical thinking skills

Finding 25: 53% of the respondents indicated that teachers use innovative teaching methods (cf. Figure 4.16). The advantage of using innovative teaching methods is that learners are engaged in project based learning in the context of complex, real-world problems (cf. 2.5.2.1). It is therefore of concern that 47% of the respondents were of the opinion that teachers do not use innovative methods.

Finding 26: All the respondents indicated that it is important to teach learners how to make good decisions (cf. Figure 4.17). This finding is supported by literature (cf. Finding 11).

Finding 27: The majority of respondents agreed that learners who think critically can make informed choices (*cf.* Figure 4.18). Literature also indicates that critical thinkers will be good decision makers (*cf.* Finding 11).

Finding 28: The majority of the respondents agreed that learners know how to analyse (*cf.* Figure 4.19) and evaluate (*cf.* Figure 4.20) information. Literature supports this finding (*cf.* Finding 12).

Finding 29: A substantial number (91%) of the respondents agreed that learners should know how to solve problems (*cf.* Figure 4.21). This finding is supported by literature (*cf.* Finding 13).

5.3.2.3 Findings related to the role of critical thinking skills in quality teaching and learning

Finding 30: 91% of the respondents stated that learners who think critically perform better (*cf.* Figure 4.22). Literature also states that learners who think critically achieve better academic results (*cf.* Finding 14).

Finding 31: Only 21% of the respondents indicated that learners are given the opportunity to judge their own performance (*cf.* Figure 4.23). Literature, however indicates that that teachers should provide learners with opportunities to judge their own performance (*cf.* Finding 15)..

Finding 32: 69% of the respondents said that the teaching of critical thinking skills is accommodated in the FET curriculum (*cf.* Figure 4.24). Literature does not support this finding as it is indicated that teachers are not aware of the critical outcomes as prescribed in the FET curriculum (*cf.* Finding 16)..

Finding 33: Just more than half of the respondents indicated that teachers know how to integrate critical thinking skills in the learning experience (*cf.* Figure 4.25). In this regard, literature states that teachers were not trained to integrate critical thinking skills in the learning experience (*cf.* Finding 16).

Finding 34: All the respondents agreed that the South African FET curriculum requires of learners who exit the FET phase to have the ability to think logically, analytically, holistically and laterally (*cf.* Figure 4.27). This is

surprising, as literature shows that teachers are not aware of the critical outcomes of the FET curriculum (*cf.* Finding 16).

Finding 35: Only 36% of the respondents indicated that teachers are trained to teach critical thinking skills to learners (*cf.* Figure 4.30). This finding is supported by literature that states that many teachers were not trained to teach these skills to learners (*cf.* Finding 16).

Finding 36: More than half of the respondents said that they focus more on teaching content than on teaching critical thinking skills (*cf.* Figure 4.31). Literature, however indicates that lessons should reflect critical thinking skills (*cf.* Finding 3).

5.4 RECOMMENDATIONS

The aim of this research was to investigate the role of critical thinking skills in promoting quality teaching and learning in the Further Education and Training (FET) phase. In order to realise this aim, a literature study was undertaken which served as the foundation of the empirical research. The findings of this research are incorporated into the following recommendations:

Recommendation 1

Secondary schools need to create a culture of teaching and learning in order to promote quality teaching and learning (*cf.* Finding 1).

Recommendation 2

Learners in the FET phase still do not see learning as important as they should. The key role of teachers, teaching learners in the FET phase should be motivating learners to achieve good results and positively re-inforce achievements (*cf.* Finding 21).

Recommendation 3

Stress, threat and embarrassment of learners are a common phenomenon in secondary schools. Teachers should therefore be reasonable and considerate in, for example setting timeframes for the completion of tasks. It is of the

utmost importance for teachers to know the abilities of all learners and not only the 'clever' ones (*cf.* Finding 5).

Recommendation 4

Learners in the FET phase are not always actively engaged in the learning experience, therefore many of the learners lose interest after a few minutes into a learning experience. To have learners constantly engaged in a lesson, teachers should use innovative teaching methods which would invite learner participation and uphold their interest in learning (*cf.* Findings 22 & 25).

Recommendation 5

Teachers should plan lessons carefully taking into consideration learners with different learning abilities. Therefore, teachers should be innovative and creative in their teaching styles and approaches to reach all learners successfully. Secondly, learners should also adopt a culture of independent learning, thus not regard the teacher to be the only source of information. The teacher should constantly challenge learners' ability to be creative, innovative and critical in their approaches to learning (*cf.* Finding 18).

Recommendation 6

Critical thinking skills are higher order forms of thinking which teachers should teach to learners so that they can become creative and innovative in their thinking. Teachers should teach learners the sequential steps of problem solving, evaluating, analysing inductive and deductive reasoning, making decisions and judging the credibility of sources. (*cf.* Finding 9).

Recommendation 7

The teaching of critical thinking skills forms part of the FET curriculum, yet many teachers are not aware of it. The Department of Education should strongly intervene by constantly training and developing teachers in order that the expected outcomes at the end of the FET phase can be attained successfully (*cf.* Finding 32)

Recommendation 8

Many teachers teach content only. They find it difficult to integrate the teaching of critical thinking skills in a lesson. Teachers need to be empowered to teach critical thinking skills to learners. Once teachers are confident and skilled on how to teach critical thinking skills, the integration thereof in a lesson would follow naturally. To achieve the desired outcomes as prescribed in the FET curriculum, the Department of Education, in conjunction with school principals should ensure that teachers are empowered to teach critical thinking skills to learners and should ensure the training of teachers to master the skill of integration (*cf.* Finding 36).

Recommendation 9

When learners are able to think critically, they will be able to confidently engage in higher-level thinking and will have an advantage over learners who cannot think critically. Therefore, learners must be taught the skills of critical thinking in order to perform better at school level and beyond (*cf.* Finding 14).

5.5 LIMITATIONS OF THE RESEARCH

It should be noted that this study is not without limitations. In fact, one of its constraints was that the study was conducted in one Education District (Johannesburg South) only. Because of this, the findings based on this research might be construed by some critics as one-sided and not representative of the views of the majority of teachers in South Africa. Another limitation is that some teachers agreed to participate, but failed to complete and return the questionnaire. This had an effect on the number of valuable contributions that could have been made by teachers.

5.6 RECOMMENDATIONS FOR FURTHER RESEARCH

In the light of the possible limitations of this research, the following suggestions for further research are made:

- An investigation into the competency levels of teachers with regard to the successful implementation of the secondary school curriculum.

- An investigation into the way in which the Department of Education can contribute to promote the quality of teaching and learning in secondary schools.
- Developing a programme to empower teachers to be able to teach critical thinking skills to learners.

5.7 CONCLUSION

This study investigated by means of a literature review and an empirical research the role of critical thinking skills in promoting quality teaching and learning in the Further Education and Training (FET) phase of secondary schools in South Africa. It also explored what critical thinking skills are and how it can enhance the quality of teaching and learning in South Africa. Various findings were highlighted and recommendations were made. The researcher hopes that this research will make a valuable contribution to improving the quality of teaching and learning.

As Nelson Mandela said: "We must use time wisely and forever realise that the time is always ripe to do right".

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ANNEXURE A

LETTER OF PERMISSION TO CONDUCT RESEARCH



UMnyango WezeMfundo
Department of Education

Lefapha la Thuto
Departement van Onderwys

Enquiries: Nomvula Ubisi, (011)3550488

Date:	25 March 2010
Name of Researcher:	Cooper Merinda Felicia
Address of Researcher:	29 Nickel Avenue Extension 14 Ennerdale 1830
Telephone Number:	0118558610/0731325840
Fax Number:	0113550304
Research Topic:	The Role of Critical Thinking Skills in Promoting Quality Teaching and Learning in the FET Phase of Secondary Schools in SA
Number and type of schools:	6 Secondary Schools
District/s/HO	Johannesburg South

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

Permission has been granted to proceed with the above study subject to the conditions listed below being met, and may be withdrawn should any of these conditions be flouted:

1. *The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*

Office of the Chief Director: Information and Knowledge Management
Room 501, 111 Commissioner Street, Johannesburg, 2000 P.O.Box 7710, Johannesburg, 2000
Tel: (011) 355-0809 Fax: (011) 355-0734

4. A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.
5. The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.
6. Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.
7. Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year.
8. Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.
9. It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.
10. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.
11. The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.
12. On completion of the study the researcher must supply the Director: Knowledge Management & Research with one Hard Cover bound and one Ring bound copy of the final, approved research report. The researcher would also provide the said manager with an electronic copy of the research abstract/summary and/or annotation.
13. The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.
14. Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards


Martha Mashigo
ACTING DIRECTOR: KNOWLEDGE MANAGEMENT & RESEARCH

The contents of this letter has been read and understood by the researcher:	
Signature of Researcher:	
Date:	

ANNEXURE B

INFORMATION ON STUDY

INFORMATION ON THE STUDY

Information on my study to investigate the role of critical thinking skills in promoting quality teaching and learning in schools and to develop guidelines to assist Teachers to integrate critical thinking skills in teaching and learning in the Further Education and Training (FET) phase.

You are invited to participate in a study to determine the importance of critical thinking skills in promoting quality teaching and learning in the FET phase in South Africa.

To participate, you must be a secondary school Teacher, teaching learners in the FET phase (Grades 10-12).

What will be expected of you to do:

You will be issued with a questionnaire consisting of three (3) sections. To ensure anonymity, the questionnaire will be marked e.g. participant x, therefore you need not write your name or the name of the school. All information provided will be considered highly confidential.

The greater part of the questionnaire consists of questions where you only choose an option. Where the researcher asks for motivation, please do so to the best of your ability. Only write down what your thoughts are.

Questions/ Problems: If you have any questions or concerns during or after the study please contact the student researcher or the supervisor using the contact details below:

Student researcher	Supervisor
Ms. M.F. Cooper Tel: 011 355 0093 Cell: 073 132 5840 E-mail: Merinda.Cooper@gauteng.gov.za	Prof. Elsa Fourie School of Educational Sciences North-West University Vaal Triangle Campus Tel: 016 910 3066 E-mail: Elsa.Fourie@nwu.ac.za

Thank you.

ANNEXURE C

VOLUNTARY INFORMED CONSENT FORM

VOLUNTARY INFORMED CONSENT FORM

THE IMPORTANCE OF CRITICAL THINKING SKILLS IN PROMOTING QUALITY TEACHING AND LEARNING IN THE CURRICULUM OF THE FET PHASE IN SOUTH AFRICA

If you agree, please place an in the 'yes' box to show that you understand and agree with each statement

I understand the information about the study in the Information Letter. Any concerns I had, were addressed.	Yes, I understand <input type="checkbox"/>
I understand that it is my voluntary decision whether I want to participate. If I do not wish to participate, or want to withdraw from the study at any time, my wishes will be respected without penalty.	Yes, I understand <input type="checkbox"/>
If I am uncomfortable in answering any question, I may choose not to answer.	Yes, I understand <input type="checkbox"/>
I understand that my full name will not be used, nor will specific details of where I live or teach be shared when information from the questionnaire is used by the researcher.	Yes, I understand <input type="checkbox"/>
I understand that if something troubles me while participating, the researcher will provide me with the necessary support.	Yes, I understand <input type="checkbox"/>

I agree to take part in this study.

(Research participant's signature)

(Date)

ANNEXURE D

QUESTIONNAIRE

QUESTIONNAIRE

THE IMPORTANCE OF CRITICAL THINKING SKILLS IN PROMOTING QUALITY TEACHING AND LEARNING IN THE CURRICULUM OF THE FET PHASE IN SOUTH AFRICA

This survey is part of a study regarding the integration of critical thinking skills in promoting quality teaching and learning in the Further Education and Training phase in secondary schools. 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: Survey details (For office use only)

1.1 Record number							
1.2 Name of researcher	M.F. COOPER						
1.3 Date of retrieval of form (dd/mm/2007)					2	0	1 0

SECTION A

QUALITY TEACHING AND LEARNING

Indicate your answer by marking the appropriate block on a scale of 1 to 4:

1=Strongly agree 2=Agree 3=Strongly disagree 4=Disagree

1. Most of the schools have a culture of teaching and learning.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
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2. Most of the teachers are motivated to teach learners.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

3. Most of the learners perceive learning as important.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

4. Learners participate actively in the learning process.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

5. Outside factors such as stress have a negative effect on learning.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

6. Threatening learners will hamper their learning abilities.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

7. I give learners written feedback on a regular basis.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

8. When learners are embarrassed, they adopt a negative attitude towards learning.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

9. Teachers know the abilities of all learners.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

10. Learners are given the opportunity to set their own goals.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

11. Learners take ownership of their own learning.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

12. Learners are praised for work well done by teachers.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

13. Teachers motivate learners to master the subject matter.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

SECTION B

CRITICAL THINKING SKILLS

14. Critical thinking skills are higher-order forms of thinking.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

15. Learners know how to think creatively.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

16. Teachers make use of innovative teaching methods.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

17. It is important to teach learners how to make good decisions.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

18. Critical thinkers can make informed choices.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

19. It is important for learners to be able to analyse information.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

20. Learners know how to evaluate information.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

21. Learners should know how to solve problems.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

SECTION C

THE ROLE OF CRITICAL THINKING SKILLS IN QUALITY TEACHING AND LEARNING

22. Learners who think critically perform better than learners who don't.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

23. Learners are given the opportunity to judge their own work/performance.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

24. The FET curriculum accommodates the teaching of critical thinking skills to learners.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

25. Teachers know how to integrate critical thinking skills in the learning experience.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

26. The use of technology (computers) would contribute to learners becoming critical thinkers.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

27. Teaching critical thinking skills to learners enable them to think logically.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

28. Teaching critical thinking skills to learners, requires of the teacher to think creatively.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

29. Learners can apply critical thinking skills in everyday situations.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

30. Teachers are trained to teach critical thinking skills to learners.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

31. When teaching FET learners, do you focus more on teaching content or critical thinking skills?

32. If a learner cannot think critically, what would the implications be in his/her life?

33. Learners who are taught to think critically, will perform better in their various subjects.

1=Strongly agree	2=Agree	3=Strongly disagree	4=Disagree
------------------	---------	---------------------	------------

Motivate your choice.

34. What can you do to enhance the teaching of critical thinking skills in your subject?

35. Rate the importance of each of these statements on a scale of 1 – 6 with 1 being critically important and 6 not important.

1. Critically important
2. Very important
3. Moderately important
4. Important
5. Less important
6. Not important

Statement	Scale
Gradually introduce learners to new critical thinking skills	
Create a comfortable classroom environment	
Expose learners to experiential learning	
Engage learners in group discussions	
Allow learners to judge the importance of information	
Provide challenges to learners	