PERCEPTIONS OF THE USE OF QUESTIONING TO ENHANCE CRITICAL THINKING SKILLS IN ENGLISH FIRST ADDITIONAL LANGUAGE CLASSROOMS AT FET COLLEGES: A QUANTITATIVE STUDY

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I, NICOLENE VOLSCHENK, solemnly declare that this work is original and the result of my own labour. It has never, on any previous occasion, been presented in part or whole to any institution or Board for the award of any Degree.

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DEDICATION

This dissertation is dedicated to my Heavenly Father who provided me with the opportunity and strength to do this study. I also dedicate this dissertation to my husband, Ernie Volschenk, and my parents, Jan and Rita Tredoux, who has offered me unconditional love, support and prayers since the beginning, and throughout the course of this study.

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SUMMARY

Students on all levels of education need to be able to think critically. This study investigated to what extent and how do lecturers at FET colleges in the Fezile Dabi District enhance their students' critical thinking skills by means of questioning in EFAL classrooms.

A literature study was conducted in order to highlight the importance of critical thinking and which questioning types, strategies/techniques and tactics should be used for the effective enhancement of critical thinking skills in the classroom. The classroom environment, factors that hamper the enhancing of critical thinking skills, reasons for the use of questioning, the different questioning types, strategies/techniques and tactics and the importance of questioning in the English First Additional Language classrooms were explored. The literature review provided the conceptual framework for the study, as well as the framework for designing a questionnaire and the observation schedule to obtain the perceptions of lecturers and students regarding the enhancing of students' critical thinking skills.

Quantitative, non-experimental descriptive survey and observation research by means of a self-constructed Likert-scale questionnaire, and observations by means of structured event sampling was conducted with a convenient sample of a purposively selected group of NQF Level 2 (Grade 10) lecturers (n = 4) and students (n = 142) at FET colleges in the Fezile Dabi District of the Free State Department of Education.

The triangulation of student and lecturer data revealed differences and similarities in opinions relating to how lecturers make use of different questioning types, strategies/techniques and tactics in order to enhance students' critical thinking skills. The data revealed that to some extent, two of the four lecturers effectively enhance their students' critical thinking skills through their constant use of questions that develop higher order thinking. The responses did however not convincingly indicate to the researcher that the enhancing of critical thinking skills takes place frequently through the effective use of different questioning types, strategies/techniques and tactics.

This study is concluded with recommendations to lecturers on how to enhance students' critical thinking skills through questioning.

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CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

1.1 INTRODUCTION

The new Curriculum and Assessment Policy (CAPS) that guide teaching and learning in South Africa gives prominence to the fact that learners/students at all levels of education need to be able to think critically (Department of Education, 2011:5; Department of Education, 2003:13). Learning Outcome 2 in the *English First Additional Language National Curriculum Statement* states clearly that: "*The learner is able (or should be able) to read and view for understanding and to evaluate* ***critically*** *and respond to a wide range of texts"* (Department of Education, 2003:13). McGregor (2007:172), Montgomery (2005:7), Ruggiero (2004:159) and Small (1996:29) mention that critical thinking is the kind of thinking that is involved in solving problems, formulating inferences, calculating likelihoods and making decisions.

Many students struggle to acquire the skill of critical thinking because they lack the skill to analyse information (Cullingford, 1990:136). Since the comprehension of students and analysis of information in the language classroom need to be developed to enable them to judge and manipulate the conclusions and actions of others (Pienaar, 2001:127), strategic questioning should be used during teaching (Bradbury, 2000:14; Kok, 2007:225)[1].

The researcher's own experience in teaching English First Additional Language (EFAL) at NQF Level 2 at a Further Education and Training (FET) College, made her aware of the students' inability to apply critical thinking skills. The students know how to read and write, but what they do not know, and cannot do, is to evaluate texts critically. Cullingford (1990:136) and

[1] The researcher worked according to the new NWU referencing guide that specifies the alphabetical ordering of sources and the use of et al. the first time when quoting a source with more than two authors.

Potterton (2008:15) mention that the entire education system is dependent on the students' capacity to perform in examinations in such a way that they will demonstrate their *thinking* ability as an acquired skill. Cullingford (1990:137) adds that critical thinking involves not only the application of the mind, but also the demonstration of its powers, and although thinking might be an essential skill, the whole purpose of learning is to use the skill, show greater self-knowledge, more wisdom, as well as the capacity to deal with other individuals. According to Barnes (2005:12), Gyalyam and Le Grange (2005:25) and Potterton (2008:15) this will not happen among students if their lecturers fail to enhance critical thinking skills among them.

Through personal observations, the researcher has also found that some of the EFAL lecturers at FET colleges only teach content, and apparently remain unconcerned about whether their students really understand the work or know what to do in order to solve a problem. The researcher argues that students coming from such teaching and learning environments might, experience a crucial lack of critical thinking and reasoning skills.

Apart from the researcher's personal observations, a review of studies conducted on critical thinking and questioning revealed the following. In a quantitative study conducted by Du Plessis (1992:3) with Grade 10 learners in South Africa, it was revealed that learners do not have the ability to think critically. Bradbury's combined qualitative and quantitative research (2000:14) that was conducted with students at a university in South Africa revealed that students lack critical thinking skills, do not know how to read and do not understand what they read. In order to solve the inability to think critically, Kok (2007:225), in her qualitative study among teachers in South Africa, proposed that questioning should be used as a skill during teaching and learning. In her qualitative study with primary school teachers in South Africa Wright (2009:42) concurs that in order to test understanding among learners, teachers should use questioning. Studies that examine the enhancing of critical thinking with questioning in EFAL classrooms at FET Colleges in the Fezile Dabi Region in South Africa could not be located.

Based on the researcher's personal experience and the limited studies conducted, the researcher concluded that the problem on which this study

focuses seems to be vested in the following: to determine to what extent and how lecturers at the Flavius Mareka FET colleges in the Fezile Dabi District enhance critical thinking skills through questioning in EFAL classrooms at FET-level. In addition, based on the findings, to make recommendations that could create an awareness of how questioning could be used for the enhancing of critical thinking skills. A study of this nature could impact significantly on improving classroom practice at FET-level. This study thus focuses on a methodological and theoretical gap identified in the current research base by extending quantitative research in the field of critical thinking and identifying to what extent the use of questioning at FET-level promotes the enhancing of critical thinking skills. Furthermore, the study envisages making recommendations to extend the current theoretical knowledge base concerning the ways in which questioning could be used to enhance critical thinking in EFAL at FET-level.

1.2 PURPOSE STATEMENT

Based on the aforementioned, the purpose of this quantitative, descriptive (*cf*. 4.3.4.1) survey and observation study (*cf*. 4.3.4.2) is to determine to what extent and how the lecturers at the Flavius Mareka FET Colleges in the Fezile Dabi District enhance their students' critical thinking skills by means of questioning in the EFAL classrooms (*cf*. 4.3.1). At this point, critical thinking is defined as thinking that is purposeful, reasoned, and goal-oriented (Sternberg, Roediger & Halpern, 2007:6).

The data were collected by means of two researcher constructed Likert-scale questionnaires with closed and open questions (*cf*. 4.3.4) that were completed by the students and their lecturers to establish to what extent and how critical thinking skills are enhanced through questioning. In addition to this, structured observations (*cf*. 4.3.4.2) were conducted in the lecturers' classes to observe the frequency with which different questioning strategies/techniques and tactics were utilized to back up the descriptive survey data.

Flowing from the purpose statement, the following research questions were formulated.

1.3 RESEARCH QUESTIONS

1.3.1 Primary research question

The following two main questions came to mind while considering the research problem:

To what extent and how do lecturers at the Flavius Mareka FET Colleges in the Fezile Dabi District enhance their students' critical thinking skills by means of questioning in the EFAL classroom (*cf*. 4.3.1)?

1.3.2 Secondary Research Questions

In order to answer the above-mentioned question, the following secondary questions guided the execution of the study (*cf*. 4.3.1):

- Which critical thinking skills need to be enhanced in the EFAL classroom at FET-level?
- How do the lecturers who teach EFAL at FET-level interpret the concept critical thinking?
- How do lecturers interpret the way in which critical thinking skills can be enhanced in the EFAL classroom at FET-level?
- Which questioning types, strategies/techniques and tactics should lecturers use to enhance critical thinking skills among learners in the EFAL classroom at FET-level?
- To what extent do lecturers presently enhance critical thinking skills in the EFAL classroom through questioning at FET-level?
- Which questioning strategies/techniques and tactics do lecturers apply in EFAL classrooms to enhance critical thinking skills at FET-level?
- To what extent is there a difference in the perceptions of students on the two campuses regarding the way critical thinking skills are enhanced in the EFAL classroom?
- Which recommendations can be made to enhance critical thinking skills by means of questioning in EFAL classrooms at FET-level?

Flowing from the research questions the following aim and objectives were identified.

1.4 AIM AND OBJECTIVES

The main aim of this quantitative non-experimental descriptive survey and observation study (Leedy & Ormrod, 2005:179; McMillan & Schumacher, 2010:217) was to determine to what extent and how the lecturers at FET colleges in the Fezile Dabi District enhance critical thinking skills in the EFAL classroom among their students by means of questioning.

Within the main aim, the following objectives were identified:

- To determine which critical thinking skills need to be enhanced in the EFAL classroom at FET-level.
- To determine how lecturers who teach EFAL at FET-level interpret the concept “critical thinking”.
- To determine how lecturers who teach EFAL at FET-level interpret the way in which critical thinking skills can be enhanced.
- To establish which questioning types strategies/techniques and tactics lecturers should use to enhance critical thinking skills among students in the EFAL classroom at FET-level.
- To determine to what extent lecturers presently enhance critical thinking skills in the EFAL classroom through questioning at FET-level.
- To observe which questioning strategies/techniques and tactics lecturers apply in EFAL classrooms to enhance critical thinking skills at FET-level.
- To determine to what extent there is a difference in the perceptions of students on the two campuses regarding the way critical thinking skills are enhanced in the EFAL classroom.
- To make recommendations to enhance the enhancing of critical thinking skills by means of questioning in EFAL classrooms at FET-level.

The conceptual framework of the study is elucidated below.

1.5 CONCEPTUAL FRAMEWORK

1.5.1 Conceptualization

In the absence of a clear definition provided by the Department of Education as to how critical thinking should be conceptualized, the researcher's conceptualization is guided by the numerous definitions found in the literature.

For the purpose of this study, critical thinking and questioning will be conceptualized as follows:

Critical thinking and critical thinking skills

Facione (2010:4) argues that critical thinking is thinking that has a purpose. In other words, it means that critical thinking helps you to prove a point, to interpret information in context, as well as to solve a problem. In order to clarify the concept critical thinking, Facione (2010:5-8) proposes the application of six interrelated cognitive and meta-cognitive skills. These are as follow:

- Interpretations: to comprehend and express meaning.
- Analysis: to identify relationships among statements, concepts and descriptions.
- Evaluation: to assess the credibility of statements.
- Inference: to identify elements needed to draw reasonable conclusions.
- Explanation: to present in a coherent way the results of one's own reasoning.
- Self-regulation: to self-consciously monitor one's own cognitive activities.

A close examination of these skills reveals a strong link with the Taxonomy of Bloom, which is perhaps the most widely utilized source to conceptualize cognitive targets. The revised Taxonomy consists of six levels of increasing complexity, namely remember, understand, apply, evaluate and create (Anderson *et al.,* 2001:44). These six levels of complexity can also be seen as a set of cognitive (interpret, analyse, explain) and meta-cognitive (planning,

monitoring, evaluating) skills mentioned by Halpern (2007:6) and Woolfolk (2010:270) (*cf*. 2.2.2.1; 2.2.3).

For the purpose of this study, the researcher focused on the enhancing of all six cognitive and meta-cognitive skills identified by Facione (2010:5-8) that need to be acquired for effective critical thinking. Bearing in mind that the students who took part in the research should all be functioning at the formal operational cognitive development level which calls for hypothetical-deductive reasoning and logical reasoning (Piaget cited by Patterson, 2008:509), it seems reasonable to expect of them to be able to apply the higher-order cognitive and meta-cognitive skills necessary for critical thinking.

According to Dong (2006:23), EFAL instruction needs to integrate literacy and critical thinking skills. In this regard, Pienaar (2001:127) argues that reading promotes all the essential cognitive and meta-cognitive skills students must possess in order to succeed in adult life. Comprehension is thus the focal point of the reading process and involves the following cognitive skills that are important for enhancing critical thinking: relating vocabulary to experience; understanding ideas, concepts and processes; recognising relationships; making comparisons; drawing inferences; reflecting and interpreting; and reading between the lines (Facione, 2010:5-8). It is clear from the above-mentioned skills that the link between critical thinking and instruction in the language classroom appears to be strong, and the development of critical thinking skills cannot be ignored.

In line with the arguments of Bradbury (2000:14) and Kok (2007:225), careful questioning should be used to develop and enhance critical thinking skills.

Questioning

Seker and Kömür (2008:392) state that questioning plays a significant role in the enhancing of critical thinking skills at all levels of education, questions are the driving force in thinking and that people who think and learn are those who contemplate questions.

The following types of questions, according to Borich (2004:260), Cole and Chan (1994:174-1790, Davies (1981:168,170), and Shipley (1972:109), are vital for enhancing critical thinking skills among students in the classroom,

namely open and closed questions; overhead and directed questions; relay and reverse questions; pivotal and focusing questions; convergent and divergent questions; high order and low order questions; product, process and opinion questions; what, when, how, who and why questions; memory and search questions; contextuality explicit and contextuality implicit questions; and background questions (*cf*. 3.3).

These types of questions correspond well with De Bono's (1985:29) Six Thinking Hats strategies/techniques, where each hat represents a different thinking mode central to critical thinking that can be activated through careful questioning, as illustrated below:

- The white hat (memory and search questions)
- The red hat (feelings and opinion questions)
- The black hat (negative judgement questions)
- The yellow hat (positive judgement questions)
- The green hat (creative thinking questions)
- The blue hat (summary questions) (*cf*. 3.7.2)

One may ask how these thinking hats are connected to critical thinking. The answer is quite obvious. As mentioned previously, Facione (2010:4) mentions that critical thinking is thinking that has a purpose. It means that critical thinking helps one to prove a point, to interpret information in context and to solve problems. In order to do this, one requires cognitive and meta-cognitive skills (Facione, 2010:5-8), which can be connected to the Six Thinking Hats. In order to be able to interpret, analyse, evaluate, draw inferences, explain certain phenomena and self-regulate one's thoughts, one needs to be able to recall or seek certain information (memory and search questions – white hat), express one's feelings and beliefs (feelings and opinion questions – red hat), evaluate the negative aspects of certain information (negative judgement questions – black hat), evaluate the positive aspects of certain information (positive judgement questions – yellow hat), think about creative ideas in order to solve problems (creative thinking questions – green hat) and to be

able to summarize the main points of gathered information according to context (summary questions – blue hat).

In this study, the application and combination of a variety of questioning types, and strategies/techniques as proposed by Borich (2004:260), Cole and Chan (1994:174-179), De Bono (1985:29-32) and Davies (1981:168-170) are regarded as important for enhancing critical thinking skills. Furthermore, it is not only important to consider the types of questions that are asked by lecturers, but also the tactics employed in asking those questions (Wragg & Brown, 2001:27).

1.5.2 Concept definitions

The concepts central to the study are defined as follows:

Critical thinking and critical thinking skills

Critical thinking is the interrelated application of cognitive and meta-cognitive skills or strategies that increase the probability of a desirable outcome. It is thus used to describe thinking that is purposeful, reasoned and goal-oriented (Sternberg *et al.*, 2007:6)

Questioning

Questioning is the primary tool teachers and students use in order to gain knowledge and understanding, and therefore promotes interaction between lecturers and students in a classroom (Eggen & Kauchak, 2010:404; Seker & Kömür, 2008:392). Questioning is also used for the development of students' ideas, to challenge students, to assess students' levels of understanding, and to steer and ignite their interests and thinking (Dymoke & Harrison, 2008:134).

The researcher draws a distinction between questioning types, questioning strategies/techniques and questioning tactics to enhance critical thinking skills

- Questioning types are the different types of questions lecturers use in their classrooms, such as open questions, closed questions and overhead questions (*cf*. 3.3). Questioning types can vary from questions that expect the mere recall of information or questions that promote inquiry (Barell, 2010:190).

- Questioning strategies and techniques refer to the skilful use of different questions by lecturers to get students acquainted to different thinking modes (Sadker *et al*., 2011:108) (*cf*. 3.7).
- Questioning tactics refer to a skill each lecturer should possess in order to ask the right questions at the right time (Monyai, 2006:130) (*cf.* 3.8).

The research methodology that was used in the context of the study is discussed in the following sections.

1.6 RESEARCH METHODOLOGY

1.6.1 Research Framework

The research framework that guided the execution of the study was positivism (Creswell, 2009:6). Positivistic assumptions, according to Creswell (2009:6), represent the traditional form of research, and positivistic assumptions hold true more for quantitative research than for qualitative research.

Leedy and Ormrod (2005:94) assert that when using a positivistic paradigm, the researcher attempts to answer questions objectively about the relationships among measured variables with the purpose of explaining, predicting and/or controlling phenomena. In line with the aim of this study, the researcher gathered data objectively for the purpose to explain, by using a positivistic worldview. By doing this, the researcher replaced her personal view with an objective view (Babbie, 2001:44). In this study, the researcher objectively determined the extent to which and how lecturers at the Flavius Mareka FET Colleges enhance critical thinking skills in the EFAL classroom through questioning, by examining the perceptions of lecturers and students and observing the instructional practices of the lecturers.

1.6.2 Research design

The research design comprised a literature review and the execution of empirical research.

1.6.2.1 Literature review

Critical thinking and questioning are the main topics that were discussed in the literature review. In order to conduct this study, the researcher mainly made use of primary and secondary sources from the library, which included books and articles from journals and Google Scholar. All other electronic versions of articles in journals were obtained with the help of the library staff. The databases used in order to obtain these articles were J-STOR, ERIC, EbscoHost, ScienceDirect, SAE Publications. The following keywords were used: critical thinking and questioning, ideal critical thinker, critical thinking and cognition, cognitive development, importance of critical thinking, importance of questioning, reasons for a lack of critical thinking, types of questions, questioning techniques, questioning strategies, Bloom's Taxonomy and De Bono's Six Thinking Hats.

A number of themes were extracted from the literature review, which assisted the researcher in identifying the structure according to which Chapters 2 and 3 unfolded.

1.6.2.2 Research Design

In line with the positivistic worldview, the researcher chose a quantitative research design to conduct this study. A quantitative study, according to Creswell (2009:4), is used for testing objective theories by examining the relationship among variables. Creswell (2009:7) edifies the fact that a quantitative study implies that knowledge develops through a positivistic lens, and is based on careful observation and measurement of the objective reality that exists in the world. The perceptions of individuals will therefore be determined by means of numeric measures (Creswell, 2009:17). In this study the researcher did not test theory or examine relationships among variables, but examined the perceptions of individuals and identified the characteristics of the teaching and learning situation quantitatively (*cf*. 4.3.2).

1.6.2.3 Strategy of inquiry

Two strategies of inquiry were used, namely non-experimental descriptive survey research and non-experimental descriptive observation research. Non-experimental **descriptive survey research** was chosen to conduct this

research. Stiponovich and Van der Merwe (2007:69) explain that descriptive research has to do with making careful descriptions of observed phenomena, and/or the exploration of possible relationships between these phenomena. This study aimed to describe how critical thinking skills are presently enhanced in the classrooms on which the researcher focused by surveying the perceptions of students and lecturers.

Survey research, according to Creswell (2009:12) and Leedy and Ormrod (2005:183), provides numeric descriptions of trends, characteristics, attitudes or opinions of a population by studying a sample of a specific population. By using non-experimental descriptive survey research, the researcher was able to determine the extent to which and how lecturers enhance critical thinking skills in their classrooms, by surveying the perceptions of students and lecturers. As the researcher did not aim to manipulate any variables during the research, a non-experimental descriptive survey study was regarded as suitable.

In order to verify and support the data obtained by the questionnaires, the researcher also made use of an **observation study** with the assistance of a trained and knowledgeable co-observer to guarantee valid and reliable findings. The distinctive feature of observation as a research process is that it offers an investigator the opportunity to gather live data from naturally occurring social situations (Cohen *et al*., 2011:456). The researcher looks directly at what is taking place in situations, rather than relying on second-hand accounts (Cohen *et al*., 2011:456). Observation is the systematic process of recording the behavioural patterns of respondents, objects and occurrences without necessarily questioning or communicating with them. It is an everyday activity whereby we use our senses (seeing, hearing, touching, smelling and tasting), but also our intuition to gather bits of data. The observations enabled the researcher to gain first-hand information regarding the application of questioning strategies/techniques by the lecturers who took part in the study (Nieuwenhuis, 2010b:83-84).

The researcher and the co-observer acted as non-respondent observers looking at the situation from a distance without becoming immersed in the situation (Nieuwenhuis, 2010b:85). **Structured event sampling** (Cohen *et al.*,

2007:400) that involves the use of a sign system and a tally code to be entered against each of the incidences indicated in the observation schedule when it was observed (Cohen *et al.,* 2007:400), was utilized. A structured observation is very systematic and enables the researcher to generate numerical data from the observations. Numerical data, in turn, facilitate the making of comparisons between settings and situations, and the calculation of frequencies, patterns and trends (Cohen *et al.,* 2011:459).

1.6.2.4 Respondent selection (Sampling)

Due to time and logistical constraints, a study population was chosen. The study population comprised all EFAL students (N=142) and their lecturers (N=4) at the Flavius Mareka FET Colleges in the Fezile Dabi District. There are presently three Flavius Mareka FET colleges in the Fezile Dabi District. As one of the colleges only offers technical subjects, the college had to be excluded from the research. The sample in total comprised four lecturers and 142 NQF Level 2 EFAL students at the two campuses (Referred to hereafter Campus A and Campus B). The researcher, who is employed at one of the colleges and the students she teaches, did not take part in the research. The researcher chose the NQF Level 2 EFAL students because they comprise larger numbers of students than the Level 3 EFAL students, which could benefit the collection of richer data.

For the purpose of this study, the researcher used purposive and convenient sampling. The respondents were firstly, students and lecturers with whom the researcher is familiar. Secondly, the students and lecturers are at the same college where the researcher teaches, and were willing and available to take part in the research (Leedy & Ormrod, 2005:206). Furthermore, the sample could be regarded as purposive (Merriam, 2009:78) as the investigation focused on students and lecturers in EFAL classrooms at FET-college level.

All four English lecturers have between 5 and 21+ years of teaching experience. The biographical variables of the lecturer and student respondents are indicated in the tables below.

Table 1.1: Biographical information of respondents

Lecturers	
Number of lecturers	4
Gender	3 Female, 1 male
Age	Between 25 and 60
Culture	Afrikaans, English, and African (Sesotho)
Qualifications	BA & HED: 3 BEd Honours: 1
Students	
Number of students	142
Gender	Approximately 90% male, 10% female
Age	Between 16 and 25
Culture	Mainly Sesotho, as well as Xhosa, Tswana, Zulu and a few Afrikaans-speaking students

The researcher acknowledges that using a convenient sample limited the generalizability of the research findings.

1.6.2.5 Data collection strategies

Questionnaire

Wilson and McLean (*in* Cohen *et al*., 2000:245) mention that the questionnaire is widely used as a useful instrument for collecting survey information. For the purpose of the study, a self-constructed, structured questionnaire comprising open and closed Likert-scale questions was used, in order to determine lecturers' understanding of critical thinking, as well as the extent to which and how they use questioning types, strategies/techniques and tactics in order to enhance critical thinking skills among their students. Maree and Pietersen (2010a:161) concur that closed questions provide for a set of responses from the respondents. The researcher mainly made use of closed questions in her questionnaires, because she wanted specific answers from her respondents.

Although a number of closed questions were asked, some of the questions in the lecturers' questionnaires were open questions to establish how lecturers understand critical thinking, what they do in class, how they teach, and how they use different questioning and types, strategies/techniques and tactics in order to enhance critical thinking skills among their students.

With the Likert-scale questionnaires, the researcher envisaged to obtain the following information in order to achieve the objectives of the study as formulated in the research questions (*cf.* 1.3.2) indicated in Tables 1.2 and 1.3 below:

Table 1.2: Lecturer questionnaire

Objective	Types of questions
Objective 2: Determine how the lecturers interpret critical thinking? (*cf.* 3.2)	Open question: Explain in your own words your understanding of what critical thinking implies. How important it is to enhance it (see Questionnaire Section B).
Objective 3: Determine how lecturers interpret the way critical thinking skills can be enhanced in the EFAL classroom? (*cf.* 3.2)	Open question: How do you go about enhancing critical thinking skills in your classroom every day? (see Questionnaire Section B)
Objective 5: Determine to what extent lecturers presently enhance critical thinking skills in the EFAL classroom? (*cf.* 3.2)	Closed questions: The purpose of questioning, the application of questioning types, strategies/techniques and questioning tactics used in the EFAL classroom (see Questionnaire Section C, D, E, F).
Objective 6: Observe which questioning strategies/techniques and tactics lecturers apply in the EFAL classroom? (*cf.* 3.2)	Closed questions: Questioning strategies used in the EFAL classroom (see Questionnaire Section E, F).

Table 1.3: Student questionnaire

Objective	Questions
Objective 5: Determine to what extent lecturers presently enhance critical thinking skills in the EFAL classroom? (*cf.* 3.2)	Open and closed questions: See Questionnaire Sections B, C, D: students' perceptions of the enhancing of critical thinking skills in the EFAL classroom; purpose of questioning
Objective 6: Observe which questioning strategies/techniques and tactics lecturers apply in the EFAL classroom? (*cf.* 3.2)	Closed questions: Questioning strategies used in the EFAL classroom (see Questionnaire Sections E, F)

Objectives 1 and 4 were achieved by means of the literature review.

Observation schedule

Based on the information gathered through the literature review, the items in the observation schedule were constructed to correspond with some of the the various questioning strategies/techniques and tactics that could be utilized in the classroom (*cf.* 4.1). The first observation was conducted in the classrooms of the lecturers before they completed the questionnaires. This was done to avoid that the questionnaire influenced the way in which the lecturers normally approach their use of questioning during teaching, when the follow-up observations were conducted.

During the observations, the researcher and the co-observer rated the frequency of the application of the lecturers' questioning strategies/techniques and tactics independently, without knowledge of one another's ratings.

1.6.2.6 Data collection process

The data collection process took place as follows:

- Permission to conduct research and informed consent were obtained from all the respondents.

- A literature review, which guided the setting of the questionnaire items and observation criteria, was conducted. An in-depth and detailed literature review was done in order to gain valuable insight into the concepts *critical thinking* and *questioning*. The questionnaires were set up in accordance with the literature review to ensure that the questionnaires were valid and reliable.
- A pilot study was conducted to determine the reliability and validity of the questionnaire, and the reliability and validity of the observation process.
- Before administering the questionnaire, the first observation was conducted in the classrooms of the lecturers, to avoid the questionnaire's influencing the way they teach.
- The questionnaires were administered to the respondents.
- Two subsequent observations were conducted in the classrooms of the lecturers.
- Data analysis and interpretation.

1.6.2.7 Data analysis and interpretation

Questionnaire

In order to analyse the data that were obtained, descriptive and inferential statistics were used.

Leedy and Ormrod (2005:252) state that descriptive statistics describe what the data look like. The analyses of the completed questionnaires indicated the frequencies, percentages means and standard deviations for the various responses to the questionnaire items. The results that were obtained were compared to the literature on critical thinking and questioning in order to determine whether lecturers complied with what is revealed in the literature regarding the enhancing of critical thinking. As there were only a few lecturer respondents, it was not possible to compare the differences between the lecturer and student responses statistically, and only descriptive statistics were used to analyse the lecturer responses.

The student data were analysed by using both descriptive and inferential statistical procedures. The responses to the questionnaires were summarized with frequency counts, percentages and means (Pietersen & Maree, 2010:183-196). By means of inferential statistics, the data obtained from the students at the two different colleges were compared in order to determine similarities and differences. T-tests were utilized to determine the statistical significance of mean differences between the student responses for the various questionnaire sections. If statistical significant differences were noted, Cohen's *d* was calculated to determine the effect of the differences in practice (Steyn, 2005:20).

The responses to the open questions were analysed by means of an inductive content analysis procedure. Inductive content analysis refers to the identification of codes by the researcher when examining the data. This implies that the data speaks for itself and that no interpretations or bias that is not related to the data is evident (Nieuwenhuis, 2010c:107). Content analysis involves looking at the content of the data and breaking it into certain themes in order to extract meaning. The main method for analysing the data was to get the thoughts of the respondents and to classify these thoughts into certain themes and categories, and to look for similarities and differences in the responses (Leedy & Ormrod, 2005:108). After the analysis, the findings were compared to the literature.

Observations

Frequencies were calculated for the various observations in order to determine the frequency of the application of questioning strategies/techniques and tactics in the EFAL classroom. The data obtained from the observations were compared with the perceptions obtained from the student and lecturer responses to the questionnaire items, and linked to the literature review.

1.6.2.8 Quality criteria

Validity and reliability of the questionnaire

Reliability and validity were guaranteed by adhering to criteria for face, content and construct validity in the design of the questionnaire (*cf*. 4.3.6.1).

A pilot study was conducted to confirm the study's reliability (*cf*. 4.3.6.2, 4.3.6.3). Moreover, criteria for internal, external and statistical conclusion validity were considered (*cf*. 4.3.6.1). How the researcher complied with reliability and validity in the study, is explained in Chapter 4 (*cf*. 4.3.6).

Validity and reliability of the observations

In order to ensure reliability and validity, the observation schedule focused on variety of questioning strategies/techniques and tactics as indicated by the literature review in order to enhance face, construct and content validity of the observations. The researcher strived to be as objective as possible in assessing the application of questioning techniques. How the researcher ensured objective and reliable observations are explained in Chapter 4 (*cf*. 4.3.6.2, 4.3.6.3).

1.7 ETHICAL CONSIDERATIONS

Because every researcher works with research respondents, it is necessary that the researcher protects the respondents, develops trust among the respondents, promotes the integrity of the research, and guards the respondents against misconduct and impropriety (Creswell, 2009:87).

The researcher complied with ethical principles according to the view of Creswell (2009:88-92). The following aspects were considered: ethical issues in the research problem, ethical issues in the purpose and questions, ethical issues in data collection, ethical issues in data analysis and interpretation, and ethical issues in writing and disseminating the research. How the researcher adhered to ethical principles in practical terms are illustrated in Chapter 4 (*cf*. 4.3.9).

1.8 CHAPTER SUMMARY

The problem identified by the researcher was that students at FET colleges appear to possess a general inability to apply critical thinking skills in the EFAL classrooms. In addition, some of the EFAL lecturers seem to only teach content and remain unconcerned about whether their students understand the work content or know what to do in order to solve a problem (*cf*. 1.1).

By using quantitative, non-experimental descriptive survey and observation research, the study was aimed at describing to what extent and how critical thinking skills are presently enhanced in the EFAL classrooms. The sample comprised of all the EFAL Level 2 students (n=142) and their lecturers (n=4) at the two campuses of the Flavius Mareka FET colleges in the Fezile Dabi District (*cf*. 1.6.2.3, 1.6.2.4)

In the next chapter, Chapter 2, the nature of critical thinking and critical thinking skills are conceptualized..

CHAPTER 2

THE NATURE OF CRITICAL THINKING

2.1 INTRODUCTION

This chapter will conceptualize critical thinking and highlight the importance of critical thinking and the role it plays in an EFAL classroom. The chapter unfolds according to the following structure:

- Cognition
- Critical thinking
- Enhancing critical thinking in the classroom
- Misconceptions regarding critical thinking
- Reasons for a lack of critical thinking

In order to establish the place and function of critical thinking in cognition and cognitive development, the next section provides a summary of the components of cognition and the processes involved in cognitive development.

2.2 COGNITION: A CONCEPT CLARIFICATION

Cognition refers to the mental processes used to acquire information about the world. It includes processing and interpreting information, as well as the store, retrieve and use of knowledge to direct our behaviour (Louw & Louw, 2007:7). Cognitive development refers to how we come to know and understand our world by means of perception, learning, memory, thinking, decision-making, imagination, creativity, language and intelligence (Louw & Louw, 2007:7; Small, 1990:2).

2.2.1 Cognitive development

Louw and Edwards (2003:459) and Small (1990:2) state that cognitive development refers to changes in cognitive structures and processes that occur with age, as well as the development of perceptions, awareness, studying, memory and thought. Woolfolk (2010:16) also mentions that

cognitive development refers to gradual changes by which mental processes are becoming more complex and sophisticated. In other words, as an individual matures cognitive structures and processes change in order to become more developed, as highlighted by Piaget's stages of cognitive development (Louw & Edwards, 2003:461-464; Louw & Louw, 2007:24; Woolfolk, 2010:33-37).

Children develop the capacity for abstract, scientific thinking in the formal operational stage (11 – adult), which enables them to think about possible occurrences, instead of just thinking about real things and actual occurrences like younger children do (Louw & Louw, 2007:299). The researcher is of the opinion that it is important to understand the nature of cognitive development in the operational stage, since the present study is about young adolescents from 17 years of age. Bearing the stage in mind, all the student respondents should have the capability to reasoning and think logically on their own. However, they need help in acquiring and executing these skills effectively to enable them to think more critically about life and their academic work.

Even though only the cognitive developmental theory of Piaget has been discussed, the researcher acknowledges the theoretical views of other theorists such as:

- **Sternberg's approach** to cognitive development which classifies intelligence in terms of function (i.e. what the components of intelligence do) and level (i.e. the degree of complexity of the planning or decision-making being undertaken) (Gouws, Kruger & Burger, 2008:54).
- **Feuerstein's approach** to cognitive development, which promotes equal weight given to students and lecturers during the learning and teaching process in the classroom. Students are regarded as open systems with receptiveness as their central characteristic (Gouws *et al*., 2008:56).
- **Gardner's approach** to cognitive development, which locates intelligence in what people can do and the product they can create in the real world (Gouws *et al*., 2008:57).
- **Vygotsky's approach** to cognitive development in which is believed that all higher cognitive processes originate in social interaction (Gouws *et al*.,

2008:53). Further elaboration on Vygotsky's approach to cognitive development will be provided in (*cf*. 2.4.2.1).

2.2.2 Cognitive actions

Cognitive development comprises growth and development with regard to cognitive and meta-cognitive actions, which in turn requires the application of cognitive and meta-cognitive skills and strategies.

The researcher now elaborates on the cognitive actions and the cognitive skills that are required for the execution of cognitive actions.

Cognition can be summarized as the ability to acquire, store, transform and use knowledge in order to form thoughts, ideas and beliefs, as well as to be able to comprehend information so that one can conceptualize, reason and figure things out, in order to direct behaviour (Elder, 1996:s.i.; Louw & Edwards, 2003:241; Louw & Louw, 2007:7; Matlin, 2002:2)

It is important to take into consideration that the students in a class do not function only as individual entities, but also process information socially and in groups (Baron & Byrne, 2003:14).

2.2.2.1 Cognitive skills

Cognitive skills comprise the following: creative and critical thinking skills, information processing skills and reasoning (Petzer, 2010:17). Each of the aforementioned skills will be briefly explained in the section below.

Halpern (2007:6) explains that cognitive skills can be classified as higher order thinking skills or lower order thinking skills. Lower order thinking skills deal with memorization and simple recall of information and knowledge (Azmi & Harith, 2012:21). Higher order thinking skills are complex, require judgement, analysis and synthesis and are not applied in rote teaching. Higher order thinking skills are reflective, sensitive to the context and self-monitored (Halpern, 2007:6). Higher order thinking skills have to do with creative thinking, in which students are expected to create, discover and invent ideas, use their imagination, and hypothesize. Students are also expected to think practically in which they apply, use and practice higher order thinking skills (Halpern, 2007:6, 7).

Cognitive skills comprise creative and critical thinking skills, information processing skills and reasoning skills. Each of the skills is briefly explained below:

- **Creative thinking and critical thinking skills**

Creativity, according to Woolfolk (2010:288), is the ability to produce original work that is appropriate and useful. McGregor (2007:172) refers to creative thinking as thinking that deals with the production of an innovative design or a new approach to a problem. Moseley *et al.* (2005:144-145) regard creative thinking skills as the ability to:

- redefine the problem and goal;
- find analogies across the different domains of knowledge;
- brainstorm ideas;
- generate and use lists of ways in which a solution can vary;
- list the positive, negative and interesting attributes of various solutions; and
- visualize from other perspectives.

Critical thinking is the evaluative or reflective consideration about the validity, nature or substance of an idea or proposition by means of assessing, judging and decision-making (McGregor, 2007:172).

Woolfolk (2010:292) views critical thinking as the ability to evaluate conclusions by logically and systematically examining the problem, evidence to solve the problem and the solution to the problem. Halpern (2007:6) refers to critical thinking skills as analysis, commenting on, judging, evaluating, comparing and contrasting, and assessing.

Critical and creative thinking cannot be separated. Creative thinking has to do with generating new ideas and solutions to a problem, and critical thinking manifests when new ideas and solutions are being implemented and tested to see whether they are effective in solving problems or not. Since the main

focus of this study is critical thinking, the researcher discusses critical thinking in detail in Chapter 2 (*cf*. 2.4).

- **Information processing**

In order to apply cognitive skills efficiently, one needs to be able to interpret and organize information one receives into meaningful clusters or units (Lipman, 2003:180). Information processing involves the way in which knowledge enters into, is stored in, and retrieved from the memory (Eggen & Kauchak, 2010:198). Louw and Edwards (2003:263) say that the human mind works like a computer. It takes information in, processes it and stores it. However, they also say that the human mind is fallible. Therefore, it is necessary to practise and repeat certain skills every day in order not to forget them. In support of Epstein and Kernberger (2006:1), the researcher argues that if a lecturer wants to enhance critical thinking, he has to practise critical thinking skills in class with the students every day.

During information processing, Eggen and Kauchak (2010:198-217) mention that three major components play the lead role:

1. Memory (information) stores, which hold all the information and data, received. They work like filing cabinets in the mind.
2. Cognitive processes which are internal intellectual actions that transfer information from one store to another.
3. Metacognition, which consists of knowledge about, and the control of cognitive processes.

- **Reasoning**

Woolfolk (2010:38) asserts that reasoning is a formal-operations problem solving strategy. In other words, a person starts by identifying the factors that may affect a problem, and then evaluates possible solutions (Woolfolk, 2010:38).

Paul and Elder (2005:6-7) add that all reasoning has a clear purpose; is an attempt to solve a problem; is based on assumptions; on a specific point of view; on specific data, information and evidence; is expressed through

concepts and ideas; contains inferences and interpretations by which one draws conclusions; and that reasoning in one's decisions has consequences.

Higher-order cognitive processes require the application of cognitive strategies to process information.

2.2.2.2 Cognitive Strategies

Cognitive strategies refer to complex actions, which require the execution of strategies for problem solving, decision-making and conceptualizing, in order to complete certain learning tasks (Petzer, 2010:15). Since the aforementioned actions are central to critical thinking (Halpern, 1999:70; Facione, 2000:62; Browne & Freeman, 2000:302; Treffinger *et al.*, 2000:7; Ruggiero, 2004:159; Ten Dam & Volman, 2004:361-362; Montgomery, 2005:7) (*cf*. 2.3) the strategies required to execute the actions are discussed below.

- **Problem solving plays an important role in critical thinking**

Problem solving, according to Woolfolk (2010:279), is defined as the formulation of new answers, going beyond the simple application of previously learned rules in order to achieve a goal. According to the researcher, problem solving also happens when no solution is obvious.

Paul and Elder (2005:19) and Woolfolk (2010:279) point out that, in order to be a competent critical thinker, one needs to be able to solve problems effectively as follows:

- by means of figuring out and re-articulating one's goals, purposes and needs;
- by stating problems as clearly as possible;
- by studying the problem;
- by figuring out the information that will be needed in order to solve this problem;
- by carefully analysing and interpreting the information against the given problem;
- by drawing reasonable conclusions;

- by deciding what action needs to be taken in order to solve the problem;
- by evaluating the advantages and disadvantages;
- by adopting a strategic approach in order to solve the specific problem;
- by revising one's problem solving strategy if the first strategy is problematic;
- by anticipating the outcomes and acting on it; and by
- looking back at the problem and learning from it.

A requirement of problem solving is the ability to see things in new ways (Woolfolk, 2010:284), but people often fail to solve problems since they display **functional fixedness** which refers to an inability to use tools or objects in new ways in order to solve their problems. For instance, they will see a knife as being used only to slice things, and never look at other possibilities of usage for the knife. It is in the researcher's opinion that people who display functional fixedness have a tendency to be narrow-minded in their thinking, and do not think critically.

Heuristics are seen as general informal strategies or guidelines that are used or invented in order to solve problems that might lead to the right answer (Ashcraft & Radvansky, 2010:434; Matlin, 2002:222; Woolfolk, 2010:283). Woolfolk (2010:285) is also of the opinion that problems often arise with heuristics as well. People apply heuristics automatically in order to make judgements that will save them time in their everyday problem solving, forgetting that even though their minds can react automatically and instantaneously, the price they often pay for this efficiency is bad problem solving. Bad problem solving occurs as people are often rigid in their thinking and display a tendency of responding in the most familiar and common way, without demonstrating flexibility in understanding problems (Woolfolk, 2010:286).

If people open their minds to multiple possibilities, they may have insight, which is the sudden reorganisation or reconceptualization of a problem that

clarifies the problems they are facing by suggesting feasible solutions (Woolfolk, 2010:286).

It is evident that problem solving plays a very important role in the development of critical thinking skills. If it is not practiced on a regular basis in and outside the classroom, some students may never be able to have full insight into a problem and its solutions, or they will never be able to develop their critical thinking skills fully since they are not fully exposed to solving problems.

- **Decision-making plays an important role in critical thinking**

For Pienaar (2001:130), the hallmark of a critical thinker is seen as the ability to make good decisions. Decisions are often complex because no clear-cut right or wrong answer exists, as well as the fact that decision-making involves the processing of a great deal of information (Pienaar, 2001:130). Decision-making involves the ability to assess and choose among several alternatives (Matlin, 2002:401). The ability to make a decision is to make a choice between various options (Epstein & Kernberger, 2006:351). When one makes choices, one actually carefully considers different arguments for one's choices (Epstein & Kernberger, 2006:351). According to Moseley *et al.* (2005:144), decision-making skills are involved with the generation and selection of alternatives and in judging among them by: framing decisions in several ways in order to consider different sorts of alternatives; generating alternatives; evaluating the consequences of various alternatives; and by being aware of the effects of memory on decisions.

The researcher is of the opinion that critical thinking can be measured in terms of decision-making, because it involves the application of cognitive and meta-cognitive skills of classifying, creative thinking (generating alternatives) and evaluation of alternatives (Facione, 2010:5) (*cf*. 2.3). In order for a person to make effective decisions, he will have to use higher order thinking skills, such as analysis and synthesis, which are core critical thinking skills (Halpern in Sternberg *et al*., 2007:6) in order to do so.

- **Conceptualization plays an important role in critical thinking**

Arends (2009:322) argues that the term *concept* refers to an idea someone has, or it may be used as a hypothesis. In terms of teaching and learning, the term *conceptualisation* is referred to as the way knowledge and experience are categorized (Arends, 2009:322). Eggen and Kauchak (2010:254) and Woolfolk (2010:247) add to Arend's idea by mentioning that a concept is a category that is used to group similar events, ideas, objects or people. Concepts are also constructed from people's experiences and are fundamental building blocks of their thinking. Thus, by constructing concepts, people are allowed to simplify the world they are living in (Eggen & Kauchak, 2010:254). Matlin (2002:236) agrees with Eggen and Kauchak (2010:254) by saying that the term *concept* refers to people's mental representations of a specific category.

Conceptualization plays an important role in critical thinking as it involves the important skill of interpreting and classifying.

Based on the preceding discussions, the researcher is of the opinion that critical thinking involves the use of higher order cognitive processes, such as problem solving, decision-making, and conceptualizing, in order to process information.

A closer look also has to be given to meta-cognitive actions as they play a central role in the development and application of critical thinking skills.

2.2.3 Meta-cognitive actions

Meta-cognition refers to a person's knowledge about and control of thought processes (Louw & Louw, 2007:167). Meta-cognitive processes also enable people to generate strategies such as asking questions in order to solve problems (Louw & Louw, 2007:167). Meta-cognition involves higher order thinking that is used to plan, monitor and regulate cognitive processes such as reasoning, comprehension and problem solving (Woolfolk, 2010:270), as well as to the individual's awareness of and his control over his cognitive processes, or the action of thinking (Eggen & Kauchak, 2010:217).

Metacognition entails three kinds of knowledge, according to Woolfolk (2010:270). These are:

- **Declarative knowledge**

This is knowledge a person possesses about himself as a student, the factors that influence his learning and memory, as well as the skills, strategies and resources he needs in order to perform a task, thus being able to know what to do.

- **Procedural knowledge**

This means that a person knows how to use strategies to solve problems.

- **Self-regulatory knowledge**

This type of knowledge ensures the completion of a task, thus, knowing the conditions (when and why) in order to apply procedures and strategies.

In summary, according to Woolfolk (2010:270) metacognition refers to the strategic application of the declarative, procedural and self-regulatory knowledge in order to accomplish a person's goals and to be able to solve problems; therefore, it includes knowledge about the value of applying cognitive strategies in learning.

Metacognition is also used to regulate thinking and learning, and consists of three essential skills that allow the self-regulation of thinking and learning. Facione (2010:5) regards self-regulation, which involves meta-cognition as a core critical thinking skill (*cf*. 2.3).

According to Woolfolk (2010:270), these skills are:

- **Planning**

Planning involves deciding how much time to spend on a task, which strategies to use, how to start, which resources to use, and so on.

- **Monitoring**

Monitoring deals with real-time awareness by asking oneself questions regarding one's performance so far.

- **Evaluating**

Evaluating deals with making judgements about the processes and outcomes of thinking and learning.

It is clear from the preceding sections, that cognitive and meta-cognitive skills as well as cognitive strategies are required for the execution of critical thinking.

Now that the cognitive and metacognitive actions have been discussed, and their importance for critical thinking established, critical thinking will be elucidated in the following section.

As a summary of the preceding section, Figure 2.1 provides a visual representation of the components of cognition and the place and role of critical thinking.

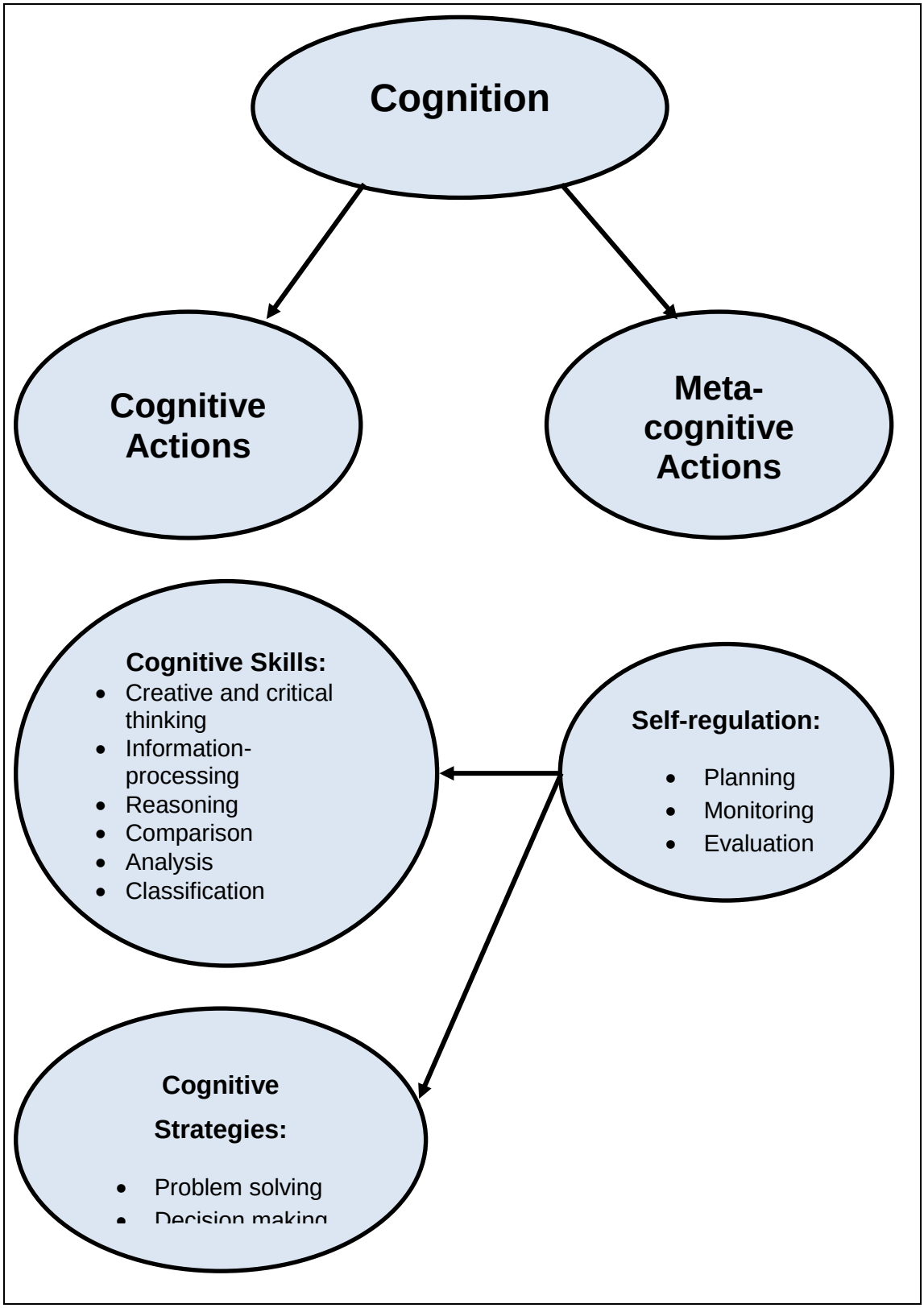


Figure 2.1: Visual presentation of the components of cognition

Figure 2.1 captures the essence of the actions involved in cognition. Cognition comprises the application of cognitive and meta-cognitive skills. Critical

thinking is classified as a cognitive skill. In order for the cognitive skills to be applied effectively, strong meta-cognitive skills are required.

2.3 CRITICAL THINKING: A CONCEPT CLARIFICATION

Numerous explanations and definitions are offered in the literature to explain what critical thinking is. Halpern (1999:70) refers to critical thinking as the use of cognitive skills or strategies that increase the probability of a desirable outcome and that are purposeful, reasoned and goal-directed.

Browne and Freeman (2000:302) explain that critical thinking focuses on a set of skills and attitudes that enable a listener or a reader to apply rational criteria to the reasoning of speakers and writers. Thus critical thinking is judgement, reflective and purposive (Facione, 2000:62).

For Treffinger *et al*., (2000:7) critical thinking refers to the examining of possibilities carefully, fairly and constructively, and then focusing one's thoughts and actions by organizing and analysing possibilities; refining and developing promising possibilities; ranking or prioritizing options; and by choosing or deciding on certain options.

Ruggiero (2004:159) asserts that critical thinking is used to review the ideas we have produced by making a tentative decision about what action will best solve a problem or what belief about an issue is most reasonable, and then evaluating and refining that solution or belief.

Ten Dam and Volman (2004:361-362) see critical thinking as higher-order thinking skills that focus attention on appropriate learning and instruction processes.

Montgomery (2005:7) explains that critical thinking is the brainwork that empowers an interpretation. Thus, by thinking critically, you do not only acquire information, but you also analyse it. In other words, you are comparing information to what you already know, believe or have discovered (Montgomery, 2005:7).

Within the context of this study, critical thinking is conceptualized according to the views of Browne and Freeman (2000:302); Facione (2000:62); Halpern

(1999:70); Montgomery (2005:7); Ruggiero (2004:159); Ten Dam and Volman (2004:361-362) and Treffinger *et al*., (2000:7) that involves the following:

Critical thinking involves the use of cognitive and meta-cognitive skills or strategies (*cf*.2.2.2.1; 2.2.2.2; 2.2.3) that enable an individual to apply rational criteria such as focusing thoughts and actions, to make tentative decisions; to focus attention on appropriate learning and instruction processes by comparing, contrasting and reconsidering information in the light of what one knows, believes and has discovered.

Two other aspects which clarify critical thinking that should also be taken into consideration, according to Bailin *et al*., (1999:289) and Facione (2010:7,10) are: critical thinking dispositions and attitudes, and behavioural critical thinking habits (*cf*.2.3.1.2; 2.3.1.3)

2.3.1 The components of critical thinking

Chartlrand and Rose (2008:3) and Facione (2009:5) listed the following **core critical thinking skills and strategies**, critical thinking dispositions and critical thinking habits, demonstrated in Figure 2.2, as the components of critical thinking.

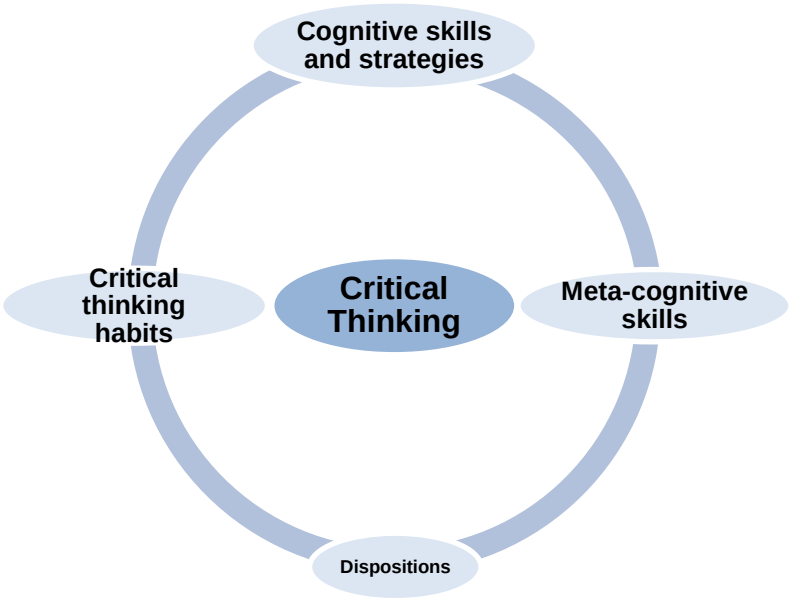


Figure 2.2: The components of critical thinking (adapted from Chartlrand & Rose, 2008:3)

Each of the components indicated in figure 2.2, is discussed in the subsequent sections.

2.3.1.1 Cognitive skills and strategies

Linked to Figure 2.2, Facione (2009:5) mentions that interpretation, analysis, evaluation, inference, explanation and self-regulation lie at the very core of critical thinking. In order to gain a clear understanding of these core critical thinking skills. Facione (2009:5-7) and Chartlrand and Rose (2008:3) simplify the meaning of each as follows:

- **Interpretation**

When dealing with interpretation, one needs to be able to comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgements, conventions, beliefs, rules, procedures or criteria (Chartlrand & Rose, 2008:3; Facione, 2009:5).

In other words, one needs to be able to interpret information in any situation correctly against the given content.

- **Analysis**

Analysis deals with identifying the actual or intended relationships among statements, being able to analyse means and ideas, detecting and eventually analysing arguments (Chartlrand & Rose, 2008:3; Facione, 2009:6).

One therefore needs to be able to analyse information in order to be able to examine arguments.

- **Evaluation**

To evaluate means to assess the credibility of statements which depict one's perceptions, experiences and judgements in a specific situation. It also means to be able to assess the logical strength of the intended inferential relationships among certain statements or questions (Chartlrand & Rose, 2008:3; Facione, 2009:6; Woolfolk, 2010:270).

Being able to evaluate means to be able to assess information against given contexts and then to draw relationships among different pieces and

information, by judging the processes and outcomes of thinking and learning (*cf*. 2.2.3).

- **Inference**

To draw inferences means that one can identify and secure the elements needed to draw logical or reasonable conclusions, as well as to form hypotheses. This skill of drawing inferences includes being able to query specific information or evidence, to conjecture alternatives, as well as to ultimately draw conclusions (Chartlrand & Rose, 2008:3; Facione, 2009:6).

To draw inferences means to possess the ability to question information in order to draw logical conclusions.

- **Explanation**

Chartlrand and Rose (2008:3), Facione (2009:7) and Woolfolk (2010:326) indicate that explanation is defined as being able to present the results of one's reasoning in a cogent and coherent manner, in other words, to give another person a look at the full picture by means of presenting one's reasoning in the form of cogent arguments. This can only be done by means of proposing and defending arguments with good reasons for causal and conceptual explanations of one's point of view.

One needs to be able to explain one's thought and ideas in order to demonstrate one's point of view in any given situation.

- **Self-regulation**

Chartlrand and Rose (2008:3) Facione (2009:7) mention that self-regulation refers to examining and correcting oneself in terms of one's thoughts and cognitive activities by means of "applying skills of analysis, and evaluation of one's own inferential judgements with a view toward questioning, confirming, validating, or correcting either one's reasoning or one's results". Self-regulation also refers to knowing the conditions of completing a task (knowing when and why) and to be able to apply the necessary procedures and strategies in order to complete a task (Woolfolk, 2010:270) (*cf*. 2.2.3).

In other words, self-regulation refers to when one is constantly correcting one's views and reasoning about specific topics of discussion or results.

Thus, in short, when one practises self-regulation, it means that one is applying meta-cognition and actually checking up on oneself in terms of one's ideas, thoughts and deductions from arguments in order to see if one's deductions are logical and in accordance with the actual problem that needs solving. (*cf*. 2.2.3)

2.3.1.2 Critical thinking dispositions and attitudes

According to Costa and Kallick (2009:15-41), Facione (2009:10) and Lai (2011:10), one needs to develop the following dispositions and attitudes in order to become an effective critical thinker. These are:

- A critical thinker shows interest in a wide range of issues or topics.
- A critical thinker is concerned to remain well informed about topics and situations in life.
- A critical thinker is alert to opportunities (teaching and learning, or socially) to think critically.
- A critical thinker trusts the process of reasoned inquiry and probes for deeper meaning through questions.
- A critical thinker has self-confidence in his/her ability to reason.
- A critical thinker is objective and open-minded regarding different world views, and opinions.
- A critical thinker considers alternatives and options as possible solutions to problems.
- A critical thinker understands the opinions of others and considers it.
- A critical thinker is fair-minded in reasoning.
- A critical thinker is honest about developing own biases and assumptions.
- A critical thinker makes altering judgements when solving problems.
- A critical thinker is willing to reconsider and revise views where reflection suggests changes, thus, he/she is self-reflective and self-evaluative.

2.3.1.3 Behavioural critical thinking habits

Facione (2009:7) mentions that, critical thinkers should not only be able to interpret and analyse information, they also need to explain their thoughts and actions, as well as practise self-regulation, when they see that their thoughts have deviated too far from the specific topic they are dealing with.

Therefore Bailin *et al*. (1999:289) add that critical thinking also includes the responsible assessment of reasons and arguments, as well as responsible deliberation. Bailin *et al*. (1999:289) further mention that critical thinking includes constructive responses to reasons and arguments given by others in the context of discussion. In other words, although critical thinking involves the interpretation and analysis of information, students should also be able to assess reasons and arguments against the given context of a specific discussion or situation.

The concept *critical thinking* has been clarified and it is necessary to shift the attention to how the ideal critical thinker behaves when faced with problems to solve.

2.3.2 The ideal critical thinker

According to Paul and Elder (2007:16-17) the ideal critical thinker possesses certain intellectual traits/dispositions/attitudes and effectively applies intellectual standards to the elements of reasoning.

In Figure 2.3, the Critical Thinking Model of Paul and Elder (2007:21) is demonstrated which points to the elements of thought (reasoning), namely purpose, the question at issue, information, interpretation and inference, concepts, assumptions, implications and consequences, and point of view, which play a role in the development of critical thinking skills (Paul & Elder, 2007:5-7). These elements are discussed in detail in (*cf*. 2.3.2).

Figure 2.3 also refers to intellectual standards that should be applied to thinking whenever one is interested in checking the quality of reasoning about a problem, issue or situation (Paul & Elder, 2007:10). The figure also demonstrates that one needs to possess certain intellectual traits and dispositions (*cf*. 2.3.1.3) in order to think critically (Paul & Elder, 2007:16-17).

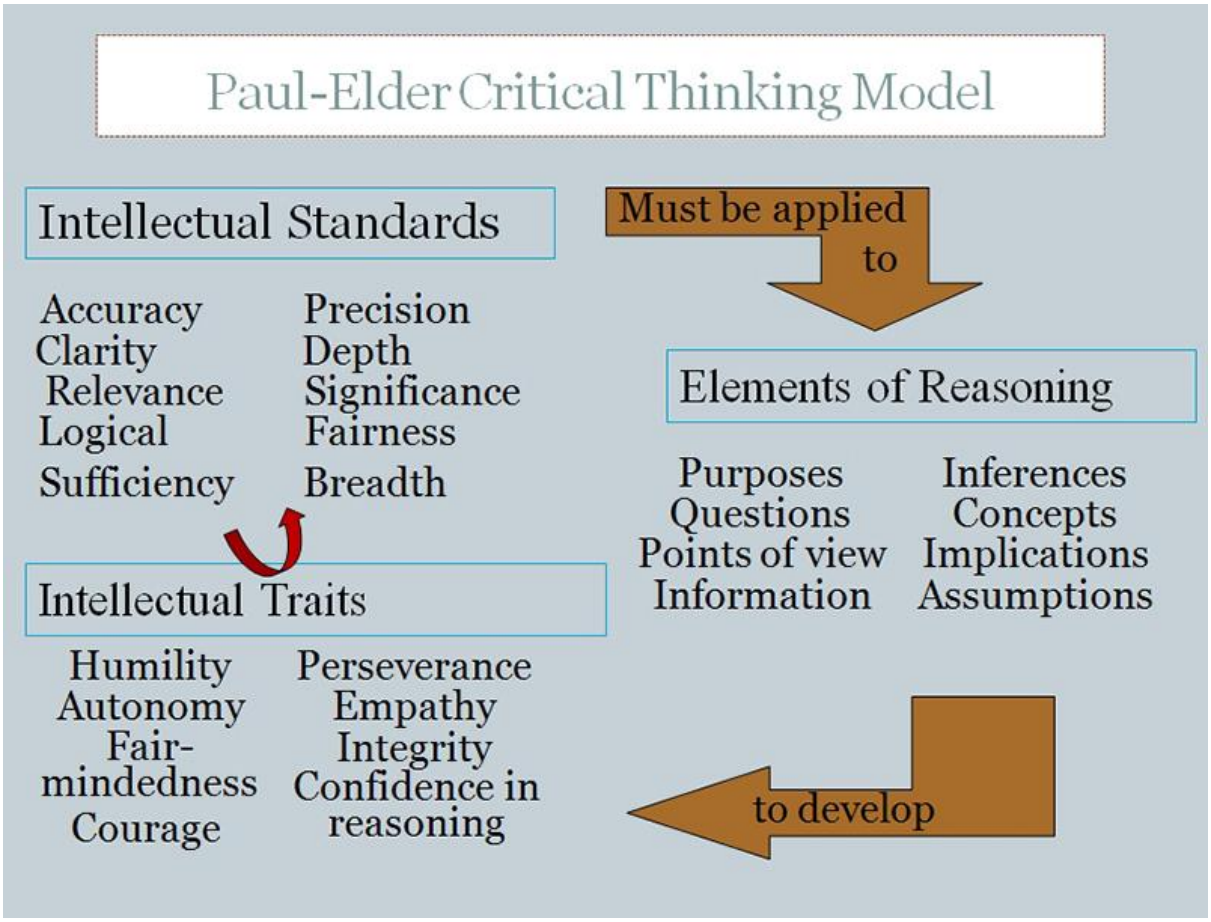


Figure 2.3: The ideal critical thinker and elements of critical thought (Paul & Elder, 2007:16-17)

According to Figure 2.3, Paul and Elder (2008:8) explain that **intellectual standards** are standards which should be applied to thinking to ensure its quality. These standards should be learned and taught explicitly to students. The goal is for these standards to become infused in the thinking of students, forming part of their inner voice, and **guiding them to reason** better (Paul & Elder, 2008:8). Students should be taught how to reason, by doing so, lecturers need to teach them what reasoning consists of (elements of reasoning). These elements, according to Paul and Elder (2008:4,5) show that all reasoning:

- Has a purpose.
- Is an attempt to figure something out or to solve problems.
- Is based on assumptions.
- Is done from some point of view.

- Is based on data, information and evidence.
- Is expressed through, and shaped by, concepts and ideas.
- Contains inferences/interpretations by which we draw conclusions and give meaning to data.
- Leads somewhere or have implications and consequences.

When lecturers have taught their students how to apply intellectual standards to thinking in order to reason better, they will **develop intellectual traits** (Paul & Elder, 2008:14-15) by being conscious of:

- The limits of their knowledge, including sensitivity to circumstances.
- The need to face, and fairly address ideas, beliefs or viewpoints.
- The need to put oneself in the place of others imaginatively in order to understand them.
- The rational control of one's beliefs, values and inferences/interpretations.
- The recognition of the need to be true to one's own thinking.
- The need to use intellectual insight and truths in spite of difficulties, obstacles and frustrations.
- Having confidence that one's own higher interest and those of humankind will be best served at large by giving the freest play to reason.
- The need to treat all viewpoints alike.

Facione (1990:2) describes the ideal critical thinker as someone who is:

> *"…habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgements, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit*."

Paul and Elder (2005:1) agree by adding that well cultivated critical thinkers can:

- raise questions and problems and formulate them clearly and precisely;
- gather and assess relevant information by using abstract ideas in order to interpret them effectively;
- come to well-reasoned conclusions and solutions by testing them against all relevant criteria and standards;
- think open-mindedly within alternative systems of thought by recognizing and assessing their assumptions, implications and practical consequences; and
- communicate effectively with others by coming up with solutions to complex problems.

It is the researcher's opinion that lecturers will only be able to enhance critical thinking skills if they know what critical thinking skills they need to enhance. The next section therefore pays attention to the elements of critical thinking that have to be enhanced during teaching, as displayed by Figure 2.3.

2.3.3 The elements of critical thought

> "*Critical thinking is the art of analysing and evaluating thinking with a view to improving it*." (Paul & Elder, 2005:4)

Elder and Paul (2007:5) argue that whenever we think, our thinking is directed by a purpose guided by a point of view that is based on assumptions leading to implications and consequences. We make use of concepts, ideas and theories to interpret data, facts, and experiences so that we can answer questions, solve problems and resolve issues (Elder & Paul, 2007:5).

Paul and Elder (2005:4) introduce the elements of critical thought as demonstrated in Figure 2.4.

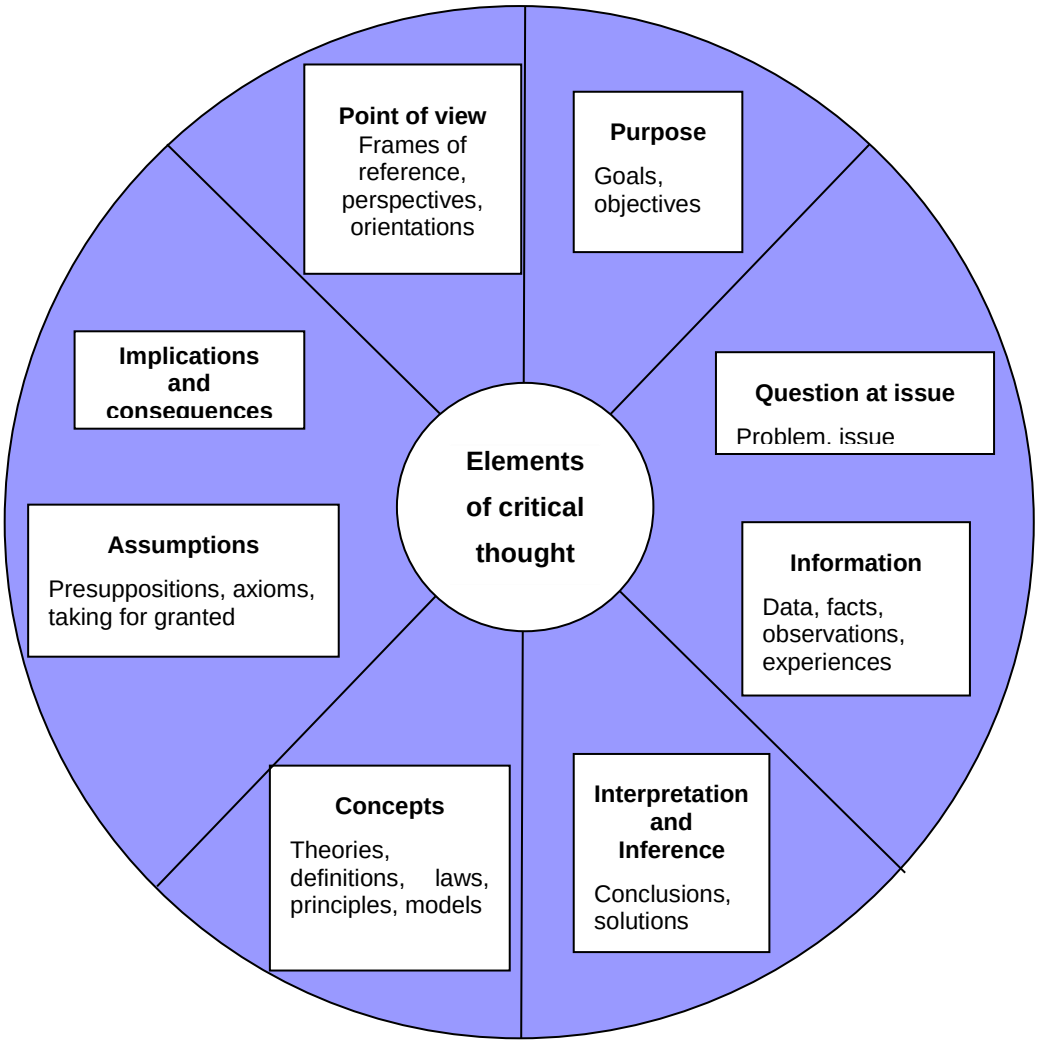


Figure 2.4: The elements of critical thought

Figure 2.4 shows eight elements of critical thought. These elements are discussed below in terms of the views of Elder and Paul (2007:14-21):

- **Purpose**

Elder and Paul (2007:14) is of reason that our purposes are our goals (objectives), meaning what we are trying to accomplish. The term "purpose" is also used to include functions, motives and intentions. Furthermore, Elder and Paul (2007:14) also mention that purposes should be clear and justifiable. One should always ask oneself what the purpose is for doing or thinking about a specific issue.

- **Question at issue**

Questions lay out problems or issues and guide our thinking; therefore, questions should be clear, because when they are vague our thinking will lack

clarity and distinctness (Elder & Paul, 2007:15). In other words, the questions we use should be clear and precise enough to guide our thinking productively (Elder & Paul, 2007:15).

- **Information**

Information, according to Elder and Paul (2007:16), includes facts, data, evidence or experiences we are using to figure things out. However, the information we use does not necessarily imply accuracy or correctness. Therefore, Elder and Paul (2007:16) propose that users of information should make sure that the information they use is accurate and relevant to the question or issue they are addressing.

- **Inferences**

Interpretations and/or conclusions are what we come to when we are making inferences (Elder & Paul, 2007:17). Inferences should logically follow from evidence, therefore, one should also infer no more or less than what is implied in a specific situation or problem (Elder & Paul, 2007:17).

- **Assumptions**

According to Elder and Paul (2007:18), assumptions operate at the subconscious or unconscious level of thought. Because assumptions are beliefs we usually take for granted, Elder and Paul (2007:18) advise that we should make sure that we are clear about our assumptions and that they can be justified by sound evidence.

- **Concepts**

The ideas, theories, laws, principles, and/or hypotheses we use in thinking to make sense of things, are called concepts (Elder & Paul, 2007:19). Therefore, we should be clear about the concepts we use, and make sure that we use them justifiably.

- **Point of view**

Our point of view includes what facts or learning content we are looking at, and the way in which we see the factors or content (Elder & Paul, 2007:20).

Therefore, we should fully consider other relevant viewpoints, and understand the limitations of our own viewpoints (Elder & Paul, 2007:20).

- **Implications**

Implications are inherent in our thoughts, even though we cannot see them (Elder & Paul, 2007:21). Implications, according to Elder and Paul (2007:21), are also claims or truths that logically follow from other claims or truths.

Elder and Paul (2007:21) conclude that the best thinkers think through the logical implications in a situation before they act on it. According to Paul and Elder (2005:4), a well-cultivated critical thinker is a person who can:

- raise vital questions while formulating them clearly and precisely;
- gather, assess and interpret information effectively;
- come up with well-reasoned conclusions and solutions by testing them against relevant criteria;
- think open-mindedly by recognizing and assessing assumptions, implications and practical consequences; and
- communicate effectively with other people while figuring out solutions to complex problems.

In short, Paul and Elder (2007:4) concur that critical thinking is thinking that is self-directed, self-disciplined, self-monitored, and self-corrective. Paul and Elder (2007:4) also point out effective communication, problem solving abilities and real commitment to practise critical thinking skills are prerequisites for effective critical thinking.

In order to establish whether the classroom practices of the lecturers who took part in the research enhance critical thinking, the researcher had to identify from the literature what could be regarded as important when enhancing critical thinking in the classroom.

2.4 ENHANCING CRITICAL THINKING IN THE CLASSROOM

2.4.1 The importance of enhancing critical thinking skills in EFAL classrooms

According to Adams (2002:152), thinking has been a major concern since the earliest writings on education with the emphasis on classical languages and Mathematics, because it was claimed that these subjects are the ones which train the mind. Shiraev and Levy (2004:56) also point out that one of the most essential characteristics of all human beings is thinking, and that it is intrinsic to almost everything we do.

Shiraev and Levy (2004:57) point out that languages serve many functions and that one of its most important functions are to help us describe various phenomena. In other words, we use language in order to describe our feelings and thoughts. We use it in order to reason about certain phenomena and to make sense of phenomena.

Adams and Hamm (1996:37) mention that in order to think critically, one needs to be able to raise powerful questions about what one has read, viewed or listened to. For this reason, the CAPS document of the Department of Education (2011:5) has listed seven Critical Outcomes that need to be achieved by each student at the end of his/her school career. Three of these outcomes explicitly focus on the development of critical thinking, namely:

- Identify and solve problems and make decisions using critical and creative thinking.
- Collect, analyse, organize and critically evaluate information.
- Use science and technology effectively and critically show responsibility towards the environment and the health of others.

In addition, the following Learning Outcomes are stipulated in the Assessment Guidelines (Department of Education, 2013:11-17) to be followed by lecturers who teach EFAL:

- **Topic 1: Listening and speaking**

Students should be able to listen in social and academic contexts for a variety of purposes and also to be able to speak accurately and correctly in social and academic context for a variety of purposes and audiences.

- **Topic 2: Reading and viewing**

Students should be able to read to determine meaning and respond to the intended message. Moreover, students should be able to read and assess visual and non-verbal forms of communication in order to determine meaning and respond to the intended message.

- **Topic 3: Writing and presenting**

Students should be able to write and present for a specified range of purposes and audiences using language structures and grammar conventions and formats appropriate to social and academic contexts.

- **Topic 4: Language and communication in practice**

Students should be able to use a variety of theoretical principles to improve effectiveness of communication in social and academic settings.

Since the application of knowledge and comprehension, the ability to analyse, synthesise and evaluate problems against the given context of the learning content form part of the enhancing of critical thinking skills (*cf*. 2.3, 3.7.1, 3.7.2), the outcomes listed above are directly linked to the enhancing of critical thinking skills in the EFAL classroom.

Vandermensbrugghe (2004:419) explains that the term critical thinking can be divided into two categories, namely: an ability to develop a capacity to reason logically and cohesively, and ability to question and challenge existing knowledge and social order.

The first category refers to the capacity to carry out logical operations, such as being able to evaluate certain categories and forms of knowledge so that validity can be determined. The second category deals with the use of reasoning in order to examine certain phenomena. It is about identifying challenging assumptions and coming up with alternatives to solve a problem.

Lecturers therefore need to remember that in order to teach critical thinking skills, they need to pay attention to the fact that their students need to develop the ability to assess information and be able to make creative and critical judgements (Adams & Hamm, 1996:37; Vandermensbrugghe, 2004:419). In order to do this, lecturers should make use of collaboration. Lecturers need to amplify the application of their students' reasoning skills by helping them to talk or draw conclusions about what is going on in their heads (Adams & Hamm, 1996:37).

Adams (2002:153) explains that good thinking is thinking that leads the thinker to achieve specific goals. In other words, good thinking will then involve the best of what one knows in order to make good judgements. Good thinking is also like a tool kit that will only be useful if it contains a variety of tools (thinking skills) that are suitable for different job demands (learning tasks) which need to be done in order to achieve the goal (Adams, 2002:153).

In the following section, the researcher takes a closer look at the type of environment, which lecturers should provide in order to teach critical thinking skills effectively to their students.

2.4.2 A classroom environment for teaching critical thinking

To enhance critical thinking skills among students in the EFAL classroom, lecturers need to ensure that their classrooms are productive learning environments which are orderly focused on learning in which students feel physically and emotionally safe and the daily routines, learning activities and standards for appropriate behaviour are designed to promote learning (Eggen & Kauchak, 2010:352). In order to provide a clear understanding of a classroom environment for teaching critical thinking skills to students, the researcher wishes to focus attention on the following aspects:

- A constructivist classroom.
- Thoughtful actions taken by lecturers.
- A thinking classroom.
- Thinking as a learning goal.

- Establishing a climate for thinking.
- Using language for thinking.
- The involvement of students in actual intellectual exploration.
- A deliberate pace for thinking.
- The classroom as a community of thinkers.
- Reflection by the lecturers and their students.
- Questioning.

The abovementioned aspects will now be discussed in further detail.

2.4.2.1 A Constructivist classroom

> *"Constructivism, grounded in the work of theorists such as Piaget and Vygotsky, emphasises that learners actively construct understanding, that new learning depends on present understanding, that learning is facilitated by social interaction, and that meaningful learning occurs within authentic learning tasks."*
>
> Gouws (in Kruger & Adams, 2002:74)

In line with the aforementioned quotation, constructivism views learning as a constructive process in which students build their own knowledge, in a responsive environment (Costa & Kallick, 2009:101). The constructive processes that are associated with this vision of learning involves the organisation of information (*cf*. 2.2.2.1), the ability to link new information to prior knowledge, to make use of metacognitive strategies (making judgements, remembering facts, decision-making, and the ability to comprehend information) (*cf*. 2.3), to plan the accomplishment of goals, or reach possible solutions to answers (Starko, 2005:15).

Jacobs (2006:46) points out that constructivism is based upon the belief that students should be helped in order to construct knowledge that is meaningful and useful in their own lives. Jacobs (2006:46) and Shostak (in Cooper *et al.*, 2011:91) continue to say that the emphasis should be on how the students learn and not necessarily on what they learn.

In other words, it is more important for lecturers to help their students learn content by thinking about it and making logical inferences about it, than to teach them the content only, without knowing whether they really understand the work or not. In support of Adams (2002:160), the researcher agrees that a thoughtful lecturer, moves away from covering a body of facts linked to content towards what students can do with the content, which supports a constructivist view to teaching and learning.

Based on the aforementioned characteristics of constructivist teaching and learning, the researcher is of the opinion that a constructivist classroom environment should be used to teach critical thinking skills. According to Shostak (in Cooper *et al.,* 2011:91), Matlin (2002:318, 319) and Woolfolk (2010:311) constructivism does the following:

- Emphasis is on how students learn instead of what they learn (*cf*. 3.5.4).
- Encourages student interaction (*cf*. 2.4.2.9).
- Provides students with the opportunity to conceptualize for themselves (*cf*. 2.2.2.2).
- Encourages active and cooperative learning (*cf*. 2.4.1, 2.4.2.9).
- Provides opportunities for students to draw inferences and actively construct explanations (*cf*. 2.3).

Jacobs (2006:46-47) states that constructivism is based on the belief that students should be helped to construct knowledge that is meaningful and useful in their own lives, and that the emphasis is placed on *how* students learn, instead of on *what* they learn. The skills that students learn and develop are more important than the content they acquire. Constructivism is also a psychological and philosophical perspective that implies that individuals form or construct what they learn and understand through individual and social activity and keep track of their own learning (Costa & Kallick, 2009:103). Thus students arrive at meaning by selecting information and combining it with what they already know (Schunk *et al*., 2008:326).

Constructivism is about learning that results from the unique contributions of students in the classroom.

The researcher is of the opinion that, in order to promote critical thinking skills among students, lecturers would have to step away from a strong focus on content and focus on the development of cognitive skills and strategies their students need in order to learn. Lecturers therefore should focus on developing the aforementioned cognitive skills and strategies (*cf.* 2.2.1), rather than only focusing on what their students have to learn. Once the students have mastered the skills, they can use those skills in order to learn whatever they wish to learn (Jacobs, 2006:47).

The researcher is of the opinion that lecturers should also make sure that they use a variety of strategies in their classrooms in order to enhance their students' thinking skills. If lecturers are going to teach in the same way they have always taught, and render no positive results or feedback to students, students' thinking skills may never become fully developed.

Adams (2002:160-163) also mentions that lecturers should take thoughtful actions during teaching if they want to develop critical thinking.

2.4.2.2 Thoughtful actions taken by the lecturers

Adams (2002:160) reasons that a thoughtful lecturer is one who acts purposefully, who follows carefully designed plans. This type of lecturer also has a clear balance between discipline and freedom in his/her classroom, and the emphasis is on learning, rather than on teaching.

2.4.2.3 A thinking classroom

Eggen and Kauchak (2010:230) assert that students should not solely receive knowledge from outside sources, but that they should construct their knowledge by developing their own understanding. This can only happen, according to Eggen and Kauchak (1997:275-278), if the students are active respondents in the classroom. The more actively students are processing information, the more successful they will be in encoding and retrieving it.

The researcher is of the opinion that only when lecturers have succeeded in making their students understand the importance of active participation in the classroom, they will be able to achieve critical thinking as a learning goal.

2.4.2.4 Critical thinking as a learning goal

When analysis, problem solving and reasoning through regular lessons of the curriculum are emphasized, students' critical thinking will develop (Woolfolk, 2010:292). This can be done when lecturers create a culture of thinking in their classrooms. A spirit of inquisitiveness, respect for reasoning and creativity, and an expectation that students will learn and understand should be created by lecturers and become learning goals (Woolfolk, 2010:292).

According to Adams (2002:160), lecturers should not expect their students' thinking abilities to develop automatically or by accident. Lecturers first need to adopt the development of thinking as a learning goal and take action to achieve this goal before they can teach thinking as a learning goal to their students.

In this regard, Adams (2002:160) says that it is important for lecturers to remember that thinking does not consist only of skills and strategies, but is dependent on dispositions, which require students to be mindful of other perspectives.

2.4.2.5 Establishing a climate for thinking

A classroom climate is described as the quality of the atmosphere, tone and ethos of the class that is primarily influenced not only by the interactions between the lecturer and students, but by the managerial, physical, psychosocial and teaching learning aspects of a particular classroom (Drinkwater, 2002:8; Borich, 2004:370).

If conditions are provided that encourage the application of students' thinking to the world they are living in, students would think better (Lipman, 2003:208). This is why Adams (2002:161) reasons that a suitable climate for the development of thinking is an environment in which students are encouraged not simply to soak up the facts, but to ponder, wonder, enquire and take risks.

In order to teach thinking skills, it is best if lecturers first create a comfortable environment and climate for their students to work and learn in – an environment where the emphasis is placed on how they are learning different cognitive skills and strategies (Abdool & Drinkwater, 2005:363-372; Borich, 2004:370).

Lecturers should take heed to create a safe learning environment where diversity of opinions, learning styles and modes of thinking are accepted, and where students are encouraged to explore learning content on their own on a frequent basis. Students need to be given the opportunity to think on their own in order to explain their thoughts to their peers and to be able to compare their thoughts to their peers' thoughts (Petzer, 2010:31).

Adams (2002:74) makes the following suggestions as to how to plan for a classroom environment that is needed to teach critical thinking skills:

- Lecturers should choose learning contexts that provide authentic learning activities for their students to engage in.
- Lecturers should model the thinking processes they want their students to learn.
- Lecturers should support their students' activities and endow them with the responsibility of task completion and learning.
- Lecturers should provide their students with many opportunities to engage in meaningful dialogue among themselves and their lecturers on the topics they are studying.
- Lecturers should use questioning that requests students to make inferences, justify statements and extend on responses.

2.4.2.6 Using language for thinking

Adams (2002:161) points out that lecturers need to strive to develop their students' ability to talk and to think about their own, as well as the thought processes of other people.

One method of doing this is proposed by Woolfolk (2010:294) who states that lecturers' classrooms should be filled with a clear, precise and rich vocabulary of thinking, which includes words such as "*think*", "*believe*" and "*guess*".

Woolfolk (2010:294) also mentions that students are more likely to think deeply about thinking when a rich language of thinking surrounds them. Therefore, students will learn more when they are actively engaged in talks that are interpretive, and involve analysis and giving explanations. Talks that

just describe are not as helpful as talks that explain, give reasons, identify parts, make a case, defend a person, or evaluate evidence (Woolfolk, 2010:294).

2.4.2.7 The involvement of students in actual intellectual exploration

Adams (2002:162) reasons that lecturers should aim at making their classrooms more intellectual and less academic. The reason for this is that an intellectual focus focuses on the development of the mind, whereas an academic focus focuses on the subject discipline. An intellectual focus can only be achieved if lecturers provide their students with authentic learning tasks that focus on real life problems, which will provide their students with the opportunity to think realistic about solving problems (Eggen & Kauchak, 2010:233). Students must learn to ask precise questions and persist in doing so until the help they require is obtained, while the lecturers must learn how to provide detailed explanations, as well as to be prepared to help students apply the help they receive to the problem at hand (Gilles & Khan, 2009:9).

Gilles and Khan (2009:9) further mention that lecturers should employ strategies such as prompting their students for supporting reasons, modelling the use of evidence and challenging their students with counter arguments. The researcher argues that if lecturers focus more on how to teach rather than on what to teach, their students will possibly develop healthy habits of first thinking about a problem and then providing possible solutions. Students will also be encouraged to be active respondents in the classrooms since the thinking and solving of problems are left to them. Students will not be spoon-fed and remain passive respondents in the classroom.

If emphasis is placed on intellectual development, Adams (2002:162) argues that the focus will automatically be on the processes of thinking while recognising that ideas need time to form and to be sharpened, in other words, that quality is improved with effort. The more lecturers employ prompting and modelling as mentioned by Gilles and Khan (2009:9), the better they will improve their students' critical thinking skills and learning by instilling behaviours in students that will encourage students to challenge basic

information, use cognitive and meta-cognitive reasoning, confront discrepancies, focus on issues, peruse tentative questions and scaffold for information (Gilles & Khan, 2009:9).

Walker (2003:64) asserts that when lecturers tell their students that they are expected to practise critical thinking skills during teaching time, as well as when they are not being taught, it will help to prepare them for the future challenges and communicating expectations, they will face from their instructors. Walker (2003:64) also mentions that students should know that they are expected to analyse problems, weigh options and look at assumptions and inferences made, when they are forming decisions. Lecturers play a critical role in promoting interactions among students and engaging them in the learning process (Gilles & Khan, 2009:9).

The researcher argues that if students are never challenged to try solving problems and answer questions logically or at least attempt to reason about difficult work they will probably never develop critical thinking skills.

In order for students to get involved in and benefit from challenging learning tasks, time is needed (Adams, 2002:162), as explained below.

2.4.2.8 A deliberate pace for thinking

Adams (2002:162) says that lecturers very often overlook the fact that good thinking requires effort and takes time in their classrooms. Apparently, it also happens in classrooms where lecturers rush through the work content in order to be finished on time before the examinations start (Sadker *et al*., 2011:138). Rushing through work leads to impulsive behaviour among students; and does not promote good thinking who where students need to be deliberate, elaborative and reflective.

As the development of thinking involves a social element too (Vygotsky cited by Lidz & Gindis, 2003:100), the following section pays attention to the social nature of the classroom for enhancing critical thinking.

2.4.2.9 The classroom as a community of thinkers

The development of thinking has a social element attached to it. In this regard, Eggen and Kauchak (2010:228) refer to the learning environment as a community of thinkers.

Eggen and Kauchak (2010:228) explain that a community of thinkers refers to a learning environment where the lecturer and students work together so that everyone can achieve. This type of classroom, according to Eggen and Kauchak (2010:228-229), is grounded on the idea that students must first construct their knowledge socially before they appropriate and internalize it. Jacobs *et al*. (2006:15-18) refer to participative learning in this regard.

Social interaction, according to Eggen and Kauchak (2010:231-233), should be promoted by lecturers in their classrooms, and responsibility to learn should be handed over to the students.

Students need to be able to communicate problems with their peers to try and find solutions for these problems together. The researcher is of the opinion that, if students have to communicate with their peers, and share viewpoints and opinions and make decisions together, cognitive growth is stimulated through problem solving, reasoning and student interaction.

Adams (2002:162) also mentions that a very important part of self-regulated learning expects of students to be active inquirers and constructors of knowledge. Groups of students working together construct more powerful understanding than individuals do alone (Eggen & Kauchak, 2010:419).

Based on the aforementioned information, the researcher argues for classrooms where students are allowed to communicate about the subject matter with their peers, and to solve problems with their peers, if critical thinking is to be enhanced.

The following section explores the use of reflection to enhance critical thinking skills.

2.4.2.10 Reflection by the lecturers and their students

Adams (2002:163) points out that reflection is the process of mentally reliving experiences in order to learn from them. Moreover, Cooper *et al*. (2011:13)

regards reflective teaching as a lecturer's habit of examining and evaluating his teaching abilities on a regular basis by making use of observations, analysis, interpretation and decision-making. Reflective lecturers are lecturers who think critically about their work.

Eggen and Kauchak (2010:5) point out that lecturers should conduct critical self-examination of their own teaching to establish to what extent it focuses on the enhancing of critical thinking skills. Critical thinking is enhanced when students are requested to reflect on their own views regarding the learning content (Adams, 2002:163; Ruggiero, 2004:63).

As questioning is regarded as a key factor in the enhancing of critical thinking in the present study, its role is explored below.

2.4.2.11 Questioning

Various questioning tactics exist to promote critical thinking, and depending on how the question was asked, students may apply different critical thinking skills (interpretation, analysis and recognition of assumptions) in responding to the question (Walker, 2003: 264). The conventional activity of an effective lecturer is the thoughtful use of questions. Questions are also only as good as the thought put into them, and should therefore go beyond the level of mere recall of knowledge (Walker, 2003:264). Since questioning plays an important role in the enhancing of critical thinking, the researcher will provide a more detailed discussion on the role that questioning plays in the enhancing of critical thinking skills in Chapter 3.

An overview of how to enhance critical thinking skills in the EFAL classroom has been given. Lipman (2003:72-80) argues that lecturers have significant misconceptions about critical thinking.

Although the focus of the study is not on factors that hamper the development of critical thinking, the researcher briefly explores some of the factors below, to place the role of questioning into perspective.

2.5 FACTORS WHICH HAMPER THE DEVELOPMENT OF CRITICAL THINKING

Several factors that are also responsible for a lack of critical thinking are identified in the literature as follows:

- Culture
- Instructional practices
- Lecturers' epistemological beliefs
- Assessment practices

The influence of the aforementioned factors on critical thinking is explained in the following sections.

2.5.1 Culture

Culture as a latent variable and culture as a toolkit of strategies are seen as two prominent views in research regarding the relationship between culture and cognition (DiMagio, 1997:267).

Nisbett *et al*. (2001:291) agree with DiMaggio (1997:267,272) by saying that the existing cultural differences impact on the nature of a society's cognitive processes. For this reason, Fisher (2005:109) points out that in order for a student to develop cognitive abilities, the student must come from a rich and coherent culture. In research performed by Fisher (2005:109), significant differences were found to occur between students who come from a rich coherent culture, and students who do not come from rich coherent cultures.

Nisbett *et al.* (2001:293) elaborate on Fisher's (2005:109) statement by mentioning that students who come from a culture such as the Western culture (Fisher, 2005:109) that focus on personal freedom, personal choices, criticism, debate, curiosity and diversity, will automatically be more capable of thinking analytically. On the other hand, students who do not come from a culture that appreciates personal freedom, personal choices, criticism and curiosity, will not value the skills of thinking critically and analytically (Fisher, 2005:110).

In the African culture, students are mainly raised in societies where the focus lies on holistic, collective thought and social obligations which focus on paying attention to relationships, and relying of experiences based on knowledge rather than abstract logic, reconciling, transcending or accepting contradictions (Grosser & Lombard, 2008:1368-1369). Avoidance is also shown by means of not dealing with conflict and an absence of participation in discussions (Grosser & Lombard, 2008:1369), which limits opportunities to get involved in critical thinking.

A student's cultural background is not the only factor that may influence the development and enhancing of his/her critical thinking skills. A closer look needs to be given to the instructional practices of lecturers (Fisher, 2005:199-205).

2.5.2 Instructional practices of lecturers

Fisher (2005:199-205) supports the idea that is introduced by Lombard and Grosser (2004:215), that lecturers are the most important sources for creating opportunities for their students in which they can learn how to think critically, and that, when thinking is promoted in a classroom, further enquiry and investigation which deals with problem solving skills will be valued.

Based on the ideas mentioned by Fisher (2005:199-205) and Lombard and Grosser (2004:215), one can conclude that lecturers need to be taught how to make effective use of different questioning techniques in their daily assessment and teaching practices so that they will be able to enhance their students' critical thinking skills.

The **direct instruction model** is a teacher-centred strategy in which the lecturer is the major information provider (Borich, 2004:180). The lecturer's role is to pass facts, rules and action sequences on to students. The passing on of facts, rules and action sequences is done by means of explanations, examples and opportunities for practice and feedback. Direct instruction is also useful when skills include specific steps, like solving problems in maths, using grammar and punctuation in writing, and balancing equations in chemistry. The environment in which direct instruction services, focuses mainly on academic learning tasks and aims for students' active participation

in the classroom (Arends, 2009:293; Eggen & Kauchak, 2010:409; Kramer, 2006:100). Borich (2004:180) also points out that the direct instruction model asks of a lecturer to involve his students so that lecturer-student interaction may take place in the classroom. Lecturer-student interaction can take place through questions and answers, review and practice and correction of student errors.

The researcher is of the opinion that lecturer-student interaction can also be utilized to enhance critical thinking skills among students. When conversations take place in the classroom students can be guided, by means of questioning (*cf*. 3.7.5), in order to think more critically about a problem to solve it effectively according to its context.

Gilles and Khan (2009:8) mention that students need to be taught how to engage in reasoned argumentation and, therefore, during direct instruction lecturers play a key role in explicitly teaching the skills of reasoned argumentation in order to engage students in small group discussions, to resolve problems and learn.

Arends (2009:293) points out that lecturers should remember that the direct instruction model was designed to promote the mastery of skills and factual knowledge that can be taught in a step-by-step fashion. Based on Arends' argument, it is clear to the researcher that the model was seemingly never designed to accomplish social learning outcomes or higher-order thinking and therefore it could be said that it is not effective for enhancing critical thinking skills, since the focus is mainly on the mastering of skills and factual knowledge.

Although the direct instruction model may be used to enhance critical thinking skills by promoting reasoned argumentation by means of the frequent use of questions, lecturers should take note that their students also need to actively and socially participate in the classroom (*cf*. 2.4.2.9). Since this instruction model does not purposefully promote social learning outcomes (Arends, 2009:293), the researcher argues that lecturers should also make use of the indirect instruction model that is more student-centred, thus resulting in more active participation from the students' side in the classroom.

Kramer (2006:101) asserts that **indirect instruction** shifts the lecturer away from being the central figure in the classroom. Learning is learner-centred with a high degree of student involvement.

Borich (2004:219) points out that the indirect instruction model focuses directly on constructivism, which is regarded as a suitable approach for enhancing critical thinking skills (*cf.* 2.5.2). Constructivist lessons are designed to encourage students to use their own experiences in order to construct meaning that makes sense to them, rather than to acquire understanding through the exposure of their lecturers' thoughts only. Kramer (2006:101) adds to Borich's (2004:219) argument by saying that indirect methods have a high potential for building higher-order thinking skills, personal values and individual responsibility for learning. Therefore students create their own understanding of concepts by analysing the evidence gathered through their learning activities.

The researcher is of the opinion that the indirect instructional method is a better teaching practice to use in order to enhance students' critical thinking skills than the direct instructional method, because it leaves room for the students in class to explore their own knowledge, thoughts and ideas in order to solve a problem.

The independent instruction model also provides opportunities for lecturers to enhance critical thinking skills. Kramer (2006:103) and Petzer (2010:35) describe **independent instruction** as instruction that allows a student to undertake a learning task by himself, and point out that independent learning benefits students because they have to rely on their own efforts in order to master all aspects of what has to be learned.

It is the student's duty to think through every aspect of a specific assignment without the constant and close management of the lecturer. The lecturer serves as a mediator of learning, thus becoming a resource for learning rather than the source of all information and instruction (Kramer, 2006:103). It could be said that independent teaching enhances student independence and responsibility for learning to a greater extent than indirect teaching methods (Petzer, 2010:35).

Kramer (2006:103) also mentions that this teaching method assists in the students' style and pace of learning. Slower learners are allowed more time to complete their tasks, whereas faster learners are allowed to move on to their next assignments. Therefore, no time limit is set on how fast or how slow students should learn.

Kramer (2006:104) and Petzer (2010:35) mention that teaching strategies such as research projects, homework, assignments (assigned questions) and one-on-one debates can be used as part of the independent teaching method.

The researcher is of the opinion that the aforementioned teaching strategies are used in order to promote independent learning and independent thinking, which is important for enhancing critical thinking (*cf*. 2.5.2.9).

As social learning is regarded as important for developing critical thinking skills, interactive instruction becomes an important approach for teaching.

Gawe (2006:209) explains that **interactive teaching** provides students with an opportunity to work together in groups so that all members of the groups will learn and understand the same content. In other words, the groups are organized and the assignments structured in such a manner that the students have to work together in order to reach a goal or to solve a problem. Thus, the students are responsible for their own learning, as well as to help their group members to learn and practise skills (Gawe, 2006:209).

The advantages of interactive teaching (Booysen & Grosser, 2014:65-67) for the development of critical thinking are:

- It promotes creative and critical thinking.
- Group work leads to new questions and situations, which force students to think critically and creatively.
- Cognitive conflict and development benefit through the exchange of ideas and the comparing, motivating and justifying of different opinions.

Apart from the lecturers' personal choice of which instructional model to use while teaching, their epistemological beliefs may also affect the development of their students' critical thinking skills.

2.5.3 Lecturers' epistemological beliefs

De Waal and Grosser (2009:697) indicate that lecturers' beliefs about knowledge and knowledge acquisition influence the way they think as well as how they make instructional decisions such as teaching styles, teaching methods and strategies, and the choice of assessment activities, which (according to the researcher) can influence the development of critical thinking.

The **realist belief**, **contextualist belief** and the **relativist belief** are the three most prominent beliefs that lecturers foster in terms of teaching, learning and assessing (Schraw & Olafson, 2003:184). These beliefs are discussed below:

The **realist belief** deals with an objective body of unchanging knowledge that is acquired through experts by means of transmission and reception. These types of lecturers use direct teaching (*cf*. 2.5.2) to teach a body of pre-established knowledge actively to their passive students. They make use of norm-referenced assessments (standardized tests) that focus on the recognition of facts, rather than on the formulation of own ideas and answers, in order to determine how much of the pre-established curriculum their students have learned (Weinert & Helmke, 1995:135-142; Schraw & Olafson, 2003:186).

It is in the researcher's opinion that the realist belief may not be the most appropriate belief to frame teaching and learning when it comes to the enhancing of critical thinking skills among students in the English classroom, since critical thinking involves interpretation, analysis, evaluation, inference, explanation and self-regulation (*cf.* 2.4.1.1). Students will gain very little from a classroom where they are not allowed to think for themselves or to come up with their own ideas that serve as possible solutions to problems.

The **contextualist belief** deals with students who construct shared understanding in collaborative contexts where their lecturers serve merely as facilitators. Contextualist lecturers foster the idea that their students' knowledge will change over time, and that their students need skills in order to acquire new knowledge on their own. This is why they make use of authentic assessments, which deal with cooperative activities, such as assignments

where they have to apply the knowledge they have gained in order to solve a specific problem (McCaslin & Hickey, 2001:133-141; Schraw & Olafson, 2003:186).

Lecturers who have a **relativist belief** believe that their students construct a knowledge base that is different from one another's, but is still equal. Thus their students' knowledge is subjective and changeable. These lecturers also like to create an environment in which their students can learn to think independently, and for this reason, they makes use of criterion-based assessments that are set up in accordance with every student's individual needs. These assessments demonstrate the students' achievements with written, numerical, oral, visual, technological and dramatic media (Cobern, 2000:219-246; Schraw & Olafson, 2003:187,191).

Johnston *et al.* (2001:19-25) explain that students learn more from a classroom which focuses on interaction between the lecturer and students, and between the students with one another. The reason for this is that the students actually get the opportunity to develop as thinkers by means of taking part in discussions and decision-making, and expressing their individual feelings. Johnston *et al*. (2001:19-25) also mention that, in classrooms where contextualist and relavist beliefs are fostered, students feel more comfortable to disagree with others, as well as to have a sense of their own authority and uniqueness. Therefore, the lecturers are not seen as central to knowledge production, and collective efforts, multiple perspectives, as well as interdependent thinking characterize the learning that takes place.

It is in the researcher's opinion that the contextualist and relativist worldviews may be more effective to enhance students' critical thinking skills in the English classroom, since they advocate for creating ample opportunity for students to solve problems, make decisions, conceptualize facts by themselves, think critically, process information as well as reason by themselves (*cf*. 2.2.2). These lecturers will more likely use indirect, independent and interactive instruction models (*cf*. 2.5.2).

The researcher aligns herself with the views of Sing and Khine (2008:290) and Schraw and Olafson (2003:32). Lecturers who teach from a lecturer-

centred and content-centred point of view have a realist approach to teaching that emphasizes their control in the classroom over their students, as well as their students' willingness to accept the role of passive recipients. These lecturers might be less successful in enhancing critical thinking skills than lecturers who view teaching as a process of facilitating and have a student-centred and learning-oriented approach to learning, which fosters constructivist teaching and learning.

Now that an overview of lecturers' epistemological beliefs has been given, it is necessary to pay attention to different assessment practices that can be employed in the classroom, as these practices also play a pivotal role in the enhancing of critical thinking skills.

2.6 CHAPTER SUMMARY

This chapter highlighted the importance of critical thinking and the role it plays in a constructivist classroom so that students' critical thinking skills can be enhanced (*cf*. 2.4.2.1). The concept clarification of cognition pointed to the ability to acquire, store, transform and use knowledge to form thoughts and ideas (*cf*. 2.2), and pointed the researcher's attention to cognitive skills, which are the accurate application of cognitive actions in an experienced way (*cf*. 2.2.2), cognitive strategies, which refer to complex actions that require the execution of problems solving, decision-making and conceptualizing (*cf*. 2.2.2.2), and meta-cognitive actions that focus on a person's knowledge about and control of his/her thought processes (*cf*. 2.2.3).

The term critical thinking was clarified, during which it was concluded that critical thinking refers to the use of cognitive and meta-cognitive skills or strategies that enable a person to apply rational criteria by focusing his/her thoughts and actions in order to make decisions (*cf*. 2.3). Critical thinking dispositions and attitudes play an important role in critical thinking (*cf*. 2.3.1.2) as well as behavioural critical thinking habits (*cf*. 2.3.1.3).

Strong emphasis was placed on the type of classroom that enhances critical thinking (*cf*. 2.4). A constructivist classroom stood out as the perfect environment to enhance critical thinking skills (*cf*. 2.4.2.1). Thoughtful actions taken by the lecturers (*cf*. 2.4.2.2) pointed out that lecturers should be thinking

and responsible lecturers in their work, and maintain a clear balance between discipline and freedom. The classroom should be thinking classrooms (*cf*. 2.4.2.3) in which lecturers carefully employ the right learning programmes in order to teach their students thinking skills. Thinking should be set as a learning goal (*cf*. 2.4.2.4) in order to be able to develop students' thinking skills by means of intellectual exploration (*cf*. 2.4.2.7), paced learning (*cf*. 2.4.2.8), social interaction (*cf*. 2.4.2.9), reflection (*cf*. 2.4.2.10) and questioning (*cf*. 2.4.2.11).

The main reasons for a lack of critical thinking skills among students were examined in which it was pointed out that lecturers may contribute to the lack of these skills since they also have some misconceptions regarding critical thinking (*cf*. 2.5). Other reasons for a lack of critical thinking skills, include culture (*cf.* 2.5.1), the instructional practices of lecturers (*cf*. 2.5.2), and lecturers' epistemological beliefs (*cf*. 2.5.3).

Based on the literature review in Chapter 2, the researcher argues that the interactive, indirect and independent instruction models, and contextual and relativist epistemological beliefs could be regarded as the most effective for the enhancement of critical thinking skills, as these models and beliefs:

- allow room for students to explore knowledge, thoughts and ideas in order to solve problems (*cf*. 2.5.2);
- promote independent learning so that students can learn how to become independent thinkers (*cf*. 2.5.2);
- provide students with the opportunity to work together and argue and reason about subject content (*cf*. 2.5.2);
- provide opportunities for students to interpret, analyse, evaluate, make inferences, explain and regulate their own progress in terms of learning (*cf*. 2.5.2);
- ask of students to apply the knowledge they have gained in order to solve problems (*cf*. 2.5.2); and
- provide students with the opportunity to be involved in the learning process and to control their own learning because they learn how to plan and

evaluate their own learning as well as to make their own decisions for improvement (*cf*. 2.5.2).

In the following chapter, Chapter 3, the researcher will provide a comprehensive clarification of the use of questioning to enhance critical thinking skills.

CHAPTER 3

ENHANCING CRITICAL THINKING SKILLS THROUGH QUESTIONING IN THE ENGLISH FIRST ADDITIONAL LANGUAGE CLASSROOM

3.1 INTRODUCTION

In Chapter 1, the importance of using questioning in EFAL in order to enhance students' critical thinking skills was emphasized (*cf*. 1.1). In this chapter, a closer look will be given to the different facets of questioning in order to provide a clearer understanding as to why questioning is regarded as an essential tool to use in the classroom in order to enhance critical thinking skills among students.

Fisher (2005:53) states that, in order to learn how to think critically, one needs to learn how to question, when to question, as well as what kind of questions to ask; and learn how to reason, when to use reasoning, as well as how to put effective reasoning methods to good use.

In line with the aforementioned introduction, this chapter will address the following issues:

- Questioning: A concept clarification
- The different types of questions
- Factors to consider when asking questions
- Reasons for using questions
- Strategies/techniques for developing effective questions
- Tactics for asking effective questions
- The importance of questioning in the EFAL classroom

3.2 QUESTIONING: A CONCEPT CLARIFICATION

Eggen and Kauchak (1997:481) explain that teacher questioning is one of the most powerful tools that are available for guiding and stimulating students' constructions, and their elaborations of knowledge. Questioning is also regarded as the most widely applicable and effective tool that promotes interaction between lecturers and their students (Eggen & Kauchak, 2010:404).

Dymoke and Harrison (2008:134) state that questions are the backbone of communication between students and their lecturers in classrooms, and that questioning is also an important medium for learning since it is used to develop students' ideas, challenge students, assess their levels of understanding, as well as steer and ignite their interests and thinking.

Seker and Kömür (2008:392) mention that questioning plays a significant role in the enhancing of critical thinking skills at all levels of education, and state further that questions are the driving force in thinking, and that people who think and learn are those who have questions. In support of Seker and Kömür (2008:392), Burden and Byrd (2010:126) argue that questioning is seen as a critical instructional tool.

An in-depth exploration of the different types of questioning strategies/techniques and tactics that can be used in the EFAL classroom to enhance critical thinking skills (*cf.* 2.3) follows in the sections below.

3.3 DIFFERENT TYPES OF QUESTIONS

The following types of questions are vital to use for enhancing critical thinking skills among learners in the classroom:

According to Cole and Chan (1994:176), Kerry (2002:7) and Dymoke and Harrison (2008:134), **closed questions** encourage convergent thinking and allow only a narrow range of prescribed responses. In other words, the lecturer already has a correct answer in mind; while **open questions** stress divergent or creative thinking and allow a wide range of acceptable responses, and give a greater opportunity for critical thinking by students. Borich (2004:260), Kellough and Kellough (2007:87-88) and Walsh and Sattes

(2005:170) focus on the use of **convergent** and **divergent questions**. Kellough and Kellough (2007:87-88) assert that convergent questions are used to limit an answer to a single or small number of responses, thus, acceptable or correct responses; and that divergent questions have no single best answer, but can have wrong answers as well. In other words, there are multiple answers to divergent questions. Sadker *et al.* (2011:113) add that convergent questions serve the same purpose as closed questions since they generate single answer replies. Divergent questions serve the same purpose as open questions since they generate different ideas, provide breadth into classroom discussions, as well as afford students opportunities to think critically and creatively in order to come up with solutions to problems. It could therefore be argued that open questions appear to be more suitable for enhancing critical thinking skills.

Davies (1981:168) mentions that **overhead questions** are asked to the class as a whole. Thus anyone can answer the question being asked. On the other hand, **directed questions** are used to ask a predetermined student a question individually (Davies, 1981:168; Walsh & Sattes, 2005:170). The teacher will usually call upon a learner's name to answer the question (Ma, 2008:96) (*cf*. 3.7.3).

Relay questions, according to Davies (1981:170), are questions that learners use to ask the teacher for information. The teacher in return does not answer the question, but turns the question back to the student who has asked the question. These questions are usually asked within groups. **Reverse questions** are used by a student to ask the lecturer for specific information. The lecturer then turns the question back to the students, forcing them to think for themselves (Davies, 1981:170), thus prompting the students with hints in order to teach them to think about solutions to problems (Wragg & Brown, 2001:33) (*cf*. 3.7.5).

Benham and Pouriran (2009:118) mention two types of questions that are most commonly used are **Referential Questions** and **Display Questions**. Referential questions focus on more interaction and meaningful negotiation. These questions also demand more thought and longer responses from students, which ultimately stimulate their higher order thinking skills. When

the lecturer uses display questions, he already knows the answer, but expects single or short responses from the students. These questions stimulate the students' lower order thinking skills.

Shipley (1972:109) and Walsh and Sattes (2005:171) assert that a **pivotal question** is used to address the principal facts or concepts in a lesson and is also prepared as part of the lesson. Furthermore, it directs thought from one aspect of a topic to another of the same topic. He also says that these types of questions should form a connected series that leads to a conclusion, and that it should be connected in such a way that each answer is related to the others and to the whole idea. **Probing questions** should be used in the classroom by lecturers to ask their students more questions directly after they have responded to previous questions posed to them (Borich, 2004:274) (*cf*. 3.7.5), because it assists in the enhancing of their students' critical thinking skills by teaching them how to think in order to solve problems. Shipley (1972:109) and Kellough and Kellough (2007:88) mention that **focusing questions** emphasize the central idea in context, and they also focus on student thinking.

Cole and Chan (1994:174), Kerry (2002:71) and Borich (2004:25&26) point out that **higher order questions** are concerned with comprehension, application, analysis, synthesis and evaluation of certain subject matter, and involves more than just the mere recall of facts. Dymoke and Harrison (2008:135) (*cf*. 3.6) continue by stating that lecturers should challenge their students' level of thinking by using Bloom's Taxonomy. Bloom's Taxonomy promotes the use of questions that stimulate higher order and lower order thinking. **Lower order questions** request knowledge about certain subject matter or about the recall of facts and specifics (Dymoke & Harrison, 2008:135).

Cole and Chan (1994:176-179) further mention that **product, process and opinion questions** require answers that are conclusions (product question), request students to explain certain procedures (process question) and make judgements and evaluate content (opinion questions). The **what, when, how, who** and **why questions** are used to gather specific information about certain subject matter or events (Cole & Chan, 1994:176-179). **Memory** and **search**

questions, according to Cole and Chan (1994:176-179) require the recall of facts of certain subject matter (memory questions) and that learners discover the answers to questions (search questions). **Contextuality explicit questions** need answers that are derived from the explicit content of the lesson or from the material provided to the learners, **contextuality implicit questions** want answers that can be found in the deep structure in the text or lesson (Cole & Chan, 1994:176-179). Finally, Cole and Chan (1994:176-179) explain that **background questions** require the knowledge of relevant background information that is not provided in the text or lesson. The researcher is of the opinion that when lecturers make use of a variety of questions in the classroom which focus directly on different thinking levels, like making judgements and evaluations, looking for specific information, leading students to discover answers by themselves and asking them to answer from the context of the learning content, they can enhance their students' critical thinking skills, because they provide their students with the opportunity to role-play different modes of thinking (Moseley *et al*., 2005:135) (*cf*. 3.6).

In short, if teachers use these different types of questions, they will not only expand their learners' knowledge on the current subject content, but will also enhance critical thinking skills among their learners, because they are engaging interactively with them, helping them to think more independently and on their own. The researcher is of the opinion that all of the aforementioned questions are appropriate to enhance critical thinking skills among students in the EFAL classroom, since they focus on deeper thinking levels and provide a wide range of detailed responses that show that students have to think before they answer.

If lecturers want their students to be active independent critical thinkers, they have to elicit responses from them by means of asking the right kinds of questions. The following section therefore focuses on the factors lecturers need to consider if they want to ask effective questions.

3.4 FACTORS TO CONSIDER WHEN ASKING QUESTIONS

This section focuses on the different factors lecturers need to take into consideration when they present their students with questions, in order to focus students' attention, forces students to draw comparisons, seeks clarification, invite further inquiry and prompt students to seek for reasons or explanations (Fisher, 2005:62). An in-depth look at questioning and class time, as well as at the importance of asking the right questions is given below.

3.4.1 Questioning and class time

According to Borich (2004:258) questions are a useful tool, since they should consume 80% of class time and are used to bridge the gap between the lecturers' presentation of content in the classroom and the students' understanding of it. In addition, questions encourage students to think about the content and act on it in terms of how their lecturers have structured it. In other words, questions are used in order to test students' knowledge and understanding of specific work content in order to deepen their higher-order thinking by means of specific problems related to work content, which they have to solve.

3.4.2 The importance of asking the right questions

It is important to ask the right questions in order to enhance students' critical thinking skills. Borich (2004:259) argues that research data show that not all questions being used in the classroom engage students actively in the learning process. Borich (2004:259) points out that 70% to 80% of questions being used require the mere recalling of facts, and only 20% to 30% of questions being used require higher order thought processes of clarifying, analysing, expanding, evaluating, generalizing and making inferences.

The researcher argues that if only 20% to 30% of all questions used in the classroom point to the development of higher order thinking skills, a serious problem will occur in the enhancing of critical thinking skills, which are higher order thinking skills. Students will be used to recall facts, and they will not get used to the fact that they actually have to think in order to get to an answer or solution to a problem. The mere recalling of facts does not provide students

with the opportunity to ask themselves questions, to make inferences, to clarify meanings and to come up with creative ideas in order to solve problems. Factual recall will only show that they are able to remember specific information given to them over a certain period.

In order to emphasize why questioning proves to be an effective teaching tool to foster critical thinking skills among students, the researcher explores the reasons for using questioning in the section that follows.

3.5 REASONS FOR USING QUESTIONS

Dymoke and Harrison (2008:134) and Wragg and Brown (2001:11) mention that questions are asked in order to facilitate learning. In other words, if questions are not frequently asked in the classroom, lecturers may rob their students of effective learning since questions probe them to learn.

Literature summarises the main reasons for questioning as follows: questioning promotes communication, arouses interest and curiosity, encourages problem solving, helps students express knowledge verbally, encourages thinking aloud and the intuitive leap, promotes deeper thinking, helps students learn from one another and monitors levels of student learning (Churches, 2010:84; Ruggiero, 2004:110,161; Kellough & Kellough, 2007:89-261; Kerry, 2002:75-81). Each of the mentioned aspects are elucidated below.

3.5.1 Questioning promotes communication

Kerry (1998:13-14) and Kerry (2002:75-76) reason that questioning transfers the responsibility to learn from the lecturer to the students. The lecturer is normally the one who inquires, probes and challenges the students in order to think, speculate and contribute in the classroom. In this regard, Churches (2010:84) adds that lecturers should ask questions that challenge their students' thinking, since this creates awareness and prompts their students to pay much more attention than usual. In other words, the stimulation of critical thinking skills will start with the lecturer's questions, followed by the students' responses to the questions.

3.5.2 Questioning arouses interest and curiosity

Tomlinson (2011:168) reasons that interest has to do with students' proclivity for a specific topic, and that their interests can be influenced by different cultures, experiences and their specific strengths. Tomlinson (2011:168) reasons further that when lecturers provide students with questions formulated around topics they find interesting, their motivation and engagement increase and achievement follows.

In this regard, Kerry (1998:15) and Kerry (2002:76-77) mention that when lecturers establish conversations that interest students, they will find it easier to use various questioning techniques that will arouse curiosity and eventually promote learning. Since conversation is the main method by which people interact socially, lecturers who allow their students to engage with them in conversation through questioning, will automatically prepare the grounds for learning through questioning (Kerry, 1998:15; Kerry, 2002:76-77).

Curiosity, according to Ruggiero (2004:161), keeps students' minds dynamic and it is a valuable aid to critical thinking. In order to solve problems, students need to be able to examine ideas from different perspectives, thus being curios and asking questions (Ruggiero, 2004:161).

3.5.3 Questioning encourages problem solving thinking skills

Ruggiero (2004:109) mentions that problems are best expressed as questions and Monyai (2006:114, 115) argues that problem solving forces a student to think critically by analysing, drawing conclusions, making generalizations and suggesting solutions.

Kerry (1998:17) and Kerry (2002:78) add to Monyai's (2006:114, 115) argument by asserting that students who have a curios mind need to be taught by means of learning content that promotes problem solving skills. When questioning is used in the classroom, lecturers can move away from focusing only on learning content but move towards understanding and reasoning about the content, which are essential skills for problem solving. By making use of questioning to solve problems, lecturers are opening different

avenues of thought for their students. Each problem has a different solution, and therefore students will learn how to think differently about ways to solve the problems (Ruggiero, 2004:110).

The aforementioned discussion links with the importance of creating a constructivist classroom (*cf*. 2.4.2.1). Lecturers need to point their attention to how their students learn, to reasoned argumentation and the strategies they use in order to solve difficult content problems, if they want to help students to develop critical thinking skills (Gilles & Khan, 2009;8; Jacobs, 2006:46-47) (*cf*. 2.5.2, 2.4.2.1).

3.5.4 Questioning helps students express their knowledge verbally

According to Kerry (1998:18) and Kerry (2002:79), questioning puts the onus of learning right where it belongs: on the students. Students have to put their ideas, opinions and thoughts into words.

If we want to discontinue the ritual of students just sitting and listening in classrooms, we must make use of questioning, because it can break the chain of this repetitive process in the classroom (Kerry, 1998:18; Kerry, 2002:79).

Furthermore, Nowlan (1990:30) and Kerry (2002:79) add to Kerry's (1998:18) argument that lecturers should spread their questions around the classroom in such a way that all students will get the opportunity to answer a question. Questions should not only be aimed at the same students, but at all students, and questions should be varied between different students, not in a specific sequence, otherwise students will only listen when it is close to their turn to answer a question.

3.5.5 Questioning encourages thinking aloud and the intuitive leap

Students are in the process of developing their intellectual skills when they observe the manner in which their lecturers are thinking aloud, since this kind of thinking urges them to think aloud too, to think about their thinking and to analyse their thinking as it occurs (Kellough & Kellough, 2007:89). Guiding students' thinking by pointing out new questions that have been raised by the

content of the lecture, and also by pointing out which questions that were posed at the start of the lecture have been answered, lecturers will move their students' thinking away from only summarising what they have learned. Thinking aloud will be encouraged by asking students questions to establish how well they understood a lecture.

In response to the challenge of problem solving, Kerry (1998:19) and Kerry (2002:80) argue that students must be able to hypothesize and make intuitive leaps (guesses). Kellough and Kellough (2007:90) add to Kerry's argument (1998:19 & 2002:80) which implies that questions that are asked at the highest cognitive level will encourage students to think more intuitively, creatively and hypothetically, encouraging intuitive leaps. It will also help them to use their imagination and to make judgements. To be intuitive, creative and hypothetical is seen as very important skills with regard to teaching students higher order thinking. These skills are, however, undervalued (Kerry, 1998:19; Kerry, 2002:80), because the questions that lecturers are supposed to use should be on a level best suited for the specific purpose for which they want to use the questions. However, they should also use questions of different variety levels and structure their questions in such a way that they move their students' thinking to higher levels (Kellough & Kellough, 2007:90).

3.5.6 Questioning promotes deeper thinking levels

Kellough and Kellough (2007:89) point out that the questions used by lecturers in the classroom are cues to students regarding the level of thinking that is expected of them. The levels range from the lowest level of mental operation (simple recall of knowledge) to the highest level (divergent thought and application). Kellough and Kellough (2007:89) advise lecturers to structure and sequence their questions so that their students will be guided from lower levels of thinking to higher levels of thinking.

Kerry (1998:21) and Kerry (2002:81) agree with the aforementioned statement of Kellough and Kellough (2007:89) that the use of effective questioning by lecturers will lead their students from lower order thinking to higher order thinking. In order to do this, the lecturers have to plan their lessons carefully

in such a way that the questions they are going to ask will follow in an increasing sequence of difficulty with regard to the topic being studied.

Brookfield (2012:200) suggests that lecturers should make use of open-ended questions to provoke all their students' thinking and problem solving abilities in order to make the fullest use of the discussion's potential for expanding their intellectual and emotional horizons. Brookflied (2012:200) further explains that the purpose for using open-ended questions is to help generate as many different understandings, interpretations and/or explanations as possible from students.

3.5.7 Questioning helps students to learn from one another

Brookfield (2012:200) points out that lecturers should make use of open-ended questions to enhance their students' critical thinking skills. When lecturers use cooperative learning, they should make use of open-ended questions in activities (Brookfiled, 2012:201; Eggen & Kauchak, 2010:419,421) that will allow for the sharing of ideas. Eggen and Kauchak (2010:340) explain that open-ended questions make room for a wide variety of answers, since these questions are easy to answer, activates prior knowledge and draw students into the lesson. These types of questions are also very safe to use and ensure that lecturers can encourage the most reluctant students in a classroom to answers questions without the risk of fear of embarrassment. Lecturers are also provided with insights into their students' thinking and allow them to build on their students' prior knowledge (Eggen & Kauchak, 2010:340,341).

3.5.8 Questioning monitors the levels of students' learning

An important aspect in the classroom is the feedback or responses students give to their lecturers' questions, with regard to the learning content (Kerry, 1998:20; Kerry, 2002:81). Kellough and Kellough (2007:261) agree with Kerry (1998:20) and Kerry (2002:81) by saying that while lecturers are evaluating what their students say, they should also pay special attention to their students' oral reports, the questions they ask and responses they give, as well as how they interact with others. Kellough and Kellough (2007:261) mention

further that lecturers should also observe their students' attentiveness, their involvement in class activities, their creativeness and their responses to challenges.

Throughout this chapter, the focus mainly was on lecturers and questioning. However, students need to ask questions in the classroom as well, therefore, the next section will discuss how students asking questions in the classroom can also benefit in the enhancing of their critical thinking skills.

3.5.9 Questioning should be used to make students ask questions

Kellough and Kellough (2007:95) state that students should ask questions that would stimulate further questioning, discussions and investigations. Lecturers should encourage their students to ask questions that will challenge their textbooks, the teaching process, as well as statements made by other people. Students should also be encouraged to seek supporting evidence behind given statements (Kellough & Kellough, 2007:95), because students' natural tendency to question evaporates as soon as they get older (Sadker *et al*., 2011:138).

Due to time constraints, lecturers tend to rush through learning content in order to cover all the work that has to be done, because they feel pressured (Sadker *et al*., 2011:138). For this apparent reason, lecturers may see student-initiated questions as dwelling from the path of high scores (Sadker *et al*., 2011:138).

Another problem concerning student-initiated questioning in the classroom, according to Sadker *et al*. (2011:138), is that students in the higher grades only ask 15% of classroom questions, which are mainly focused on the classroom management and organization of the lecturer and not on learning content. Examples are when a student asks when the teaching time is over, or when they can have a free period. To avoid these types of questions, the researcher argues that lecturers need to manage the questions their students ask in order to guide, encourage and motivate them to think more critically by asking their own questions that focus on the learning content (Sadker *et al*., 2011:138).

In summary, the use of questioning is not negotiable in the classroom. Questioning will stimulate thinking and encourage communication about learning content. Communication about learning content will provide opportunities to reflect on different viewpoints offered, which is an important aspect of critical thinking.

3.6 STRATEGIES/TECHNIQUES FOR DEVELOPING EFFECTIVE QUESTIONS

Sadker *et al.* (2011:108) mention that to question well means to teach well, and that through the skilful use of questions, lecturers have a guide to their students' ideas, they can spur their students' imagination, and also stimulate their students' thought processes.

Bloom's Taxonomy classifies six cognitive levels at which questions should be posed in order to require of a person to respond by using different thought processes (lower and higher order) (Sadker *et al.,* 2001:118-119). Edward de Bono's Six Thinking Hats strategy helps students to recognise how to use thinking strategies/techniques in an organised way, by offering opportunities for both critical and creative thinking in the classroom (McGregor, 2007:140). Bloom's Taxonomy and Edward de Bono's Six Thinking Hats will now be discussed in further detail.

3.6.1 The role of Bloom's Taxonomy in the development of critical thinking

According to Moseley *et al.* (2005:52), Bloom's Taxonomy is based on clear definitions and provides a coherent framework for classifying thinking and learning outcomes. The taxonomy provides clear statements of educational objectives, organised in a hierarchy based on complexity.

Karbach (2013:s.i.) provide the following version of Bloom's Taxonomy of educational objectives, as displayed in Figure 3.1:

Figure 3.1: Bloom's revised Taxonomy

Figure 3.1 above requires a person in each level of the Taxonomy as indicated in the centre of the figure, to respond by making use of different kinds of thought processes namely:

- Comprehension Application
- Analysis Synthesis
- Evaluation Knowledge

Lecturers should formulate questions on each of these levels and engage students in a variety of actions with various products or resources to acquire the different cognitive processes (Sadker *et al*., 2011:118-119).

Comprehension questions, according to Borich (2004:268), require that students understand the facts that they have stored in their memory, and that when they reply to comprehension questions, they must clearly indicate that

they can summarize, explain and elaborate all the facts that they have learned. In other words, students will be able to provide evidence of gained **knowledge**.

In order to demonstrate comprehension, students must be able to recall facts from their memory, but they should explain their answers, elaborate on their ideas and solutions to problems, and summarize their suggestions in a logical order so that it will make sense and also be understandable (*cf*. 2.4.1). For this reason, Sadker *et al*. (2011:121) point out that to answer questions dealing with comprehension, students must go beyond the recall of information, and must demonstrate a personal grasp of the learning content by being able to rephrase it, giving descriptions in their own words, and also by making comparisons.

Borich (2004:269) mentions that questions dealing with **applications** extend facts and understanding. In other words, application questions go beyond the point of just memorizing facts. They require that students apply facts to a specific problem, context or environment, which is different from the one the information was learned in. Borich (2004:269) continues by saying that students cannot only rely on solving problems in the original context with original content. Students will have to make use of their meta-cognitive strategies like planning, monitoring and evaluating (*cf*. 2.2.3) in order to apply previously learned knowledge so that they will be able to solve problems effectively, and therefore further the development of their critical thinking skills (*cf*. 2.2.1; 2.2.2.2).

Borich (2004:270) explains that questions dealing with **analysis** require students to break a problem up into smaller parts and then to draw relationships among these parts. The purpose for breaking up the problem into smaller parts is to identify errors, differentiate among facts, opinions and assumptions, as well as to derive conclusions, draw inferences or make generalizations, which are important critical thinking skills (*cf.* 2.2.1; 2.3). The purpose of analysis is to discover the reasons behind the information that was given. It is important to teach students how to analyse content. By dissecting the given problem and by drawing logical conclusions, students will learn how to apply higher order thinking skills in order to come up with the best solution

possible for that specific problem, which are important skills for effective critical thinking (*cf*. 2.3).

Questions dealing with **evaluation** require the students to form judgements and to make decisions by using subjective or objective criteria, insisting that the criteria being expressed be clearly understood (Borich, 2004:272) (*cf*. 2.3). Facione (2009:5) regards evaluation as an important core critical thinking skill (*cf*. Figure 2.2).

Questions dealing with **synthesis** (creating ideas) ask that students must produce something unique (Borich, 2004:271). Synthesis questions are higher order questions that ask of students to perform original and creative thinking. It also requires students to produce original communications, to make predictions and to solve problems (Sadker *et al.,* 2011:125). Students must think of every possible way in order to solve a problem and then indicate how they came up with the solution, thus, synthesis questions allow students to come up with a variety of creative answers, instead of supplying their lecturers with a single correct answer (Sadker *et al*., 2011:125). In other words, by making use of synthesis questions, students are taught how to think creatively (Sadker *et al*., 2011:125). Creativity in thinking helps students with the formulation of possible solutions and explanations of a problem or phenomenon, which will advance their critical thinking skills (*cf*. 2.2.1). Treffinger *et al*. (2000:7-8) add to the abovementioned discussion by saying that successful problem solving depends on using both critical and creative thinking skills, because creative thinking helps students to seek many possibilities to solve problems, whereas critical thinking helps them to focus their thinking .

The researcher regards Bloom's Taxonomy as an effective tool to use in order to enhance critical thinking skills among students, since the cognitive skills addressed are important in the in the application of critical thinking skills. (*cf*. 2.3.1)

Another approach that plays a prominent role in enhancing critical thinking skills is the approach of Edward de Bono.

3.6.2 Edward de Bono's questioning strategy

Moseley *et al.* (2005:135) point out that De Bono turned his attention from lateral thinking to parallel thinking. Parallel thinking refers to the emphasis of allowing different ways of thinking to co-exist so that they can lead to solutions rather than rushing to judgements (Moseley *et al*., 2005:135). This programme of parallel thinking was organized around six kinds or models of thinking, as explained in Figure 3.1.

De Bono (1985:31-32) proposed the Six Thinking Hats strategies consisting of different colours that represent different thinking modes, which people use daily to interact. These hats are the following, as illustrated by De Bono (1985:31-32) and Moseley *et al.* (2005:136) in Figure 3.2:

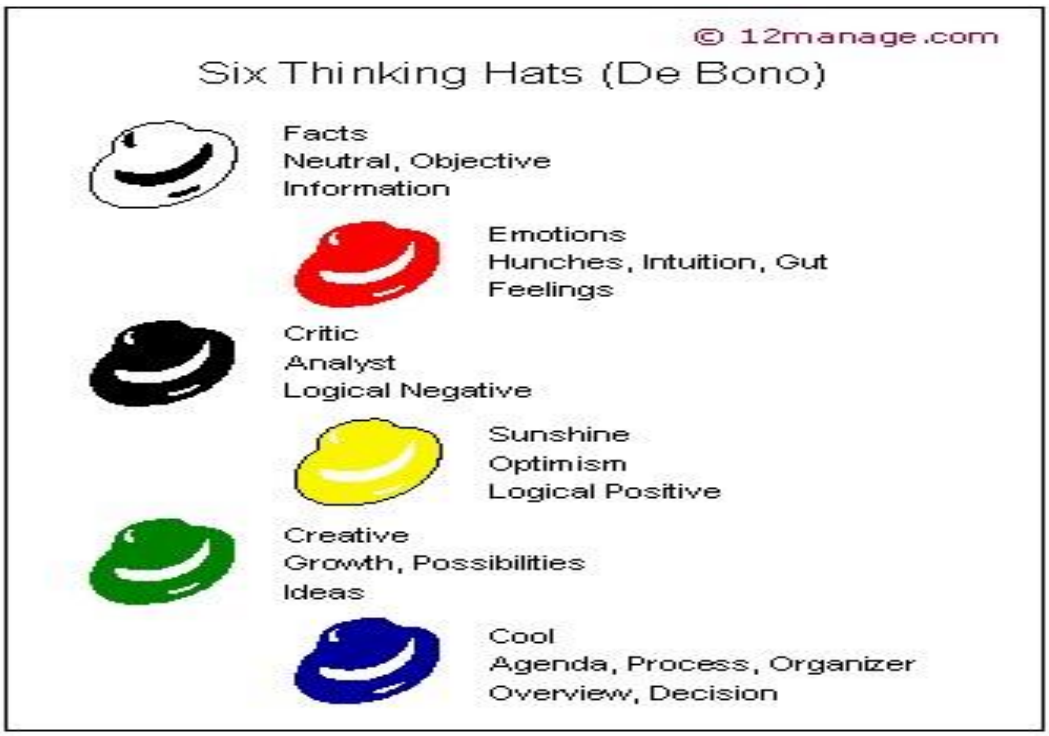


Figure 3.2: The Six Thinking Hats (De Bono, 1985:31-32)

For the purpose of this study and in the context of enhancing critical thinking skills, the researcher will focus on all six hats as possible questioning approaches used in the classroom to enhance critical thinking skills. The Six Hats strategy is elucidated below.

White Hat Thinking

De Bono (1985:35) says that White Hat Thinking is "a convenient way of asking for the facts and figures to be put forward in a neutral and objective manner," linking with Bloom's levels of understanding (*cf*. 3.6.1). White hat thinking is calls for data, detail, figures, information and the asking of useful questions (De Beer & Gravett, 2010:90). Some example questions in EFAL context may be:

- Name the different figures of speech.
- Who was William Shakespeare?

Red Hat Thinking

De Beer and Gravett (2010:90) and De Bono (1985:56) point out that this type of thinking has to do with emotions and feelings. De Bono (1985:56) further says that if students' emotions and feelings are not allowed as inputs in their thinking processes, they will lurk in the background and affect all the rest of their thinking. McGregor (2007:141) adds that with red hat thinking, students do not have to give reasons for their feelings and emotions regarding certain learning content. In EFAL context, when a poem deals with the death of a young child who is more or less the same age as the students (i.e. *Sixteen Candles* by Sharon Philbon), lecturers can ask them the following questions:

- What emotion do you feel regarding the passing of the young woman?
- Do you think that it was fair that the young woman had to die at such a young age? Motivate your answer.

Black Hat Thinking

This type of thinking, according to De Beer and Gravett (2010:90), McGregor (2007:141) and De Bono (1985:80) is logical and encourages the student to be cautious about an idea or the subject under review. It also focuses on what could go wrong in a given situation and identifying faults and weaknesses (McGregor, 2007:141). De Beer and Gravett (2010:90) further say that black hat thinking is the most important hat in critical thinking because it prevents one's emotions from dominating a situation. The students

have to play devil's advocate and should ask questions that are likely to expose weaknesses in a proposal (De Beer & Gravett, 2010:90). For instance, when a comprehension test in EFAL, which deals with safety and crime, is given to the students, the lecturers may ask questions which would encourage answers from a logical perspective, such as:

- Why is it not safe for a woman to come home late at night all by herself?
- What are the negative effects of crime in a country?

Yellow Hat Thinking

According to De Bono (1985:110), positive thinking has to do with a mixture of curiosity, pleasure, greed and the desire to make things happen. It also requires from students to look at the positive aspects and to identify the value or advantages in a specific situation or proposal (De Beer & Gravett, 2010:90; McGregor, 2007:141). Some example questions in EFAL context may be:

- Explain the poet's use of metaphor in stanza 2.
- What are the benefits of knowing the figures of speech when you have to analyse a poem?

Green Hat Thinking

De Beer and Gravett (2010:90), De Bono (1985:135) and McGregor (2007:141) assert that Green Hat Thinking has to do with new ideas and new ways of looking at things, by focusing on lateral solutions, creativity and innovative, alternative suggestions. The lecturer is enhancing critical thinking skills through questioning in the classroom. Some example questions in EFAL may be:

- From the text it is obvious that Susan worries about the cookies that were not a successful batch. Come up with two ideas that she can employ so that the unsuccessful cookies are not wasted.

Blue Hat Thinking

The Blue Hat, according to De Beer and Gravett (2010:90), McGregor (2007:141) and De Bono (1985:170), implies that people are thinking about the thinking needed to explore certain subject matter, and it also offers a challenge of self-analysis, evaluation and holistic thinking. The Blue Hat thus promotes the synthesis of information. Some example questions are:

- Summarise the techniques Susan could have employed in her baking to ensure a successful batch of cookies?

The thinking Hats of De Bono and Bloom's Taxonomy are essential strategies in enhancing critical thinking skills among students. By catering for a wider range of questions to the students, all students can be included in the classroom interactions and, thus, be enhanced to think more critically and independently.

In summary, Table 3.1 summarises the aforementioned discussion regarding De Bono's (1985:31-32) Six Thinking Hats theory, and links the strategy with Bloom's Taxonomy:

Table 3.1: Linking the Six Thinking Hats with Bloom's taxonomy

Hat	Explanation	Level in Bloom's Taxonomy
White Hat	A convenient way of asking for facts and figures to be put forward in a neutral and objective manner.	Knowledge/ comprehension
Red Hat	This type of thinking has to do with emotions and feelings.	Application
Black Hat	This type of thinking is logical and encourages students to be cautious about an idea or the subject under review.	Evaluation

Hat	Explanation	Level in Bloom's Taxonomy
Yellow Hat	This is positive thinking, which has to do with a mixture of curiosity, pleasure, greed and the desire to make things happen.	Evaluation
Green Hat	This type of thinking has to do with new ideas and new ways of looking at things, by focusing on lateral solutions, creativity and innovative suggestions.	Synthesis
Blue Hat	This type of thinking promotes the synthesis of information.	Synthesis

In addition to using different types of questions in the classroom to enhance critical thinking skills, the researcher feels that it is important to study the different tactics used in order to support effective questioning in the classroom. Certain questioning tactics promote the enhancing of critical thinking skills.

3.7 TACTICS FOR ASKING EFFECTIVE QUESTIONS

Monyai (2006:130) emphasizes that effective questioning is central to effective teaching. Monyai (2006:130) adds that lecturers should acquire the essential skill of asking the right questions at the right time. The questions lecturers ask will determine largely whether their students simply repeat memorized work, or whether they are encouraged to think for themselves, as well as to acquire their own insights (Monyai, 2006:130).

Questions that are asked are only as good as the answers provided to them. Therefore, it is not only important to consider the types of questions that are asked by lecturers, but also the tactics employed in asking those questions (Wragg & Brown, 2001:27). It is for this reason that Monyai (2006:130) urges lecturers to ask questions that cover different levels of thinking (*cf.* 3.6.1;

3.6.2). Wragg and Brown (2001:27) distinguish between the following tactics when asking questions:

- structuring;
- pitching;
- directing and distributing;
- pausing and pacing;
- prompting and probing;
- listening to replies and responding.

For the purpose of this study, these tactics will be discussed in greater detail, as some of these tactics will be the focus of the researcher's observations.

3.7.1 Structuring

According to Wragg and Brown (2001:29), structuring consists of providing signposts for the sequence of questioning that will take place. Question structuring may be done in accordance with the exposition of a topic. Wragg and Brown (2001:29) also say that structuring moves may be described as pre-formulators. In other words, it indicates the answers the lecturers expect, and the clues are part of the questions.

3.7.2 Pitching

Pitching is used in order to estimate the right intellectual level of the students who are being taught, in order to accommodate individual student differences. Students differ in readiness, learning styles, interests, as well as in personal backgrounds (Sadker *et al.*, 2011:111; Wragg & Brown, 2001:29).

Wragg and Brown (2001:29) mention that lecturers should be careful when pitching questions to students. A question that may seem easy to answer for the smarter students in class will not necessarily be easy for the challenged student. Therefore, lecturers should vary the questions they use, and include questions that focus on merely recalling facts as well as questions that require students to analyse content and to think their answers through before providing feedback to their lecturers. Sadker *et al*. (2011:111) point out that

this can only happen if lecturers know both their students and their content areas, because this will help them to differentiate their questions in accordance with their students' individual intellectual abilities.

3.7.3 Directing and distributing

Wragg and Brown (2001:31) warn lecturers that it is easy to deceive themselves while distributing undirected questions in the classroom. Undirected questions may lead to a chaotic situation where the lecturer completely loses control of the situation in the classroom, as undirected questions can allow students' thoughts to wander too far from the topic on which the questions were based. Wragg and Brown (2001:31) point out that lecturers should consider their students' head movements, facial expressions and gestures while asking questions in the classroom. The reason for this may be that some of their students may be shy, disinterested or bored. This implies that lecturers who regularly ask a torrent of nonstop questions in order to promote student involvement in the classroom, is not at all creating an ideal learning environment for their students (Sadker *et al*., 2011:111)

For this reason, Wragg and Brown (2001:31-32) propose that lecturers distribute questions around the classroom while focusing on their blind spots in the classrooms. In other words, lecturers need not ask questions only to the students who are always willing to participate, but also have to involve the shy, disinterested and bored ones as well.

Ma (2008:96) agrees with Wragg and Brown (2001:31-32) by pointing out that lecturers should nominate students in class to answer questions, in order to include all their students in active learning (Sadker *et al*., 2011:116). However, lecturers should note that they should not nominate a student before the question is asked, because it will result in only this one student doing all the thinking concerning the specific subject matter (Ma, 2008:96).

Furthermore, Ma (2008:97) explains that lecturers sometimes ask questions only to the high achievers in the classroom who usually sit in the front, without even realising it. This problem then results in the improper distribution of the questions to the students, leaving many students uninvolved in thinking about answers.

3.7.4 Pausing and pacing

It is a well-known fact that lecturers often ask more questions than they can answer,

and sometimes they also answer their own questions, without providing their students with the opportunity to come up with an answer themselves, thus resulting in less student participation in the classroom, as well as in a lowered quality of the students' responses (Sadker *et al*., 2011:115; Wragg & Brown, 2001:32).

Ma (2008:97) argues that it takes time to answer a question. This is where **wait time** plays an important role. Allowing your students enough time (approximately two to three seconds) to think about the answer before actually answering the question, lecturers may be surprised by the responses they will receive (Ma, 2008:97; Wragg & Brown, 2001:32). However, very few lecturers actually make use of this important skill (Ma, 2008:96), which is important to allow students to think critically about information.

Research conducted by Wragg and Brown (2001:32) and Ma (2008:97) indicate that by allowing students wait time before providing them with feedback, more students will answer questions or provide longer answers. In addition, more students will ask questions in return, in order to double check their understanding, since it will give the reflective students a chance to think and answer, as well as involving the students who instantly knew what to answer (Tobin in Wragg & Brown, 2001:32 and Ma, 2008:97). However, if sufficient wait time is not provided to students, the teaching and learning process gets short-circuited since the lecturer will react to his/her students' responses with ineffective comments. In turn, the students will show lowered participation in the classroom (Sadker *et al*., 2011:115).

3.7.5 Prompting and probing

When students' first answers to questions are inadequate or inappropriate, lecturers should make use of prompts and probes (Borich, 2004:274). Prompts are usually hints they provide to their students, while probes require more detailed and precise answers from them (Wragg & Brown, 2001:33).

Three forms of prompts are identified by Wragg and Brown (2001:33). These are the following:

- The question should be rephrased differently in words more closely to the students' knowledge and experiences.
- Lecturers should make use of simple questions that will lead their students back to the original question.
- Lecturers should provide a review of the information that has been given so far and then tempt to ask questions that will help them to recall or see the answer.

According to Borich (2004:274-275), a probe is used for the following reasons:

- It elicits clarification of students' responses. In other words, students are asked to rephrase their responses in order to determine they appropriateness and correctness.
- It solicits new information in order to extend students' responses. In other words, the lecturers are building higher plateaus of understanding by using previous responses as stepping stones to reach higher expectations.
- It redirects the students' responses in a more productive direction in order to discourage students to venture to another response that is not in accordance with the question that was asked.

Sadker *et al*. (2011:112) assert that well thought-out questions, especially probing and delving questions, can move the child to higher levels of thinking, and ultimately result in critical thinking.

3.7.6 Listening to replies and responding

Wragg and Brown (2001:34) mention that our ability to listen may be diminished by anxiety, and that sometimes we do not listen carefully to the responses of students. This will lead to lecturers to inappropriate responses to their answers. Sadker *et al*. (2011:115) add that, due to a lack of wait time, lecturers do not understand their students' responses, which results in typical comments such as "uh-huh", "okay" and "I see", which actually clearly indicate

that the lecturers themselves do not know or understand what was actually said or explained. Careful listening will enable lecturers to prompt and probe for deeper clarification and thinking about an answer, if necessary. Moreover, Wragg and Brown (2001:34-35) argue that effective responses include reinforcement and feedback given to students.

Although detailed discussions have been provided regarding questioning, the researcher feels it is important to focus on the importance of questioning in the EFAL classroom also, to motivate the rational with the study.

3.8 THE IMPORTANCE OF QUESTIONING IN THE EFAL CLASSROOM

The term English First Additional Language classroom used in the context of this study, refers to a classroom where the primary concern is the development of a language that is not spoken and used as a home language (first language) by the students (Benham & Pouriran, 2009:118).

Language teaching and learning involves communication. Benham and Pouriran (2009:117) explain that communication is an outward extension of thought, and helps in the process of arranging thought, as well as to link one idea to another. Communication also includes verbal (spoken or written) and non-verbal (symbols and representations through drawing and diagrams) forms.

Language, according to Benham and Pouriran (2009:118), is one of the principle means through which patterns of interaction and communication are constructed. These patterns are constructed through social interaction among students who use language (Benham & Pouriran, 2009:118).

Communication is used when the language user recognizes a situation, which requires the conveyance of information to establish a convergence of knowledge. In order to do this, the language user needs to negotiate meaning through interaction (Benham & Pouriran (2009:118).

Benham and Pouriran (2009:118) and Monyai (2006:130) also highlight the fact that the use of different types of questions by lecturers is necessary for creating classroom interactions and communication in the EFAL classroom,

and which will also allow lecturers to ask the right questions at the right time during the learning process (*cf*. 3.3, 3.4.2, 3.5.1)

McNeil (2010:74) mentions that research shows that many lecturers agree that thinking skills are important in education, but that not all students receive higher order thinking instruction. The emphasis on the teaching and enhancing of higher order thinking skills should not only be seen against the background of it being one of the outcomes in the Curriculum of EFAL. It should be remembered that their students need higher order thinking skills in order to pass all tests, to compete in a global job market and to initiate social change (Freire cited by McNeil, 2010:74). Nagappan (cited by McNeil, 2010:74) adds to Freire's statement that higher-order questioning offers many benefits like increased literacy levels, a thorough development of thinking skills and it leads to more target language production.

3.9 CHAPTER SUMMARY

This chapter highlighted the concept clarification of questioning (*cf*. 3.2). Questioning was highlighted as a very important and powerful teaching tool, especially in the EFAL classroom, since it plays an important role in the enhancing of students' critical thinking skills.

In order to use questioning as a teaching tool, the researcher investigated different types of questioning, namely: open/divergent and closed/convergent questions; overhead and directed questions; relay and reverse questions; referential and display questions; pivotal and focusing questions; higher order and lower order questions; product, process and opinion questions; what, when, how, who and why questions, memory and search questions; contextuality explicit and contextuality implicit questions; and background questions (*cf*. 3.3) in order to understand how and when to use them. Two effective questioning strategies for enhancing critical thinking were explored. Bloom's revised taxonomy (*cf.* 3.6.1) informed the researcher of questions dealing with applications, analysis, evaluation, synthesis and comprehension which are core critical thinking skills. Edward de Bono's Six Thinking Hats (*cf.* 3.6.2) strategy points to the use of six different questioning strategies that

enhance thinking in different modes, which also provides opportunities to acquire all the core critical thinking skills.

The factors that need to be considered when questions are asked (*cf.* 3.4) revealed that questioning should consume 80% of class time to bridge the gap between the lecturers' presentation of content in the classroom and the students' understanding thereof (*cf.* 3.4.1). The importance of asking the right questions (*cf.* 3.4.2) was also highlighted, because not all questions that are asked in the English classroom engage students actively in the learning process. Right questions are those types of questions that enhance students' critical thinking skills, and not questions that only focus on the recall of facts.

In an effort to emphasise why questioning should be used in the EFAL classroom, the researcher looked at the reasons for using questioning (*cf.* 3.5). An introductory reason was supplied that placed the emphasis on the fact that questions are used to facilitate learning and the development of critical thinking skills. Critical thinking is promoted because questioning promotes communication between students, it signals their interests, it arouses their curiosity, it encourages problem solving thinking skills, it helps them to express their knowledge verbally, it encourages thinking out aloud, it promotes deeper thinking levels, it helps students to learn from one another, and it monitors their learning (*cf.* 3.5.1 – 3.5.9).

The tactics of effective questioning (*cf*. 3.7) pointed to a number of points that could be beneficial to the development of critical thinking skills. Lecturers should not only ask questions, but should employ different tactics such as structuring their questions more clearly and understandably, pitching their questions at the desired cognitive level of the students, directing and distributing their questions fairly among all members in the classroom, applying wait time and pausing in order to give students an opportunity to think about their answers, making use of prompts and probes to guide their students' to deeper thinking, listening to their students' replies and responding to them, and sequencing their questions (*cf.* 3.7.1 – 3.7.6).

The importance of questioning is mainly vested in promoting interaction and communication, negotiating meaning and exploring thoughts, which are important activities for the development of critical thinking (*cf*. 3.8).

The next chapter, Chapter 4, highlights the research process and explains how the researcher gathered the data necessary to answer the research questions.

CHAPTER 4

EMPIRICAL RESEARCH DESIGN

4.1 INTRODUCTION

Chapters 2 and 3 highlighted the importance of enhancing critical thinking skills through questioning. Chapter 4 elaborates on the empirical research design which was employed to determine to what extent and how the lecturers at the Flavius Mareka FET Colleges in the Fezile Dabi District enhance critical thinking skills by means of questioning. This chapter unfolds according to the following format:

- Research framework
- Empirical research design which consists of:
    - The aim and objectives
    - The research design
    - The research strategy
    - Data collection methods
    - Reliability and validity
    - Population and sample
    - Data analysis
    - Ethical issues

Before conducting the research, the researcher had to choose a suitable framework that would guide the execution of the research. How the framework was selected is explained in the next section.

4.2 RESEARCH FRAMEWORK

A research framework is seen as a set of beliefs (worldviews) that guide a specific action (Creswell, 2009:6). In other words, it is the beliefs that influence the research process, as well as an indication of why the researcher

chose a specific research design (quantitative, qualitative or mixed-method) (Creswell, 2009:5).

Creswell (2009:6-11) and Nieuwenhuis (2010a:47-68) propose six philosophical world views that can guide the execution of research:

- Positivistic World View
- Postpositivistic World View
- Social Constructivist/Interpretivistic World View
- Advocacy and Participatory World View
- Pragmatic World View
- Critical Theory World View

In the context of the study the positivistic world view was seen as suitable for the research.

4.2.1 Positivistic world view

McMillan and Schumacher (2010:5) point out that the concept of positivism is based on the premise that the study of humans can be done in the same way as the study of nature, with accepted sets of rules for conducting and reporting results. Researchers should therefore choose methods that will allow them to measure the variables of interest objectively and stay detached from the research respondents so that unbiased conclusions can be drawn (Leedy & Ormrod, 2005:95). Maree and Van der Westhuizen (2010c:31-32) and Welman *et al*. (2005:6) add that the knowledge obtained in this world view can be seen as hard, real and objective, and that this research approach underlines the natural-scientific method in human behavioural research and research must be limited to what the researcher can observe and measure objectively.

In order to select a research paradigm, the researcher had to evaluate her own assumptions regarding the study. Ontological assumptions mean that social reality can be understood from an external or internal point of view (Maree & Van der Westhuizen, 2010c:31). In this study the researcher wanted to understand the classroom reality from an external viewpoint.

Epistemological assumptions, according to Maree and Van der Westhuizen (2010c:31) refer to a view which might lead to adopting an objective or subjective role when collecting data. The researcher took on an objective stance to collect objective data (Maree & Van der Westhuizen, 2010c:31). Methodological preferences deal with paradigmatic assumptions and perspectives, which significantly impact on methodological choices, and also demand a consideration of different research methods (Maree & Van der Westhuizen, 2010c:33). In this study, the teaching realities of the lecturers in their classrooms were viewed in an objective manner and directed the researcher to quantitative data collection (Maree & Van der Westhuizen, 2010c:31).

In the context of this study, the researcher chose a positivistic world view, because she wanted to determine objectively the extent to which lecturers use questioning in order to enhance their students' critical thinking skills, as well as their perceptions and understanding of critical thinking and the enhancing thereof (*cf*. 1.3.1; 1.4).

In the following section, the researcher clarifies and motivates the empirical research design that was employed in the study.

4.3 EMPIRICAL RESEARCH DESIGN

4.3.1 Aim and objectives

Based on the problem formulated in Chapter 1, the main aim of this quantitative descriptive survey and observation study (Leedy & Ormrod, 2005:179; and McMillan & Schumacher, 2010:217) was to determine to what extent and how the lecturers at the Flavius Mareka FET Colleges in the Fezile Dabi District enhance their students' critical thinking skills by means of questioning in the EFAL classroom (*cf*. 1.2).

Within the main aim, the following objectives were identified:

- To determine which critical thinking skills need to be enhanced in the EFAL classroom at FET-level.

- To determine how lecturers who teach EFAL at FET-level interpret the concept “critical thinking”.
- To determine how lecturers who teach EFAL at FET-level interpret the way in which critical thinking skills can be enhanced.
- To establish which questioning types, strategies/techniques and tactics should lecturers use to enhance critical thinking skills among students in the EFAL classroom at FET-level.
- To determine to what extent lecturers presently enhance critical thinking skills in the EFAL classroom through questioning at FET-level.
- To establish which questioning strategies/techniques and tactics lecturers apply in EFAL classrooms to enhance critical thinking skills at FET-level.
- To determine to what extent there is a difference in the perceptions of students on Campus A and Campus B regarding the way critical thinking skills are enhanced in the EFAL classroom
- To make recommendations to enhance critical thinking skills by means of questioning in EFAL classrooms at FET-level.

In order to achieve the abovementioned aim and objectives, a suitable research design was chosen.

4.3.2 Research design

A research design is a general strategy a researcher uses in order to solve a research problem (Leedy & Ormrod, 2005:85). In other words, research designs are plans and procedures the researcher follows in order to collect and to analyse data (Creswell, 2009:3; Leedy & Ormrod, 2005:85).

In line with the positivistic worldview, the researcher made use of a quantitative research design.

4.3.2.1 Quantitative design

In quantitative research, the researcher aims to answer questions about relationships or to test theories objectively among measured variables by means of explaining, predicting and controlling phenomena by means of

numbers (Creswell, 2009:4; Leedy & Ormrod, 2005:94 and McMillan & Schumacher, 2010:21). Quantitative data are analysed by making use of statistical procedures (Creswell, 2009:16).

A quantitative research design was suitable for this study, because the researcher wanted to determine the students' and lecturers' perceptions regarding the enhancing of critical thinking skills among their students in the EFAL classrooms. Creswell (2009:7) mentions the fact that a quantitative study implies that knowledge develops through a positivistic lens, and is based on careful observation and measurement of the objective reality that exists in the world. The perceptions of the research respondents are determined by means of numeric measures (Creswell, 2009:16). In this study, the researcher wanted to obtain data that would characterize how critical thinking skills are enhanced in EFAL classrooms at FET-level, by means of numbers. In addition, the researcher objectively determined the lecturers' understanding of critical thinking. Furthermore, classroom situations were quantitatively observed, focusing on how the lecturers' enhance their students' critical thinking skills by observing the questioning strategies/techniques and tactics used in the EFAL classrooms.

In the following section, the researcher clarifies the research strategy.

4.3.3 Research strategy

Research strategies or strategies of inquiry "*provide specific direction for procedures in a research design*" (Creswell, 2009:11). These strategies guide the researcher in conducting research, and analysing the data obtained from the research. As this study was quantitative in nature, the researcher had to choose between experimental and non-experimental research strategies (McMillan & Schumacher, 2010:21). Maree and Pietersen (2010b:149) and McMillan and Schumacher (2010:21-22) point out that experimental research strategies involve manipulation and treatment of variables in order to effect change. Non-experimental research describes phenomena and examines relationships between variables without any direct manipulation (McMillan & Schumacher, 2010:22).

As the researcher did not want to manipulate conditions, but merely wanted to obtain objective perceptions and an objective picture and description of classroom situations in terms of the use of questioning to enhance critical thinking skills, she chose to work with non-experimental descriptive research strategies.

4.3.3.1 Descriptive survey research

Non-experimental **descriptive survey research** was chosen to conduct this research. Fouche and De Vos (2011:96), Stiponovich and Van der Merwe (2007:69) and Leedy and Ormrod (2005:179) explain that descriptive research has to do with making careful descriptions of observed phenomena, as well as the exploration of possible relationships between these phenomena. McMillan and Schumacher (2010:217) point out that descriptive research is used in order to summarise the current or past status of something. Descriptive research describes achievements, attitudes, behaviours or other traits of phenomena or respondents (McMillan & Schumacher, 2010:217). In this study, the descriptive design pointed out respondents' perceptions on whether and how lecturers are currently enhancing their students' critical thinking skills through questioning. Descriptive survey research, according to Leedy and Ormrod (2005:183) and Creswell (2009:12), provides numeric descriptions of trends, characteristics, attitudes or opinions of a population by studying a sample of a specific population. McMillan and Schumacher (2010:236) further point out that surveys describe incidences, frequencies, and the distribution of the characteristics of an identified population. Surveys can also be used to explore relationships between variables in explanatory ways. Survey research was suitable for this study as the researcher was interested in the opinions of lecturers and students. In this study, group administration of the questionnaires was used. The researcher waits while the whole group of respondents completes the questionnaires simultaneously (Maree & Pietersen, 2010a:158).

In this study, the researcher made use of group administration of questionnaires, in order for the researcher to be able to ensure that:

- all the questionnaires were fully and correctly completed;

- to ensure that the respondents did not discuss their opinions and understanding regarding critical thinking with each other; and also
- to ensure that the respondents did not discuss their answers with one another.

Limitations in the intended survey research may occur in the form of respondents not being completely honest in their responses, as well as respondents answering the questionnaires by only marking the options given to them without reading the questions. These two limitations can cause a major set-back to the study in terms of unreliable information that can or will be used. In order to avoid unnecessary set-backs, the researcher personally administered the questionnaires to make sure that all items were answered, and encouraged respondents to ask for clarity if they had trouble in answering any of the questions. In addition, the researcher used open-ended questions to avoid that the respondents merely guess in order to answer the questions, but also had to think and reason before attempting to answer any of the open ended questions.

4.3.3.2 Descriptive observation study

In order to support and provide a deeper understanding of the data obtained by the questionnaires, the researcher also made use of an **observation study** in collaboration with a trained and knowledgeable co-observer. The distinctive feature of observation as a research process is that it offers an investigator the opportunity to gather live data from naturally occurring natural social situations. The researcher directly looks at what is taking place in situations rather than relying on second-hand accounts (Cohen *et al*., 2007:396). Observation is the systematic process of recording the behavioural patterns of respondents, objects and occurrences without necessarily questioning or communicating with them (Cohen *et al.,* 2007:396). It is an everyday activity whereby we use our senses (seeing, hearing, touching, smelling and tasting) - but also our intuition to gather bits of data. The researcher used observations to gain a deeper insight and understanding of the application of questioning strategies/techniques and tactics by the lecturers who took part in the study (Nieuwenhuis, 2010b:84).

4.3.4 Data collection methods

McMillan and Schumacher (2010:336-337) point out that data collection strategies or methods refer to the varieties of observational and interviewing methods as well as data recording techniques that are used by a researcher in order to conduct research.

Two sets of researcher-constructed questionnaires were used to obtain data for this study. Although observations were done, the questionnaires served as the main/primary method of data collection.

4.3.4.1 Questionnaire

Wilson and McLean (cited by Cohen *et al*., 2007:245) mention that the questionnaire is widely used as a useful instrument for collecting survey information. For the purpose of the study, a self-constructed, structured questionnaire comprising open and closed Likert-scale questions were used (Delport & Roestenburg, 2011:212), in order to determine lecturers' understanding of critical thinking, the purpose of questioning as well as how they use questioning types, strategies/techniques and tactics in order to enhance critical thinking skills among their students. The questionnaires were also used in order to determine students' perceptions of their lecturers' use of questioning types, strategies/techniques and tactics in the classroom in order to enhance their critical thinking skills. Both questionnaires contained similar questions but were phrased differently to suit students and lecturers.

The researcher acknowledges the following advantages and disadvantages towards data collection with a questionnaire, as mentioned by Leedy and Ormrod (2005:185):

Advantages

- Questionnaires were distributed to a large numbers of respondents simultaneously.
- The respondents responded to questions with the assurance that their responses were anonymous.

Disadvantages

- Respondents may have misunderstood or misinterpreted some of the questions posed in the questionnaires due to a lack of language proficiency.
- The researcher gained only limited information regarding the use of questioning for enhancing critical thinking skills.

In order to avoid a low return rate, the researcher personally administered the questionnaires to the respondents. At the onset of the administering of the questionnaires, the researcher explained the instructions to the respondents clearly. She also explained the informed consent that they had to sign. All four lecturers involved in this study understood how to complete the questionnaires. Some of the students seemed to struggle because they did not understand some of the words used in the questionnaires, and asked the researcher to explain the words to them.

The lecturer frequently reminded the students that the questionnaire they were completing referred to their English lecturers and how they used questioning to enhance their critical thinking skills. On submission of the questionnaires, the researcher checked through every student's questionnaire in order to ensure that every question was answered. If questions were not answered, the researcher kindly requested the students to complete everything by showing them where they overlooked some of the questions.

The researcher adhered to the following principles in designing the questionnaire:

Questionnaire design

- **Instructions**

In support of Maree and Pietersen (2010a:159), the instructions on the questionnaires were simple, clear and concise to make understanding possible. During the administering of the questionnaire to the students, the researcher also read the instructions with the respondents and answered any questions they had regarding the questionnaires.

- **Appearance**

As indicated by Maree and Pietersen (2010a:150) the questionnaires were neatly printed on good quality paper, and not too small fonts were used.

- **Completion time**

Maree and Pietersen (2010a:159) assert that questionnaires should not take too long to complete, 20 minutes for students and 30 minutes for adults or lecturers. The questionnaires for both the students and their lecturers were completed in the specific period. The questionnaires were administered during a working day on the two campuses (Campus A and Campus B) at the Flavius Mareka FET Colleges while all the NQF Level 2 EFAL students and their lecturers were present. The researcher personally handed the questionnaires to the students. She explained to the students exactly what was expected from them in this research, and how they should go about responding to the questionnaires. The administering of the questionnaires took place during the first term at the colleges after lecturing time in order to ensure that the actual teaching time was not disrupted. The students were willing to stay behind after college hours in order to complete their questionnaires.

The lecturers were first observed once by the researcher before they were requested to complete their questionnaires, in order to avoid that the questionnaire information influence their classroom teaching to be different from how they normally teach. After the first observation, each lecturer received a questionnaire to complete, while the researcher waited.

- **Question sequence**

The researcher followed the instructions of Maree and Pietersen (2010a:160) as to structure the question sequence of the questionnaires, and applied the following principles:

- A short introduction that explains the survey to the respondents was provided.
- Easy-to-answer questions were first asked which referred to the respondents' biographical details.

- The questions in the questionnaires were clustered under topics that followed in a logical order.

- **Question wording**

Maree and Pietersen (2010a:160) mention that if the questions in the questionnaire are not carefully worded, the researcher may receive data that are meaningless. The researcher aimed to follow the following instructions from Maree and Pietersen (2010a:160) on how to word a questionnaire:

- Language was used that all the respondents of the study understood.
- The questions were phrased very precisely in order to avoid ambiguity.
- Only one aspect per question was covered, no double-barrelled questions were asked.
- No leading questions were asked to lead respondents to answers since this would have caused the data not to be reliable and valid.
- Questions were not based on the respondents' knowledge or memory of specific subjects.
- No hypothetical or negative questions were asked.
- All items in the questionnaire were formulated in the first person.
- The researcher aimed to formulate the items in the questionnaires as statements and not as questions.
- No assumptions regarding the respondents were made or sensitive questions were asked which may have offended them.

Types of questions

McMillan and Schumacher (2010:197) reason that open and closed questions are used to determine a specific objective, and are the best for obtaining demographic information and data that can be categorized easily. The questionnaire comprised both closed and open questions.

- **Closed questions**

Maree and Pietersen (2010a:161) concur that closed questions provide for a set of responses from the respondents. The researcher therefore mainly

made use of closed questions in her questionnaires, because she wanted specific answers from her respondents.

- **Open questions**

Maree and Pietersen (2010a:161) reason that an open question is used in order to give the research respondent an opportunity to provide a word, phrase or comment. Open questions leave room for broader answers than just a mere "yes" or "no".

Although a number of closed questions were asked, some of the questions in the lecturer's questionnaires were open questions, as lecturers had to explain how they are teaching, and how they are using different questioning types and strategies/techniques in order to enhance critical thinking skills among their students. Some of the questions in the students' questionnaire were open questions as well, in order for them to explain how they perceive and experience their lecturers' use of different questioning types and strategies/techniques in the classroom. Some of the open questions in the students' questionnaire also dealt with the students' perceptions regarding critical thinking and how the skills should be enhanced..

The researcher's questionnaires (*cf*. Appendix E, F) consisted of the following types of questions as explained by Maree and Pietersen (2010a:161-164, 167):

- **Filter and follow-up questions**

The students and lecturers were asked to motivate some of their responses (*cf*. Questionnaire Section B).

- **Biographical questions**

Questions to determine biographical variables were included, for example, culture, age and gender. In addition, the lecturers answered questions about their level of teaching experience and qualifications, whereas the students only answered questions about their age, gender, culture and mother tongue (*cf*. Questionnaire Section A).

- **Likert-scale questions**

In order to determine the extent of agreement about the purpose of questioning and the frequency with which questioning types, strategies/techniques and tactics were used, students and lecturers had to choose between four options when responding to questionnaire statements (*cf*. Questionnaire Sections C – F). Sections C – F addressed the following:

- Section C – The purpose of questioning
- Section D – Questioning types
- Section E – Application of questioning strategies/techniques
- Section F – Questioning tactics

According to Maree and Pietersen (2010a:167) by giving the respondents four options to choose from instead of five , force the respondents to either agree or disagree without the possibility of being neutral. Likert-scale questions were suitable to measure how respondents feel or think and to discover the strength of feeling as was required in the context of this study (Maree & Pietersen, 2010a:167).

The Likert-scale, according to Maree and Pietersen (2010a:167) is a very convenient means when the researcher wants to measure constructs. A series of Likert-scale questions were asked and respondents responded by assigning a categorised value to their responses. The closed questions consisted of four-point **Likert-scale questions** (strongly agree, agree, disagree, strongly disagree and almost always, often, sometimes, almost never) in order to determine the purpose of questioning and the frequency with which questioning types, strategies/techniques and tactics are used.

In addition to the questionnaire, the researcher also conducted a descriptive observation study that would assist her to verify the responses obtained with the questionnaire. The following section clarifies the use of the observations as data collection instrument.

4.3.4.2 Observations

According to McMillan and Schumacher (2010:210) and Cohen *et al*. (2011:460 – 464) there are five types of observation recordings that can be used once the researcher has defined the specific behaviours to be observed. These are the following:

- **Duration recording (Duration of behaviour)**

The observer indicates the length of time a specific kind of behaviour lasts (McMillan & Schumacher, 2010:210). In other words, the frequency of the observation is not as important as the event that takes place. The recording schedule needs to be structured in such a manner that it indicates the total duration of a single continuous behaviour (Cohen *et al.*, 2011:463).

- **Frequency-count recording (Structured event sampling)**

According to McMillan and Schumacher (2010:210) this type of recording is used when the researcher is only interested in the frequency with which predetermined behaviours occur. Cohen *et al.* (2011:460) add that event sampling requires the observer to enter a tally mark against statements (identified behaviours) each time they are observed. Furthermore, this method is mainly used for finding out the frequencies or incidences of observed situations or behaviours (Cohen *et al.*, 2011:461).

A structured observation is very systematic and enables the researcher to generate numerical data from the observations. Numerical data, in turn, facilitate the making of comparisons between settings and situations, and frequencies, patterns and trends to be noted or calculated (Cohen *et al.,* 2011:459).

- **Interval Recording**

A single subject is observed over a specific period and the specific behaviours that occur are recorded (McMillan & Schumacher, 2010:210). Interval recording also charts the chronology of events to a certain extent and requires the data to be entered in the appropriate category at fixed intervals, as well as what happened during the preceding interval, instead of charting what happens on the instant (Cohen *et al.*, 2011:462).

- **Continuous Observation**

McMillan & Schumacher (2010:210) points out that after observing a subject over an extended period, the observer provides a brief description of the behaviours observed.

- **Time sampling (Instantaneous sampling)**

Time sampling highlights the chronology of events, because the researcher only enters what she observes at standard intervals of time (Cohen *et al.*, 2011:462).

Rating scales

Another observation type that is mentioned by Cohen *et al.* (2011:462) is rating scales. By using this method, the researcher makes judgements regarding a certain event being observed, and enters responses on a rating scale. Cohen *et al.* (2011:463) also mentions that the researcher is also required to move from simply reporting observations (a low inference) to making judgements about the events observed (a higher degree of inference).

The researcher made use of structured frequency-count event sampling in order to conduct the observations, because she was interested in the frequency with which lecturers use different questioning types, strategies/techniques and tactics during a lecture (McMillan & Schumacher, 2010:210; Cohen *et al*., 2011:462).

Conducting the observations

Based on the information gathered through the literature review, the items in the observation schedule were constructed to correspond with some of the various questioning strategies/techniques and tactics that could be utilized in the classroom (*cf.* 1.6.2.5). As mentioned previously, an initial observation was conducted in the classrooms of the lecturers before the completion of the questionnaire to avoid that the questionnaire influences the way in which the lecturers would respond to the questionnaire.

After the completion of the questionnaire, subsequent observations were conducted in the classrooms of the lecturers. At the end of each of the observation sessions, the researcher and the co-observer compared their

observation tally tables for the frequency with which certain questioning strategies/techniques and tactics were utilized by the lecturers. In total, 9 observations of 60 minutes each were conducted, after which the researcher and the co-observer compiled a summary.

The observations were announced and consent to do so was obtained from the college principal and the lecturers. In order to avoid that the observations became threatening to the lecturers, the researcher explained the purpose of the observations to each of the lecturers beforehand, and broadly highlighted the aspects of their classroom practice that would be observed. The observations had to be unannounced to avoid respondents' preparing in advance to teach differently from what they normally do (Cohen *et al.,* 2007:411).

Two lecturers (one at Campus A and one at the Campus B) were each observed three times. The remaining two lecturers (one at the Campus A and one at the Campus B) were not observed three times. The remaining lecturer at Campus A was observed only two times due to a scheduled test that prevented the researcher and co-observer to continue with the third observation on that specific campus. The remaining lecturer at Campus B was observed only once due to time and logistical constraints. This lecturer was held up with semester tests, and also received untimely notices of meetings which coincided with the time set aside for the observations. The researcher realises that it would have been ideal for all the lecturing respondents to be observed three times, but struggled to get observation appointments that suited respondents for a period of six months.

During the observations, the researcher and the co-observer rated the frequency of the application of the lecturers' questioning strategies/techniques and tactics independently, without knowledge of one another's ratings.

Recording the observations

In recording observations, the researcher captured two dimensions: a description of the context not linked to any value judgement, and a reflection of what happened (i.e. own thoughts or ideas about the meaning of what was observed). As suggested by Nieuwenhuis (2010b:85-86) the observers

compiled accurate field notes during the observation about what they saw, heard and experienced. Reflection on an observation was done as soon as possible after the event and included the observers' hunches (Nieuwenhuis, 2010b:86).

Nieuwenhuis (2010b:85) mentions that the most important part of an observation is the recording of data. The content that is mechanically recorded or written down by a researcher becomes the raw data from which a study's findings will eventually emerge (Merriam, 2009:128). Nieuwenhuis (2010b:85) identifies three ways in which observations can be recorded:

- **Anecdotal records**

Short descriptions of basic actions observed that capture key phrases or words that are objective without any self-reflective notes.

- **Running records**

These are a more detailed, continuous or sequential account of what is observed. It focuses not only on actions but also the situation, and tries to describe the action in the context in which it occurred.

- **Structured observation**

For the purpose of this study, the researcher chose to make use of structured observations against predetermined criteria.

Predetermined categories of behaviour, which a researcher would like to observe, are identified. These categories are usually distilled from the literature and are developed into checklists or rating systems in order to record and score predetermined actions or behaviours.

In order to record observations, an observer first needs to be trained how to do it. The researcher studied the section on training observers in McMillan and Schumacher (2010:211) and with the assistance of her study leader trained the co-observer on how to make objective observations (McMillan & Schumacher, 2010:211). The researcher acquainted herself with the advantages and disadvantages of observations.

Advantages and disadvantages of observations

According to Leedy and Ormrod (2005:180), an observation study is advantageous because it can yield data that portrays much of the richness and complexity of human behaviour. The observations that were constructed according to predetermined criteria portrayed a complex yet integrated picture of how the lecturers and the students in the sample act and interact in classroom. A disadvantage of observations is that a researcher who might be a novice researcher might not always know what aspects are most important to look for at the beginning and might alter what people say and do and how events unfold (Leedy & Ormrod, 2005:145). The researcher tried to avoid that these disadvantages compromised the collection of data by constructing an observation schedule with specific criteria that guided the observation. This avoided that selective attention was paid to certain events in the classroom. The assistance of a co-observer provided a way of checking whether the observations made were reliable and valid.

The role of the observer

Nieuwenhuis (2010b:85) explains that there are four types of observations a researcher can engage in. These are:

- **Complete observer**

When the researcher is acting as a complete observer, he is a non-respondent observer who is looking at a specific situation from a distance, thus enabling himself to provide and "outsider" perspective.

- **Observer as respondent**

When the researcher is acting as a respondent in research, he focuses mainly on his role as observer in a specific situation. The researcher may look for patterns of behaviour in a particular community to understand, but will remain uninvolved and will also not influence the dynamics of the setting or the situation.

- **Respondent as observer**

When this type of observation is used, the researcher plays the part of a respondent who actually takes part in the research process and who works

with the respondents in the situation in order to design and develop intervention strategies. Therefore, it can be said that the researcher immerses himself in a chosen setting in order to gain an insider perspective of that particular setting.

- **Complete respondent**

When this type of observation is used the researcher gets completely immersed in the setting to such an extent that the research respondents do not even know that they are the subjects of the observation.

The researcher and her co-observer were observers as respondents who focused on observing patterns of behaviour in a specific classroom (Nieuwenhuis, 2010:85). They acted as neutral and normal as possible in order to avoid disturbing the natural setting (Cohen *et al.*, 2011:471 – 472). The researcher ensured that she upheld quality criteria during the research, and paid attention to reliability and validity.

4.3.5 Reliability and validity

4.3.5.1 Validity of the questionnaire

Leedy and Ormrod (2005:28-29) mention that validity of a measuring instrument concerns the extent to which the instrument measures what it is supposed to measure. Reliability refers to the consistency with which a measuring instrument yields a certain result when nothing that has been measured has changed (Leedy & Ormrod, 2005:28-29).

Validity was supported by the fact that the researcher's questionnaires complied with criteria for content, face and construct validity (Leedy & Ormrod, 2005:92):

Face validity

Face validity is the extent to which an instrument looks like it is measuring a specific characteristic (Leedy & Ormrod, 2005:92). The questionnaires truly measured the construct in question, namely critical thinking and the questioning types, strategies/techniques and tactics appropriate to enhance critical thinking skills in accordance with the literature review.

Content validity

Content validity is the extent to which a measurement instrument serves as a representative sample of the content area that is being measured (Leedy & Ormrod, 2005:92).

The questionnaires reflected the various parts of the content domain, namely an understanding of critical thinking, the purpose of questioning, the types of questions, questioning strategies/techniques, and tactics to enhance critical thinking in appropriate proportions. By having done a literature study first, the researcher was able to use relevant information that helped in constructing the questionnaires objectively without any personal biases attached to any of the questions.

Construct validity

By making use of questionnaires in order to conduct research, the researcher believes that construct validity was adhered to, since the use of a questionnaire to measure perceptions and views of respondents about the nature of the teaching and learning situation in the classroom can be regarded as a suitable data collection instrument (Leedy & Ormrod, 2005:92).

According to Leedy and Ormrod (2005:92) construct validity is the extent to which an instrument measures a characteristic that cannot be directly observed, but must be inferred from patterns in people's behaviours. The questions in the questionnaire were verified with the study leader to determine whether they measured the construct in question, namely, the extent to which lecturers use questioning in order to enhance their students' critical thinking skills.

In addition, the validity of the quantitative research design was guaranteed as follows:

Internal validity

Internal validity, according to Leedy and Ormrod (2005:97) and Cohen *et al*. (2011:183), is the extent to which a researcher can draw accurate conclusions about relationships within specific data, which the research design yields. Internal validity implies causal truthfulness (McMillan & Schumacher,

2010:109). Since the researcher made use of convenient sampling, internal validity could not be guaranteed, since the findings of the study cannot be generalized and the researcher did not control the influence of all the variables on the outcome of the study.

External validity

External validity is the extent to which results are applicable to situations beyond the study itself. In other words, the conclusions drawn can be generalized into other contexts as well (Cohen *et al*., 2011:186; Leedy & Ormrod, 2005:99; McMillan & Schumacher, 2010:116). This could be regarded as a limitation in the study, as a random sample was not chosen and the results could be regarded as applicable to the FET Colleges in the Fezile Dabi District only.

Statistical conclusion validity

McMillan and Schumacher (2010:107) reason that statistics are used to determine whether relationships exist between two or more variables. It is important that the calculated statistics accurately portray the actual relationships. McMillan and Schumacher (2010:107) also mention that statistics are the first step in determining results, interpretations and conclusions, and therefore guide research findings.

The researcher made use of the Statistical Consultation Services at the North-West University, Vaal Triangle Campus to guide her in the choice of appropriate statistical procedures to analyse the data in order to ensure that correct conclusions about the data are formulated (McMillan & Schumacher, 2010:107).

Construct validity

McMillan and Schumacher (2010:115) mention that construct validity refers to "*inferences that are made from the nature of the measurement and interventions used to the constructs they purportedly represent*." In other words, in terms of this study, construct validity are concerned with the use of appropriate data collection instruments to determine how lecturers enhance critical thinking skills by means of questioning.

With regard to this study, the researcher made use of two sets of questionnaires: a student and lecturer questionnaire, and compared student responses before final conclusions were made. In addition, classroom observations were conducted to determine how the lecturers use different questioning techniques in their classrooms to enhance their students' critical thinking skills. The researcher made use of triangulation, which allowed her to gather multiple sources of data regarding the construct in question (the data from the questionnaires and observations) before coming to conclusions (Cohen *et al*., 2011:195; Delport & Fouché, 2011:442; Leedy & Ormrod, 2005:99; McMillan & Schumacher, 2010:379).

By making use of questionnaires and observations in order to conduct the research, the researcher believes that construct validity was adhered to. A questionnaire can be regarded as suitable to measure perceptions and views of respondents about the nature of the teaching and learning situation in the classroom (Leedy & Ormrod, 2005:92). . Observations could be regarded as suitable to determine the questioning strategies/techniques and tactics lecturers use as observations capture authentic experiences.

The researcher acknowledges the following possible limitations that the quantitative research design could have held for her study:

- Not everyone who is sampled to participate in a study might be willing to participate, causing a researcher to work with fewer respondents than originally aimed for. The researcher ensured that the respondents understood the purpose of the research to motivate them to take part in the research.
- While participating in a study, some of the respondents might provide information that is not trustworthy. The researcher tried to avoid this by being present during the completion of the questionnaires to clarify uncertainties that could lead to misunderstandings.
- It was not possible to gain deep understanding of the phenomenon under investigation because a qualitative dimension was not included.

4.3.5.2 Reliability of the questionnaire

Before the actual research took place, the researcher did a pilot study (Leedy & Ormrod, 2005:192). The researcher provided her group of NQF Level 2 EFAL students at Campus B with the student questionnaire (N = 40) and two subject experts in the field of teaching EFAL who were not part of the official study with the lecturer questionnaires in order to check for appropriateness and whether they had any difficulty understanding the items in the questionnaires.

Part of a pilot study is also to prove that the questionnaire items measure the construct in question (Leedy & Ormrod, 2005:192). For this purpose Cronbach alpha coefficients and inter-item correlations are calculated. Akaba (2006:183) explains that the Cronbach alpha is a reliability coefficient that calculates the extent to which items (in questionnaires) are correlated positively to one another. It also measures the consistency among individual items on a scale, and points out that the internal consistency reliability becomes higher as the Cronbach alpha moves closer to one (Simon, 2008; Sekaran, 2000:308-313). Cronbach alpha coefficients were also calculated for the actual study. Simon (2008) mentions that a Cronbach alpha of between 0.7 and 0.8 is regarded as acceptable in Social Studies when working with a set of items to be considered on a scale, but Garson (2008) explains that 0.60 could be seen as proper for as exploratory study.

Furthermore, inter-item correlations need to be incorporated in order to prove a questionnaire's reliability. According to Revelle and Zinbarg (2009:145) inter-item correlations judge how well questionnaire items reflect the construct that is measured. Revelle and Zinbarg (2009:145-154) state that an acceptable value for an inter-item correlation is between 0.15 and 0.5. The results obtained for the pilot study and actual study are reported in Chapter 5.

4.3.5.3 Reliability of the observations

In order to ensure reliability, the observation schedule included criteria for the observation of a variety of questioning strategies/techniques and tactics as indicated by the literature review (McMillan & Schumacher, 2010:210-211). Furthermore, a researcher should strive to be as objective as possible when

observing. To maintain such objectivity and enhance reliability, the researcher used the following strategies:

- She defined only major questioning strategies/techniques and tactics being studied in a precise, concrete manner so that they were easy to recognize when they occurred. This prevented that the observer paid selective attention (Cohen *et al.,* 2011:473) to certain aspects of the classroom teaching and learning, and ignoring others, but also ensured that there were not too many aspects that had to be observed.
- The researcher and a co-observer rated the frequency of the same behaviours independently without knowledge of one another's ratings, and compared their rating afterwards (Leedy & Ormrod, 2005:180).
- The co-observer was trained to observe the criteria in the same manner as the researcher, to ensure that observations were conducted in similar ways (Leedy & Ormrod, 2005:180).
- The researcher and the co-observer decided in advance, what would count as valid evidence for a judgment to be made (Cohen *et al*., 2007:410-411).
- The researcher and co-observer sat in the back of each classroom. They informed the students that their lecturers' were being observed and requested them participate as normally as possible in the classroom while their lecturers' were teaching.
- The observer may get distracted, or look away and miss an event. The observer and co-observer frequently checked with each other whether they were still observing what the guidelines asked for in order to avoid distractions and attention deficit.
- Observers sometimes interpret a situation and then record their own interpretations rather than the phenomenon itself. The researcher and co-observer continually ensured that they follow the guidelines of the observation schedules very carefully, and did not get personally involved with the different classroom situations.
- Observers may forget what they observe, therefore, they must ensure to record events and write notes during the observation or directly after an

observation was done. The researcher and co-observer ensured that they wrote notes during each observation in order to prevent them from forgetting important behaviours that were observed in each classroom.

- The observers' interpretations can be affected by their judgements and preferences. The researcher and co-observer strived to be as objective as possible during each observation and did not allow their personal opinions and interpretations to play a role during their observations. They only recorded what was asked for by the criteria on the observation schedule.
- Only the researcher and one co-observer observed each lecturer and the respective students in order to avoid inconsistency in the results by means of too many different viewpoints and interpretations of the behaviours observed.

As indicated by Cohen *et al.,* (2007:400) the observation schedule was also pilot tested in a classroom situation similar to the ones that took part in the actual observation study. The pilot study assisted the researcher and the co-observer to establish what would count as evidence for the application of questioning techniques and how frequent observations would be tallied.

4.3.6 Population and sample

Leedy and Ormrod (2005:253) refer to universe as the entire population with which the researcher considers conducting her research. A population, according to Leedy and Ormrod (2005:204), refers to a homogeneous group which consists of individual units who may be similar with respect to the characteristics of interest. The population for this study comprised all the EFAL students at FET Colleges in South Africa, as well as the lecturers teaching them.

Due to time and logistical constraints, a study population was chosen, namely the Fezile Dabi FET colleges. The study population comprised all Level 2 EFAL students (N = 142) and their lecturers (N = 4). The entire study population comprised the sample. The four lecturers were the lecturers who teach Level 2 EFAL students. The researcher, who is also a Level 2 EFAL lecturer at one of the colleges, and her own students, did not take part in the

research. The researcher chose the NQF Level 2 EFAL students because they are a larger group than the NQF Level 3 students, and there is general consensus among college staff that the NQF Level 2 students' classroom attendance is much better than the NQF Level 3 students' classroom attendance. This would ensure that more and complete data would be gathered from the Level 2 students. Furthermore, the lecturer is familiar with the work content of Level 2 EFAL and in a position to make meaningful links between the enhancing of critical thinking skills and questioning.

Sampling is the process of selecting respondents from the population in order to conduct a study (Leedy & Ormrod, 2005:144). McMillan and Schumacher (2010:129,136) distinguish between probability and non-probability sampling. Probability sampling refers to subjects that are drawn from a larger population in such a way that the probability of selecting each respondent in the population is known (McMillan & Schumacher, 2010:129). Non-probability sampling refers to the researcher using subjects who are easily accessible or who represents certain types of characters (McMillan & Schumacher, 2010:136).

For the purpose of this study, the researcher used purposive and convenient sampling, because the respondents were students and lecturers who were readily available, and the researcher had friendly relationships with colleagues on the other campuses, which allowed easy access (Cohen *et al*., 2011:156; Leedy & Ormrod, 2005:206).

In purposive sampling, the researcher chooses a specific sample group because she had a specific purpose in mind, and would therefore have to supply a rationale, which explains why she selected a particular sample of respondents (Leedy & Ormrod, 2005:206). McMillan and Schumacher (2010:138) point out that based on the knowledge the researcher has of the population, she can make a judgement about which subjects should be selected to provide the best information in order to address the purpose of the research. In this study, the focus was on Level 2 EFAL students at the Flavius Mareka FET Colleges.

Approximately 90% of the students were male and 10% of the students were female. Their ages differed greatly between 16 and 25 years of age. The students were mainly Sesotho, Xhosa and Zulu speaking, and a very small percentage of the students were Afrikaans and English speaking.

The researcher acknowledges that using a purposive, convenient sample limits the generalizability of the research findings.

4.3.7 Data analysis

4.3.7.1 Questionnaire

Closed questions

In order to analyse the data that were obtained, descriptive statistics were used. Leedy and Ormrod (2005:252) state that descriptive statistics describe what the data look like, in other words provide a summary of the data. The analysis of the completed questionnaires therefore indicated the frequencies, percentages means and standard deviations for the various responses to the questionnaire items (Cohen *et al*., 2011:382). These results obtained were compared to the literature on critical thinking and questioning in order to determine whether lecturers comply with what is revealed in the literature regarding the enhancing of critical thinking skills.

Inferential statistics allow the researcher to make inferences about large populations by collecting data on relatively small samples (Leedy & Ormrod, 2005:252). Inferential statistics were used to interpret the results and to draw conclusions. The responses obtained from the students at the different colleges were compared to determine the differences in their opinions and perceptions regarding questioning and critical thinking skills. *P*-values were calculated to determine the statistical significant differences between the colleges. The *p*-values that were smaller than 0.5 were regarded as statistically significant and *p*-values larger than 0.5 were regarded as insignificant to the study.

In order to determine whether statistical significant differences had any effect in practice, Cohen's *d* was calculated. According to Steyn (2005:20) Cohen's *d* can be interpreted as follows:

- 0.2 reports a small effect in practice.
- 0.5 reports a medium effect in practice.
- 0.8 reports a large effect in practice.

Open questions

The responses to the open questions were analysed by means of a deductive and inductive content analysis procedure. Inductive content analysis refers to the identification of codes by the researcher when examining the data. This implies that the data speaks for itself and that no interpretations or bias that is related to the data is evident. (Nieuwenhuis, 2010c:107). Content analysis involves looking at the content of the data and breaking it into certain re-occurring themes in order to extract meaning. The main method for analysing the data would be to get the thoughts of the respondents, and then classify these thoughts into certain themes and categories, and to look for similarities and differences in the responses (Leedy & Ormrod, 2005:108).

4.3.7.2 Observations

Frequencies and averages were calculated for the various observations in order to determine which questioning strategies/techniques and tactics were applied the most frequently in the EFAL classroom. The data obtained from the observations were compared with the perceptions obtained from the student and lecturer responses to the questionnaire items to make conclusions.

4.3.7.3 Triangulation of data

Leedy and Ormrod (2005:99), Cohen *et al*. (2007:141) and McMillan and Schumacher (2010:331) reason that triangulation helps the researcher to obtain convergent data from two or more methods of data collection with the hope that it will support a particular hypothesis or theory. The researcher also made use of investigator triangulation in which she and a co-observer engaged in observing respondents to discover data independently (Cohen *et al*., 2011:196). The data collected from the observations and questionnaires were triangulated in order to determine the extent to which lecturers enhance critical thinking skills among their students by means of questioning. The

observation data were also used to confirm the responses obtained with the questionnaires.

4.3.8 Ethical issues

In order for the research to be conducted, the researcher had to make sure that the questionnaires and observation schedules were drawn up in such a manner that the respondents in the study felt comfortable participating without feeling threatened or forced into participating in this study. Therefore, the following ethical issues were addressed.

4.3.8.1 Ethical issues in the research problem

Creswell (2009:88) mentions that the researcher should identify a significant problem to study. He also says that during the identification of the research problem, it is important to identify a problem that will benefit individuals being studied. Developing critical thinking skills among students at all levels in education and making recommendations regarding how to improve these skills are prominent issues in the South African education scenario (Lombard & Grosser, 2004:212). Therefore, the Department of Education (2011:5) emphasises that students need to identify and solve problems and make decision using critical and creative thinking. The research therefore addresses an issue of importance.

4.3.8.2 Ethical issues in the purpose and questions

It is of vital importance to the researcher to state the purpose of the study clearly, so that all the respondents will understand what the study is about. The researcher informed the respondents of the purpose of the study in order to eliminate any misunderstanding regarding the study they might have. The researcher explained how the research will be conducted, how the respondents will be involved in the gathering of data, and also clarified any questions the respondents had.

4.3.8.3 Ethical issues in data collection

The researcher verbally requested from the principal of the two campuses permission to conduct research with the Level 2 EFAL students. After assent was obtained, the researcher had to obtain written consent from the

respondents. An informed consent form was handed to each respondent to sign before that specific respondent engaged in the research (Creswell, 2009:89). This form acknowledged that the respondent's rights will be protected during data collection. In line with Creswell (2009:89), the researcher's consent forms (*cf*. Appendixes B, C) provided information regarding the following:

- The identification of the researcher.
- The identification of the purpose of the study.
- The benefits of participating.
- The identification of the level and type of respondent involvement.
- A guarantee of confidentiality to the respondent.
- An assurance that the respondent can withdraw at any time.
- The researcher's personal details, should there be any queries from the respondents' side.

It is important to note that permission was obtained not only from the respondents, but also from the principal of the two colleges where the research was conducted. The consent provided by the principal of the Fezile Dabi FET Colleges is attached in Appendix A. The researcher also obtained ethical clearance from the North-West University to conduct this study. The ethical clearance number is NWU: 0004208A2 (*cf.* Appendix D).

4.3.8.4 Ethical issues in data analysis and interpretation

When the researcher analyses and interprets data, some issues may emerge that call for good ethical decisions (Creswell, 2009:91). The researcher applied the following criteria identified by Creswell (2009:91):

- The anonymity of the respondents was protected at all time; therefore, a coding process was used in order to identify respondents individually by means of numbers. The participants were made aware of the fact that there are only three FET-colleges in the Fezile Dabi District, and that two of the three took part in the research. This implied that the colleges that took part in the study were identifiable.

- The data were only available to the researcher, her study leader and the Statistical Consultation Services to ensure confidentiality.
- An accurate account of the information that was interpreted and analysed was given to respondents on completion of the study in order for them to verify and justify the conclusions made by the researcher.
- The researcher gave an accurate account of the information obtained from the data interpretation by means of a debriefing session between the researcher and respondents.

4.3.8.5 Ethical issues in writing and disseminating the research

The research report did not use language or words that were biased against respondents in terms of gender, sexual orientation, racial or ethnic group, or disability (Creswell, 2009:92). In no way did the researcher allow herself to form conclusions based on these pre-assumptions in order to conduct this study. The researcher also guarded against falsifying or inventing findings to meet her needs (Creswell, 2009:92). The findings of this study were based solely on the data obtained with the empirical study.

4.4 CHAPTER SUMMARY

In this chapter, the researcher provided information regarding the nature of the research that was conducted. A positivistic worldview was chosen to work from because the researcher objectively gathered data and stayed detached form the research respondents so that unbiased conclusions could be drawn (*cf*. 4.2).

The main aim of the study was to determine to what extent and how the lecturers at FET colleges in the Fezile Dabi District enhance critical thinking skills in the Level 2 EFAL classroom among their students by means of questioning. The researcher made use of a quantitative research design to conduct this study (*cf*. 4.3.2.1). The quantitative research design develops knowledge through a positivistic lens and is based on careful observation and measurement of the reality that exists in the world.

The research strategy that was chosen was non-experimental descriptive survey and observation research because the researcher did not want to

manipulate conditions, she only wanted to obtain and objective picture and description of classroom situations in terms of the use of questioning to enhance critical thinking skills among students (*cf*. 4.3.3).

The data collection methods used were two questionnaires (one for the lecturers and one for the students) constructed by the researcher which comprised closed Likert- scale questions as well as open questions (*cf*. 4.3.4.1). Observations were conducted by means of structured event sampling (*cf*. 4.3.4.2). Validity and reliability were guaranteed by making use of two sets of questionnaires, which were distributed among the lecturers and students to answer. Classroom observations were also done in which the researcher and co-observer acted as objective observers in order to verify the responses obtained by the questionnaires (*cf*. 4.3.4.2).

The researcher made use of convenience and purposive sampling in order to conduct this study (*cf*. 4.3.6). Descriptive and inferential statistics were used in order to analyse the data so that a summary of the data could be provided, and also for the researcher to make inferences about the data (*cf.* 4.3.7).

Ethical issues in the research problem, the purpose and questions, data collection, data analysis and interpretation and in writing and disseminating the research were upheld during the research (*cf.* 4.3.8).

In Chapter 5, the data analysis and interpretation process, which the researcher followed in order to answer the main research question and secondary research questions, are discussed in further detail.

CHAPTER 5

DATA ANALYSIS AND INTERPRETATION

5.1 INTRODUCTION

This chapter presents the statistical analyses and the interpretations of the data obtained from the lecturer and student responses, in order to determine the extent to which and how lecturers at FET colleges in the Fezile Dabi District enhance critical thinking skills through questioning in the EFAL classroom.

The following sequence will be used to deal with the data analyses and interpretations:

- The reliability of the questionnaire for the pilot study and the actual study.
- The biographic information of the respondents.
- Data analysis and interpretation: lecturer responses.
- Data analysis and interpretation: student responses.
- Data analysis and interpretation: a comparison between the two campuses.
- Data analysis and interpretation: observations.
- Triangulation of questionnaire and observation data.

The next section outlines the reliability of the questionnaire for the pilot study and the actual study.

5.2 RELIABILITY OF THE QUESTIONNAIRE

The Cronbach alpha coefficients that were calculated for the various constructs in the student questionnaires for the pilot and actual study are presented in Table 5.1:

Table 5.1: Cronbach alpha coefficients of student and lecturer questionnaires

Questionnaire constructs	Pilot study	Actual study
The purpose of questioning	0.716	0.845
Questioning strategies	0.600	0.652
Application of questioning techniques	0.721	0.783
Lecturer expectations of questions asked to students	0.604	0.663

In order to prove that the questionnaire issued to the students was reliable, a pilot study was done (Leedy & Ormrod, 2005:192). Cronbach alpha coefficients were calculated to determine the internal consistency of the various questionnaire sections. Akaba (2006:183) describes the Cronbach alpha as a reliability coefficient that calculates the extent to which the items in the questionnaire issued to the respondents are correlated positively to one another. Simon (2008) and Sekaran (2000) mention that the Cronbach alpha coefficient measures the consistency among individual items on a scale, and that the consistency reliability becomes higher as the Cronbach alpha moves closer to 1. Cronbach alpha coefficients were also calculated for the actual study.

A Cronbach alpha of between 0.7 and 0.8 is regarded as acceptable in Social Sciences when working with a set of items to be considered on a scale (Simon, 2008). Garson (2008) says that 0.60 could also be seen as acceptable for an exploratory study. Since this study involved a first exploration of how critical thinking skills are enhanced through questioning at FET-level, it is evident from Table 5.1 that the questionnaire for the students complied with the criteria for reliability.

Revelle and Zinbarg (2009:35) and Trochim (2006) mention that inter-item correlations evaluate different questionnaires items to determine how well they measure a construct in question. Table 5.2 presents the inter-item correlations for the pilot and actual study for the student questionnaires:

Table 5.2: Inter-item correlations of student questionnaires

Questionnaire sections	Pilot study	Actual study
The purpose of questioning	0.163	0.295
Questioning strategies	0.073	0.157
Application of questioning techniques	0.192	0.247
Lecturer expectations of questions asked to students	0.204	0.224

An acceptable value for an inter-item correlation is between 0.15 and 0.5 (Revelle & Zinbarg, 2009:35). Both the pilot study and actual study complied with these criteria for acceptable inter-item correlations.

Only four lecturers took part in the study, and therefore the researcher could not do a pilot study that determined the reliability of the questionnaire statistically. In order to prevent that an unreliable questionnaire was distributed to the lecturers, the researcher approached two EFAL subject experts to evaluate the lecturer questionnaire to determine its validity and reliability. One of the two subject experts gave a comprehensive evaluation report regarding the questionnaire (see Appendix J). Based on this report, the researcher finalised the lecturer questionnaire to address the research question at hand: to what extent and how do lecturers at the Flavius Mareka FET Colleges in the Fezile Dabi District enhance their students' critical thinking skills by means of questioning in the EFAL classroom.

The following section deals with the biographic information of both the lecturers and students who participated in the actual study. The data are displayed in tables and graphs. The data in the graphs are rounded off to the nearest integer, and the data in the tables only reflect the actual responses obtained.

5.3 BIOGRAPHIC INFORMATION OF THE RESPONDENTS

The researcher aimed to distribute 220 questionnaires to the students and 4 to the lecturers. Of the 220 and 4 questionnaires distributed, 142 (64.5%) and 4 (100%) were returned by the students and lecturers respectively. Student

absenteeism was the main reason why only 142 (64.5%) students completed the questionnaires. The student response rate could be regarded as acceptable, as Browne (2005:123) argues that researchers should be worried when response rate is below 60%.

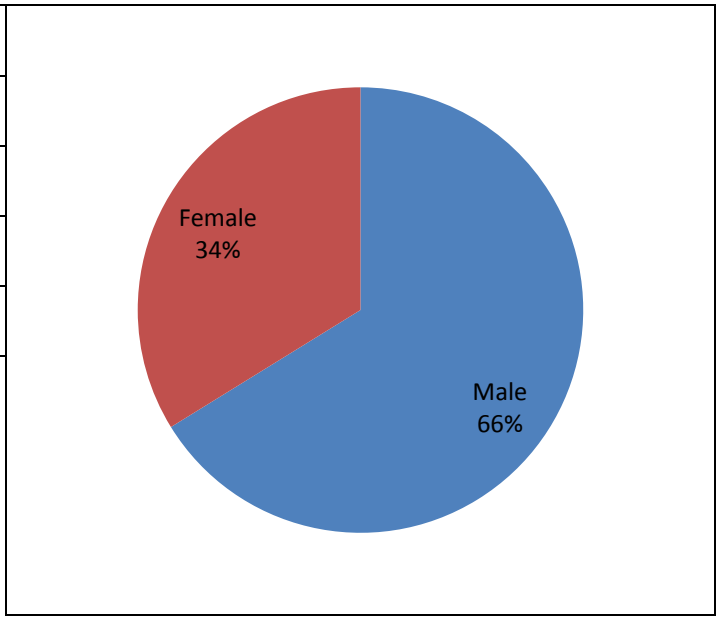
The following section discusses the biographic information for the lecturer and student respondents.

5.3.1 Biographic information of the students

Table 5.3 presents the biographic information of the students according to their gender.

Table 5.3: Gender of students

Gender	*f*	%
Male	94	66.2
Female	48	33.8
Missing	0	0.0
Total	142	100.0

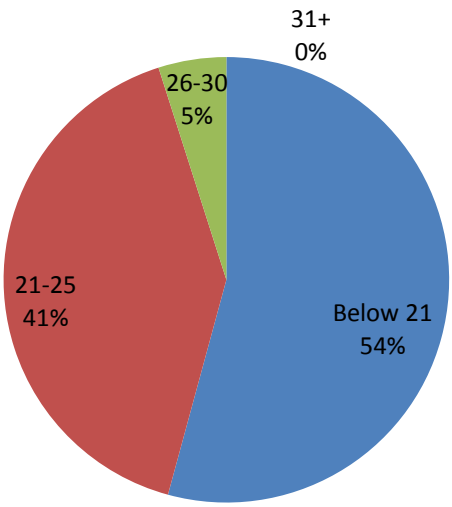


As indicated in Table 5.3 there were more male students (n = 94) than female students (n = 48) who participated in the research.

Table 5.4 represents information regarding the students' respective age groups.

Table 5.4: Age of students

Age	*f*	%
Below 21	77	54.2
21-25	58	40.9
26-30	7	4.9
31-40	0	0.0
41-50	0	0.0
51+	0	0.0
Missing	0	0.0
Total	142	100.0



The majority of the students were below 21 years of age (n = 77). The second largest age group of the students fell between 21 and 25 years of age (n = 58), and only a few students were between 26 and 30 years of age (n = 7).

The biographic information of the students according to the ethnic groups they represented, is indicated in Table 5.5.

Table 5.5: Ethnic groups of students

Ethnic Group	*f*	%
Black	129	90.8
White	7	4.9
Asian	0	0.0
Coloured	5	3.5
Other	0	0.0
Missing	1	0.7
Total	142	100.0

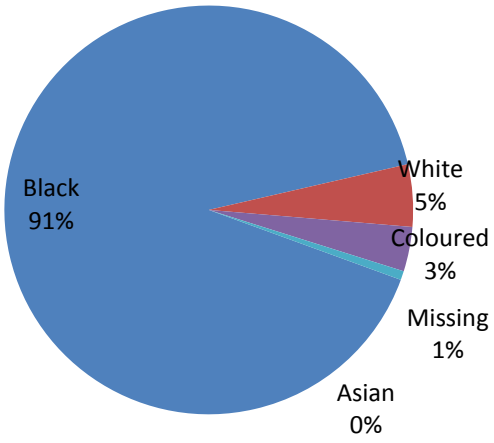


Table 5.5 indicates that the group of students who took part in the study comprised a mixed cultural group. The majority of the student respondents were Black (n = 129), and only a few White (n = 7) and Coloured (n = 5) students participated in the study.

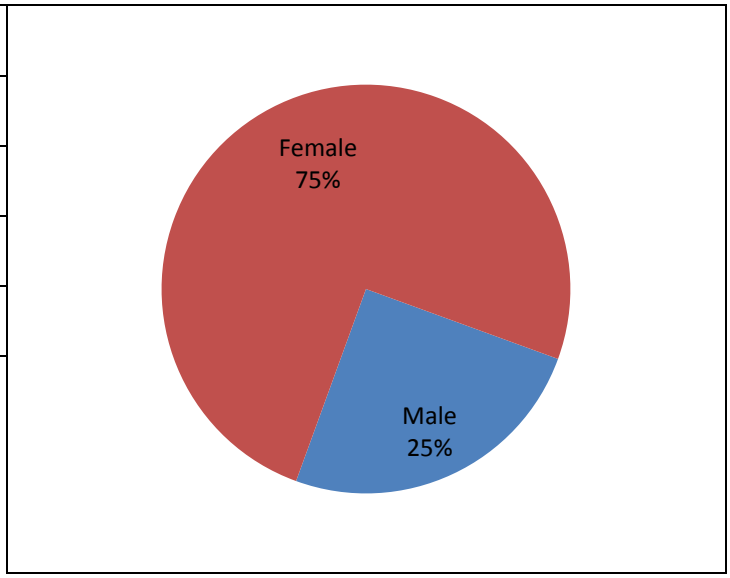
The following section deals with the biographic information of the lecturers who participated in the study.

5.3.2 Biographic information of the lecturers

Table 5.6 provides the biographic information of the lecturers related to their gender.

Table 5.6: Gender of lecturers

Gender	*f*	%
Male	1	25.0
Female	3	75.0
Missing	0	0.0
Total	4	100.0



As indicated by Table 5.6, there were more female lecturers (n = 3) than male lecturers (n = 1).

Table 5.7 indicates the biographic information related to the lecturers' different age groups.

Table 5.7: Age of lecturers

Age	*f*	%
21-25	0	0.0
26-30	1	25.0
31-35	0	0.0
36-40	1	25.0
41-50	1	25.0
51+	1	25.0
Missing	0	0.0
Total	4	100.0

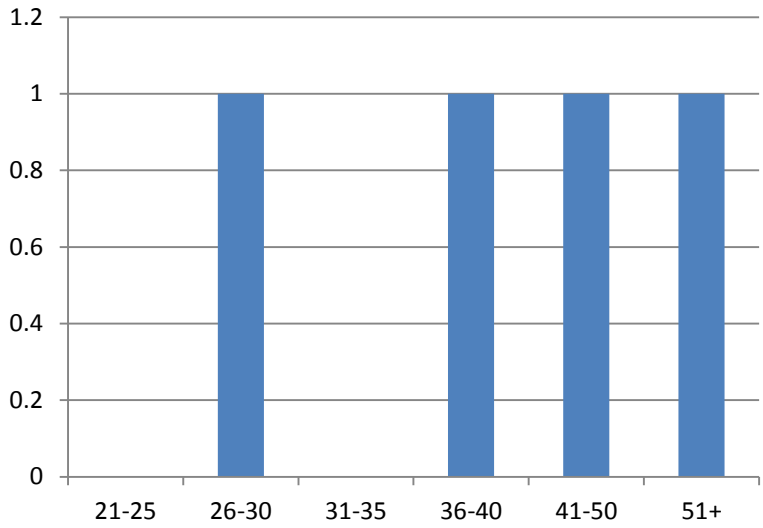


Table 5.7 illustrates the different age groups of the lecturers who participated in the study. One lecturer was between 26 and 30 years of age (n = 1), another between 36 and 40 years of age (n = 1), and another between 41 and 50 years of age (n = 1). Lastly, one lecturer was classified as part of the age group 51 and above (n = 1).

The biographic information related to the lecturers' ethnic groups are illustrated in Table 5.8.

Table 5.8: Ethnic groups of lecturers

Ethnic group	*f*	%
Black	2	50.0
White	2	50.0
Asian	0	0.0
Coloured	0	0.0
Other	0	0.0
Missing	0	0.0
Total	4	100.0

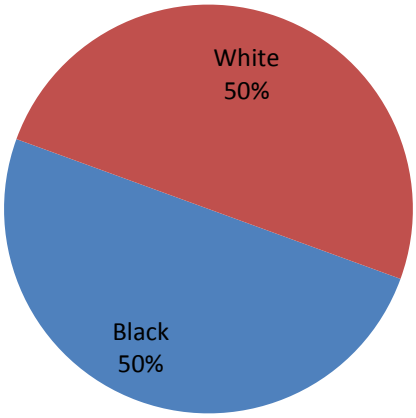
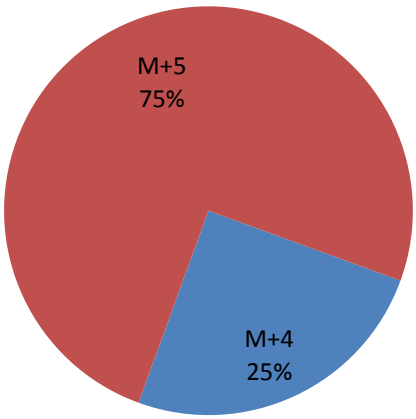


Table 5.8 indicates that two of the four lecturers were from the Black ethnic group (n = 2) and the other two of the four lecturers were from the White ethnic group (n = 2).

Table 5.9 presents the biographic information relating to the lecturers' qualifications.

Table 5.9: Qualifications of lecturers

Qualifications	*f*	%
M+2	0	0.0
M+3	0	0.0
M+4	1	25.0
M+5	3	75.0
M+6	0	0.0
M+7	0	0.0
Missing	0	0.0
Total	4	100.0



One lecturer had Matric (Grade 12) and four years of tertiary training (n = 1), whereas as the remaining three lecturers had Matric (Grade 12) and five years of tertiary training (n = 3).

Table 5.10 portrays the biographic information related to the lecturers' years of teaching experience in English.

Table 5.10: Teaching experience in English

Years of teaching experience	*F*	%
0-5	1	25.0
6-10	0	0.0
11-15	1	25.0
16-20	0	0.0
21+	2	50.0
Missing	0	0.0
Total	4	100.0

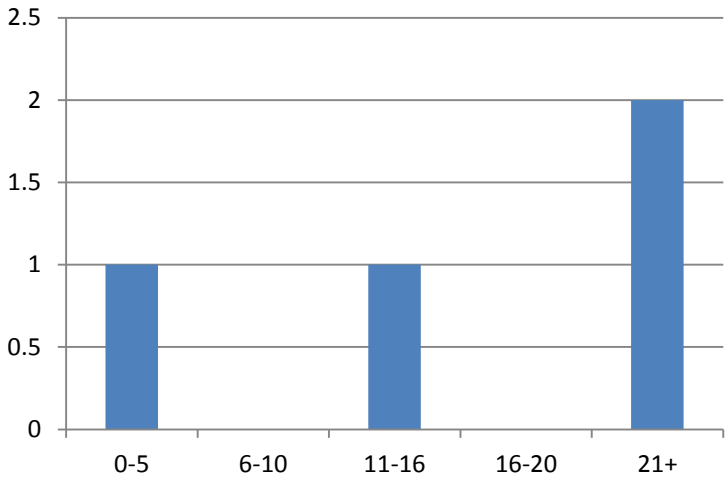
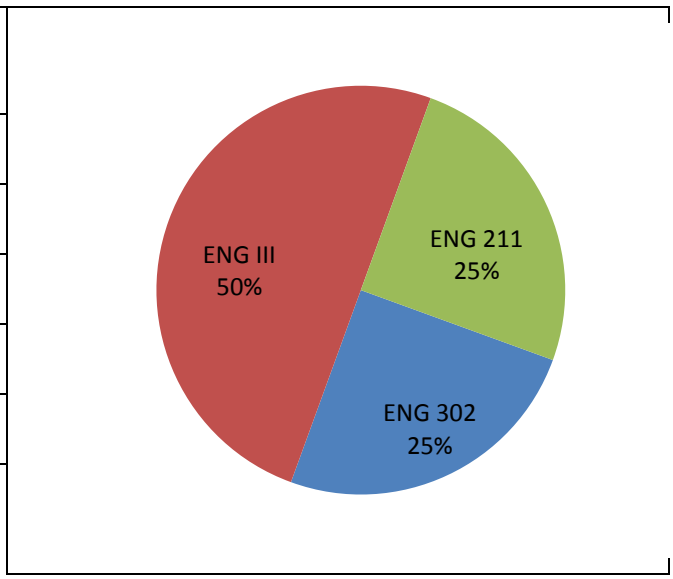


Table 5.10 indicates that one lecturer had between 0 and 5 years teaching experience (n = 1), another lecturer between 11 and 15 years teaching experience (n = 1), and two lecturers had 21 and more years teaching experience (n = 2) in English.

Table 5.11 indicates the biographic information related to the lecturers' English qualifications.

Table 5.11: English qualifications of lecturers

English qualifications	*f*	%
ENG 302	1	25.0
ENG III	2	50.0
ENG 211	1	25.0
Missing	0	0.0
Total	4	100.0



One lecturer completed English modules as part of the BEd-degree to the third year of study (ENG 302). Another lecturer completed English modules up to the first semester during his/her second year of BEd-degree studies (ENG 211); and the other 2 lecturers completed a three year BA-degree in English (ENG III).

In the following section, the data analysis and interpretation of the lecturer responses to the questionnaire are discussed in detail.

5.4 DATA ANALYSIS AND INTERPRETATION: LECTURER RESPONSES

Descriptive statistics were used in order to organise and summarize the data obtained from the lecturers and students (Pietersen & Maree, 2010:195).

Each section in the questionnaire focused on a specific construct regarding the enhancement of critical thinking skills through questioning in the EFAL classroom.

The next section focuses on Sections B of the lecturer questionnaire.

5.4.1 Lecturer responses: Section B – Understanding of critical thinking

The purpose with Section B of the lecture questionnaire was to determine the lecturers' viewpoints regarding the extent to which they enhance their students' critical thinking skills in the EFAL classroom. The researcher made use of the following open questions to obtain the data regarding the following:

- The lecturers' understanding of what the term *critical thinking* implies.
- The importance of enhancing critical thinking skills in the English First Additional Language classroom.
- The questioning strategies/techniques the lecturers use to enhance their students' critical thinking skills in the classroom.

By focusing the lecturers' attention on the different aspects above, the researcher wanted to check whether they understand what critical thinking is, how important it is to enhance critical thinking skills in the classroom, as well

as how they go about developing these skills among their students in their respective classrooms. Table 5.12 presents the lecturer responses from the two campuses respectively in relation to how they understand critical thinking.

Table 5.12: Understanding of critical thinking

	Response	Campus A	Campus B
1	The ability to evaluate information as well as to use different levels of thinking.		1
2	Being able to predict, apply knowledge and skills, analyse, solve problems, and evaluate.		1
3	Being able to analyse and show a clear understanding of what you intend to say. Contributing constructive, sensible facts to a conversation.	1	
4	Being able to analyse and evaluate a situation or idea. To break up ideas into smaller parts. Have a thorough understanding of the subject in order to express ideas or to solve problems.	1	

All four lecturers showed a fair but limited understanding of the cognitive and metacognitive skills and strategies involved in critical thinking (Facione, 2009:5) (*cf*. 2.3.1.1). The researcher compared their responses with the definition of Treffinger *et* al. (2000:7) (*cf.* 2.3) who states that critical thinking refers to the careful, fair and constructive examination of possibilities, by focusing one's thoughts and actions, by organising and analysing possibilities, by refining and developing possibilities, by ranking and prioritising options, and also to choose and decide upon certain options. The responses did not indicate any awareness that critical thinking also involves the development of dispositions for critical thinking (Facione, 2009:10; Lai, 2011:10) (*cf*. 2.3.1.2).

In the following table, Table 5.13, the importance of enhancing critical thinking skills according to the lecturers' responses, is discussed.

Table 5.13: The importance of enhancing critical thinking skills

	Response	Campus A	Campus B
1	It is very important. It enables students to solve problems in the classroom, as well as outside the classroom.		1
2	It is of vital importance. The mere recalling of facts is seldom called for, and therefore students who cannot think critically are unlikely to do well in English.		1
3	It is essential. Pre-knowledge is essential which serves as the foundation for application.	1	
4	Students will become independent and open-minded thinkers who are able to contribute positively to a lesson.	1	

All four respondents acknowledged that it is important to enhance critical thinking skills in the English classroom. The four lecturers mentioned the following as motivations to their answers:

- **Critical thinking enables students to solve problems in the classroom, as well as outside the classroom**. This response confirms the literature that students need to be able to solve problems effectively (Paul & Elder, 2005:19; Woolfolk, 2010:279) (*cf.* 2.2.2.2).
- **The mere recalling of facts is seldom called for, and therefore students who cannot think critically are unlikely to do well in English**. This response is also in line with the literature that states that languages, together with Mathematics, are the subjects, which train the mind. Therefore, one needs to be able to think, since one of the most essential characteristics of all human beings is thinking, and thinking is intrinsic to almost everything we do (Adams, 2002:152; Shiraev & Levy, 2004:56) (*cf.* 2.4.1).
- **Pre-knowledge is essential, which serves as the foundation for application**. According to Adams (2002:163) students should be able to use reflection to recall pre-knowledge when they are prompted with questions or asked to solve problems (*cf.* 2.4.2.10).

- **Students will become independent and open-minded thinkers who are able to contribute positively to a lesson**. This response confirms the literature, namely that by enhancing critical thinking skills in the English classroom, students will be motivated to become independent thinkers (Brookfield, 2012: 200; Kellough & Kellough, 2007:89) (*cf.* 3.5.6).

By evaluating the lecturers' responses in terms of what the literature says regarding the importance of the enhancing critical thinking skills, the researcher is of opinion that the four lecturers from Campus A and Campus B understand the importance of enhancing critical thinking skills in the English classroom, since all the responses supported the literature.

The following table, Table 5.14, reports on the responses regarding how lecturers enhance critical thinking skills.

Table 5.14: Enhancing critical thinking skills

	Response	Campus A	Campus B
1	Simplifying content, starting at the bottom and moving up with regard to the content.		1
2	Carefully choosing additional texts, questioning, making challenging statements in order to draw students out of their comforts zones, and also by frequently playing the role of the devil's advocate.		1
3	Asking students questions regarding knowledge application in problem situations and the work place.	1	
4	Encouraging students to participate fully in the classroom activities, being able to evaluate and not just agreeing to everything that is said by the lecturer in the classroom, students must also be able to analyse and debate certain matters.	1	

In response to how they develop critical thinking the lecturers noted the following. All four lecturers showed a fair but not comprehensive understanding as to how one should go about developing critical thinking skills. Their responses corresponded with what the literature indicates regarding the strategies/techniques to be used in order to enhance critical thinking skills:

- **By simplifying content, and to start at the bottom and to move up with regard to the content**. In support of the literature, this response means that there possibly exists a notion of extending and uplifting in this lecturer's classroom which could involve a series of questions being asked on the same cognitive level (extending) before the level is lifted to apply higher order thinking skills (Wragg & Brown, 2001:34-35) (*cf.* 3.7.6).
- **Carefully choosing additional texts, questioning, making challenging statements in order to draw students out of their comfort zones, and also by frequently playing the role of the devil's advocate**. This response supports the literature where it is indicated that questioning encourages students to learn and to put their ideas, opinions and thoughts into words (Kerry, 1998:18; Kerry, 2002:79) (*cf.* 3.5.4). The researcher is of opinion that when lecturers play devil's advocate, they pose challenging statements to their students that expect their students to evaluate and analyse their thoughts and opinions regarding the subject under discussion. Borich (2004:270 & 272) (*cf.* 3.6.1) points out that questions dealing with analysis and evaluation, two core critical thinking skills, require from students to break problems up into smaller parts and to draw relationships among them, as well as to form judgements and to make decisions by using subjective and objective criteria that is expressed as clearly understandable.
- **Asking students questions regarding knowledge application in problem situations and the work place**. The responses seem to indicate that the lecturers ask questions that deal with application of knowledge and not just the memorisation of facts. Students are apparently requested to apply facts to specific problems, contexts or environments, which are different from the ones the information was learned or obtained from. This response supports the literature that notes that students should not only rely on the original context or content to apply critical thinking skills for solving problems (Borich, 2004:269) (*cf*. 3.6.1).
- **Encouraging students to participate fully in the classroom activities, being able to evaluate and not just agreeing to everything that is said by the lecturer in the classroom, students must also be able to**

analyse and debate certain matters. If lecturers want their students to think critical, they have to debate and elaborate specific learning content. This will enable students to construct own knowledge (Costa & Kallick, 2009:101) (*cf*. 2.4.2.1). Based on this lecturer's response it could be assumed that the students in this classroom get the opportunity to construct own knowledge and that there critical thinking skills are possibly enhanced.

The next section deals with the lecturers' responses to Section C, the purpose of questioning, of the lecturer questionnaire.

5.4.2 Lecturer responses: Section C – The purpose of questioning

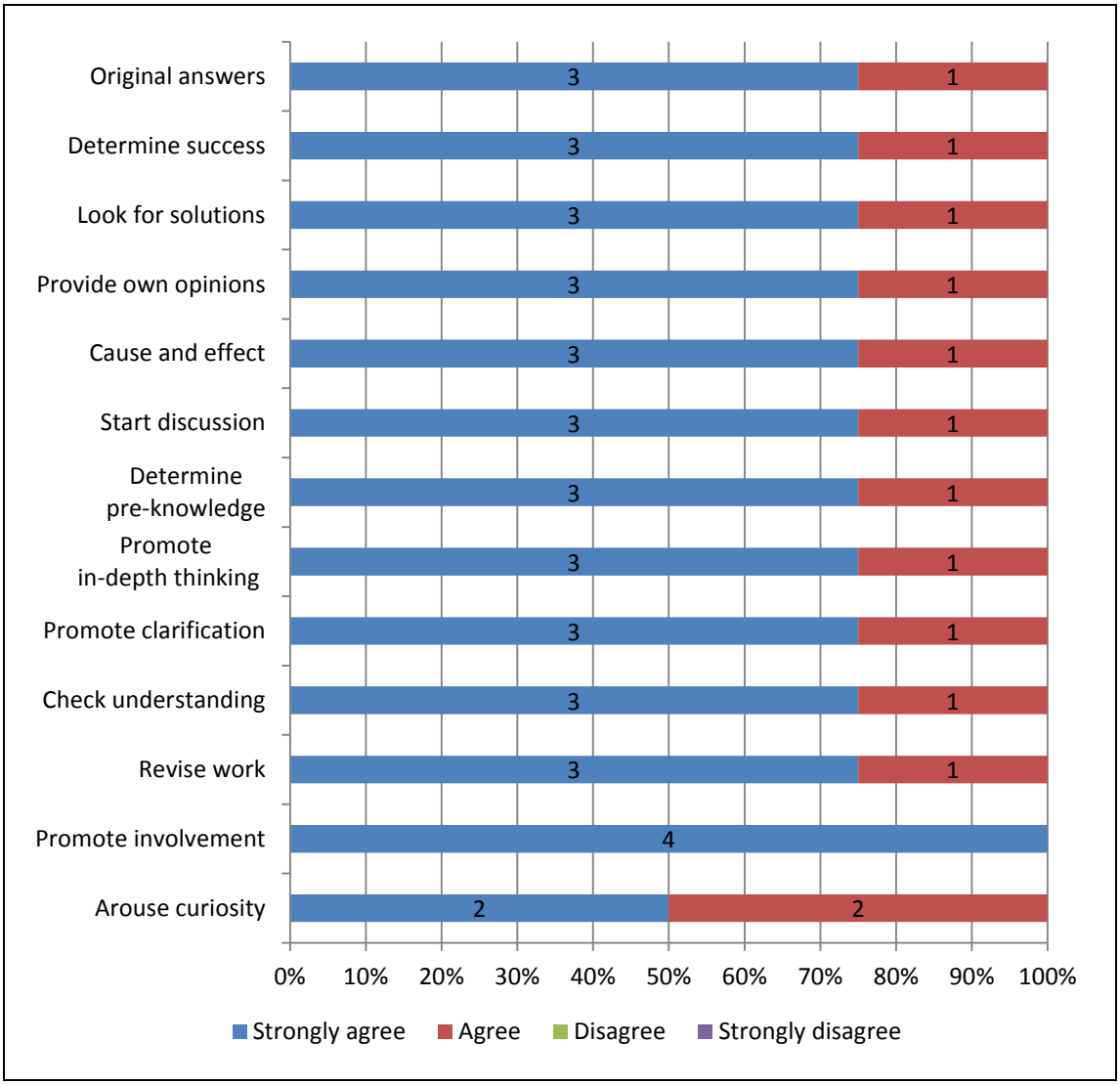
The purpose of Section C in the lecturers' questionnaire was to obtain the lecturers' perceptions regarding the purpose of questioning in the EFAL classroom. By focussing the attention on the purpose of questioning in the classroom, the researcher wanted to check whether the lecturers regard questioning as an important tool to use in order to enhance their students' critical thinking skills by agreeing or disagreeing with the statements.

All the statements in this section of the questionnaire pointed to the use of questioning that would enhance critical thinking. The researcher was therefore particularly interested in the *"Strongly Agree"* and *"Agree"* responses of the lecturers.

Table 5.15 classifies the responses obtained from the on the four-point Likert scale by means of frequencies and percentages.

Table 5.15: The purpose of questioning

Statement	Strongly agree	Agree	Disagree	Strongly disagree
1. Questioning should arouse curiosity among students.	2	2	0	0
	50%	50%	0%	0%
2. Questioning should promote involvement in the classroom.	4	0	0	0
	100%	0%	0%	0%
3. Questioning should be used to revise work.	3	1	0	0
	75%	25%	0%	0%
4. Questioning should be used to check understanding.	3	1	0	0
	75%	25%	0%	0%
5. Questioning should promote clarification in the communication process between the lecturer and the students	3	1	0	0
	75%	50%	0%	0%
6. Questioning should promote in-depth thinking about a specific topic being discussed in the classroom.	3	1	0	0
	75%	50%	0%	0%
7. Questioning should be used to determine students' pre-knowledge.	3	1	0	0
	75%	25%	0%	0%
8. Questioning should be used to start a discussion in the classroom about a specific topic.	3	1	0	0
	75%	25%	0%	0%
9. Questioning provide students with the opportunity to think about cause and effect.	3	1	0	0
	75%	25%	0%	0%
10. Questioning should create opportunities for students to provide their own opinions.	3	1	0	0
	75%	25%	0%	0%
11. Questioning should encourage students to look for solutions to problems.	3	1	0	0
	75%	25%	0%	0%
12. Questioning should allow the lecturer to find out how successful a lesson has been.	3	1	0	0
	75%	25%	0%	0%
13. Questioning should prompt students to come up with original answers.	3	1	0	0
	75%	25%	0%	0%



From the data obtained, it appears that 50% of the lecturers strongly agreed that questioning should arouse curiosity among their students.

The responses appear to support the literature. Tomlinson (2011:168) (*cf.* 3.5.2) argues that lecturers need to teach material in the classroom that will capture their students' attention in terms of topics that interest them. Kerry (1998:15) and Kerry (2002:76-77) (*cf*. 3.5.2) add to Tomlinson's (2011:168) argument by explaining that lecturers should establish conversations that interest students, because they will find it easier to use different questioning strategies/techniques that will arouse curiosity and eventually promote thinking and learning.

All the lecturers strongly agreed that questioning should promote student involvement in the classroom. The responses of the lecturers confirm the

literature. Kellough and Kellough (2007:95) (*cf.* 3.5.9) state that students should also ask questions in the classroom since it furthers questioning and involvement in critical thinking, discussions and investigations.

Three of the lecturers (75%) strongly agreed that questioning should be used to revise work, whereas one of the lecturers (25%) agreed to this statement. In support of the literature, the lecturers seem to use questioning in order to revise work, and to provide their students with the opportunity to reflect and express their knowledge verbally, which allows for deeper thinking (Borich 2004:269) (*cf.* 3.6.1). Moreover, students learn from each other, since conversation and thinking start to take place when work is revised (Kerry, 2002:79) (*cf.* 3.5.4).

Three of the lecturers (75%) strongly agreed that questioning should be used to check their students' understanding, whereas one lecturer (25%) agreed to this statement. These responses are in line with the literature review which indicates that questioning is used to test students' knowledge and understanding of specific work content (Borich, 2004:258) (*cf*. 3.4.1). In addition the responses could indicate that the questioning used by the lecturers extends understanding (Borich, 2004:269) (*cf*. 3.6.1), helps to generate many different understandings/interpretations of work content (Brookfield, 2012:200) (*cf*. 3.5.6), assesses students' level of understanding (Dymoke & Harrison, 2008:134) (*cf*. 3.2), and students are directed towards understanding and critically reasoning about work content (Kerry, 1998:17; Kerry, 2002: 78) (*cf*. 3.5.3).

In response to questionnaire item number 5, three (75%) lecturers strongly agreed and one lecturer (25%) agreed that questioning should promote clarification in the communication process between the lecturer and the students. These responses support the view of Churches (2010:84) (*cf.* 3.5.1) who asserts that lecturers should ask questions in order to challenge their students' thinking, because it creates awareness and prompts them to pay more attention than usual.

Three of the lecturers (75%) strongly agreed and one of the lecturers (25%) agreed that questioning should promote in-depth thinking about a specific

topic being discussed in the classroom. The responses confirm the literature where it is said that the questions that are used by lecturers in their classrooms are cues to students regarding the level of thinking that is expected of them. The levels of thinking range from the lowest level of mental operation to the highest level (Kellough & Kellough, 2007:89) (*cf.* 3.5.6).

In response to questionnaire item number 7, three (75%) of the lecturers strongly agreed, and one (25%) of the lecturers agreed that questioning should be used to determine students' pre-knowledge. The responses confirm the view of Adams (2002:163) (*cf.* 2.4.2.10) who mentions that reflection is the process of mentally reliving experiences in order to learn from them. The researcher regards reflection as an important tool to use in order to recall previously learned work. With reflection, students have the opportunity to recall think critically about their pre-knowledge in order to solve new problems posed to them in the classroom.

The responses for questionnaire item number 8 showed that three (75%) of the lecturers strongly agreed that questioning should be used to start a discussion in the classroom about a specific topic. Only one lecturer (25%) agreed to this statement. In support of Kerry (2002:79) (*cf.* 3.5.4), it seems that the lecturers realise that students have to put their ideas and opinions into words in order for critical thinking to be enhanced.

The responses to questionnaire item number 9 indicated that three (75%) of the lecturers strongly agreed that questioning provides students with the opportunity to think about cause and effect. Only one lecturer (25%), agreed to this statement. Borich (2004:270) (*cf.* 3.6.1) says that critical thinking can be enhanced by asking and encouraging students to analyse and break up a problem up into smaller parts and to draw relationships among the different parts. This will enable students to identify errors, differentiate among facts, opinions and assumptions, and derive conclusions, draw inferences or make generalisations (Paul & Elder, 2007:21) (*cf.* 2.2.1). To the researcher the aforementioned data could indicate that the students are apparently allowed to think critically and discover the reasons behind the information that was given to them

Three lecturers (75%) strongly agreed, and one lecturer (25%) agreed that questioning should create opportunities for students to provide their own opinions. All four lecturers seem to reason that questioning plays an important role in helping students to provide their own opinions and therefore support the literature. Since conversation is the main method used in which people interact socially with each other, lecturers who allow their students to engage with them in conversation, will prepare the grounds for enhancing critical thinking skills through questioning (Kerry, 1998:15; Kerry, 2002:76-77) (*cf.* 3.5.2).

The responses to questionnaire item number 11 pointed out that three (75%) of the lecturers strongly agreed and one (25%) of the lecturers agreed that questioning should encourage students to look for solutions to problems. The responses confirm the literature where it is argued that questioning should be used in order to get students to understand and reason a specific problem (Kerry, 1998:17; Kerry, 2002:78) (*cf.* 3.5.3), which involve important critical thinking skills. All four lecturers seemingly make use of questioning in order to stimulate their students problem solving thinking skills, which play an important role in critical thinking (Paul & Elder, 2005:19; Woolfolk, 2010:279) (*cf.* 2.2.2.2).

Three of the lecturers (75%) strongly agreed and one lecturer (25%) agreed that questioning should allow a lecturer to find out how successful a lesson has been. The response corroborates literature where it is stated that feedback from students to their lecturers is an important aspect in the classroom (Kerry, 1998:20; Kerry, 2002:81) (*cf.* 3.5.8). Lecturers should pay special attention to their students' oral reports, the questions their students ask as well as the responses they give, and how they interact with others (Kellough & Kellough, 2007:261) (*cf*. 3.5.8). The researcher argues that when lecturers pay attention to the kind of feedback their students provide they will be able to pick up when their students have fully understood the lesson or not. Also, by listening to their students' feedback, they will be able to see gauge their students' level of thinking and guide them to higher more complex levels of thinking (Brookfield, 2012:200; Kerry, 2002:81) *(cf.* 3.5.6).

In support of the literature, three lecturers (75%) strongly agreed and one lecturer (25%) agreed that questioning should prompt students to come up with original answers. Questions that are asked at the highest cognitive level will encourage students to think more intuitively, creatively, critically and hypothetically, as well as to help them use their imagination and to make judgements (Kellough & Kellough, 2007:90) (*cf.* 3.5.5), which are important critical thinking skills (Paul & Elder, 2005:19; Woolfolk, 2010:279) (*cf.* 2.2.2.2).

From the responses obtained in this section, the researcher is of the opinion that there is evidence that the lecturers seemingly do understand that questioning plays an important role in enhancing critical thinking skills in the EFAL classroom.

The following section focuses on the lecturers' responses to Section D, types of questions.

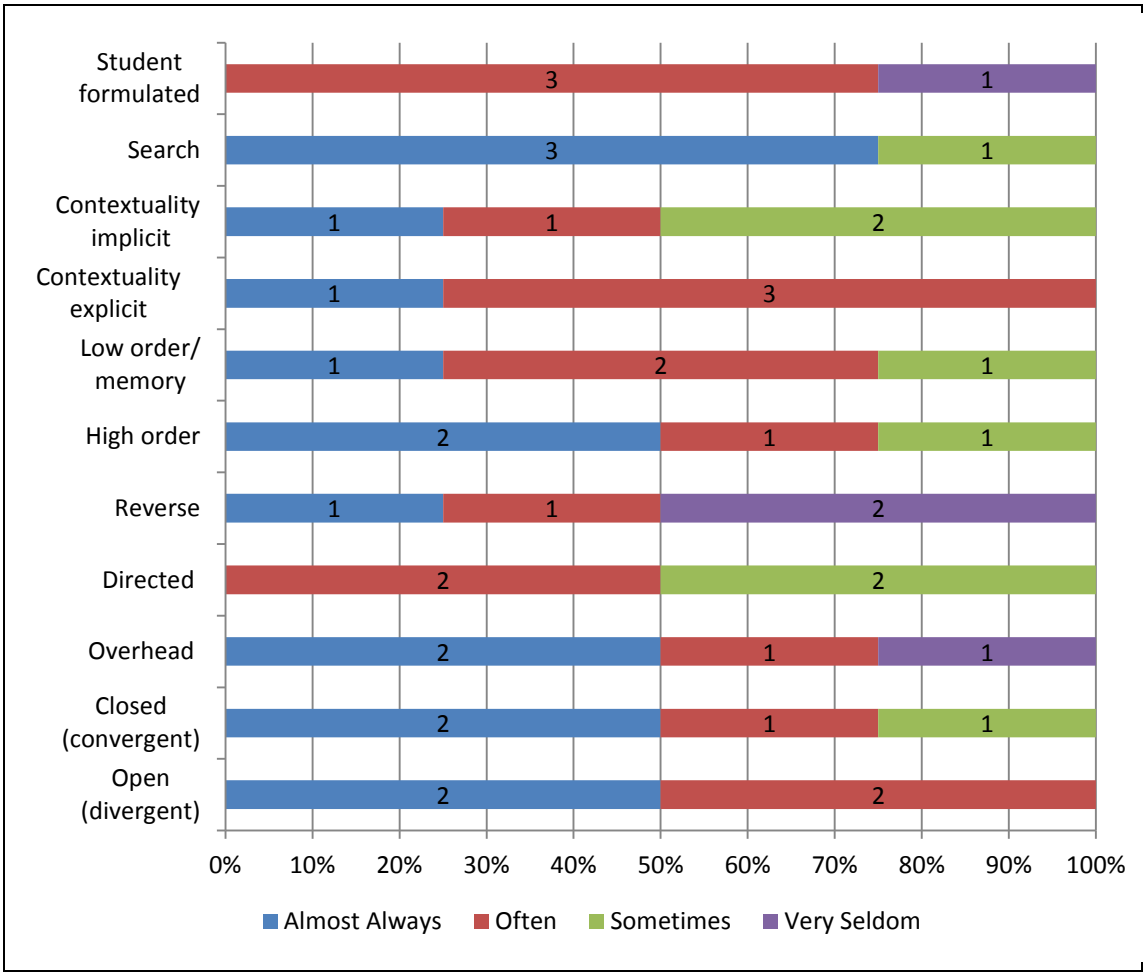
5.4.3 Lecturer responses: Section D – Types of questions

The purpose of Section D in the questionnaire was to focus on the perceptions of the lecturers regarding the frequency with which the lecturers make use of different types of questions (*cf*. 3.3) in the EFAL classroom. By focusing attention on the frequent use and/or non-use of specific types of questions, the researcher wanted to determine whether the lecturers use specific types of questions that are effective for enhancing critical thinking on a frequent basis during teaching.

The following table, Table 5.16, reports on the responses of the lecturers with regard to different types of questions used in the EFAL classroom.

Table 5.16: Types of questions

Type of question	Almost always	Often	Sometimes	Seldom
1. Open questions (divergent).	2	2	0	0
	50%	50%	0%	0%
2. Closed questions (convergent).	2	1	1	0
	50%	25%	25%	0%
3. Overhead questions.	2	1	0	1
	50%	25%	0%	25%
4. Directed questions.	0	2	2	0
	0%	50%	50%	0%
5. Reverse questions.	1	1	0	2
	25%	25%	0%	50%
6. High order questions.	2	1	1	0
	50%	25%	25%	0%
7. Low order/memory questions.	1	2	1	0
	25%	50%	25%	0%
8. Contextuality explicit questions.	1	3	0	0
	25%	75%	0%	0%
9. Contextuality implicit questions.	1	1	2	0
	25%	25%	50%	0%
10. Search questions.	3	0	1	0
	75%	0%	25%	0%
11. Student formulated questions.	0	3	0	1
	0%	75%	0%	25%



One of the concerns highlighted by Borich (2004:259) (*cf.* 3.4.2) states that not all questions used by lecturers in a classroom engage students actively in the learning process. Borich (2004:259) (*cf.* 3.4.2) also points out that questions that deal with the mere recalling of facts are used 70% to 80% of the time in classrooms, whereas questions that stimulate higher order thinking processes are only used 20% to 30% of the time. If lecturers do not vary the types of questions they use, they may end up with students who can only recall facts, instead of thinking about the answer they have to provide.

From the data obtained, it appears that two (50%) of the lecturers usually make use of open questions, and two (50%) of the lecturers often make use of open questions. This response may indicate that two of the lecturers pay frequent and daily attention to enhancing their students' critical thinking skills whereas two lecturers only often focus on enhancing the critical thinking skills of their students. It is important to remember that open questions stress creative thinking and allow a wide range of acceptable responses, which

provides greater opportunities for students to think critically (Cole & Chan, 1994:176; Kerry, 2002:7; Dymoke & Harrison, 2008:134) (*cf.* 3.3).

Closed questions allow only a narrow range of prescribed responses where the lecturer already has the correct answer in mind (Cole & Chan, 1994:176; Kerry, 2002:7; Dymoke & Harrison, 2008:134) (*cf.* 3.3). The data obtained for this section pointed out that two (50%) of the lecturers usually make use of closed questions, whereas one (25%) uses this type of questions often, and another lecturer (25%) uses it sometimes. This response could indicate that half of the students are possibly expected to frequently recall facts in the classroom, which could lead to their experiencing difficulty when having to think and reason about an answer when they are confronted with open questions.

Davies (1981:168) (*cf.* 3.3) point out that overhead questions are asked to the class as a whole, and therefore, any student can answer. The data obtained indicated that two (50%) of the lecturers almost always make use of overhead questions and one (25%) lecturer often uses overhead questions, thus providing all students with the same opportunity to think and answer. Only 1 lecturer (25%) seldom uses overhead questions. Using overhead questions seldom may indicate that some of the students who took part in the study are provided with limited opportunities to think about answers to questions in the classroom. This response could indicate that the lecturer, who uses overhead questions seldom, either makes more use of directed questions in the classroom, or asks the same students questions in the classroom, thus not allowing all students to participate and think, and hampering the development of critical thinking skills.

Lecturers use directed questions in order to ask predetermined questions to individual students (Davies, 1981:170) (*cf.* 3.3). From the data obtained, two (50%) of the lecturers seem to make use of directed questions often, whereas the other two (50%) lecturers use it only sometimes. Although it is good to direct specific questions in the class to specific students, these questions should not be used too frequently. In order to enhance critical thinking, lecturers should probe and challenge the students to ask questions in the classroom (Kerry, 1998:13-14; Kerry, 2002:75-76) (*cf.* 3.5.1.1).

Reverse questions are used when students ask questions to their lecturers, and the lecturers in turn reverse their students' questions back to the students, so that the students have to think about the answers themselves (Davies, 1981:170) (*cf.* 3.3). The data obtained points out that one (25%) lecturer almost always and often makes use of reverse questions, respectively. Two (50%) lecturers very seldom make use of reverse questions. The researcher is of opinion that reverse questions stimulate critical thinking, because these questions will not only prompt students to ask questions themselves, they will also expect of the students to think carefully about the answers to questions. Based on the data it could be argued that the lecturers could make more use of reversed questions to enhance critical thinking skills.

According to Cole and Chan (1994:174), Kerry (2002:71) and Borich (2004:25&26) (*cf.* 3.3) high order questions deal with the development of core critical thinking skills such as comprehension, application, analysis, synthesis and evaluation of certain subject matter, and involve more than just the recalling of facts. The data obtained indicate that two (50%) of the lecturers almost always make use of high order questions in their classrooms. Only one (25%) of the lecturers often uses high order questions, and one (25%) lecturer sometimes uses high order questions. This response could indicate that some of the lecturers challenge the development of their students' core critical thinking skills (Facione, 2010:5) (*cf*. 2.3.1).

One (25%) of the lecturers almost always makes use of low order/memory questions, whereas two (50%) of the lecturers make use of it often. Another lecturer (25%) sometimes makes use of these questions. Low order/memory questions have to do with the mere recalling of facts and specifics (Cole & Chan, 1994:174 &176-179; Borich, 2004:25&26) (*cf.* 3.3). If lecturers too frequently make use of these types of questions, they may expect students to depend only on recalling previously learned work, thus not nurturing critical thinking.

Only one (25%) of the lecturers almost always makes use of contextuality explicit questions, whereas three (75%) of the lecturers often make use of these types of questions. With contextuality explicit questions, lecturers want students to derive their answers from the explicit content of the lesson

presented in the classroom (Cole & Chan, 1994:176-179) (*cf.* 3.3). It appears as if most of the lecturers use these types of questions and therefore actually use low order/memory questions and closed questions, that do not enhance critical thinking but focus on the mere recalling of facts.

From the data obtained, one (25%) of the lecturers almost always uses contextuality implicit questions, one (25%) often uses it and two (50%) of the lecturers sometimes make use of it. Contextuality implicit questions are mainly used in order to derive answers from the deep structures in a text or a lesson (Cole & Chan, 1994:176-179) (*cf.* 3.3). These questions serve the same purpose as open questions and high order questions. It is of great concern that two (50%) of the lecturers only sometimes make use of these questions, as these questions could help the students to develop their core critical thinking skills, namely comprehension, application, analysis, synthesis and evaluation skills.

Three of the lecturers (75%) almost always make use of search questions whereas as one lecturer (25%) sometimes makes use of it. Search questions are used to lead students to discover the answer to questions based on specific learning content (Cole & Chan, 1994:176-179) (*cf.* 3.3). The three lecturers who use search questions will probably create more opportunities for their students to engage in critical thinking. These students will ultimately be more used to thinking on their own and searching for ideas to come up with answer to questions that were asked, than those students whose lecturers only use search questions sometimes in the classroom.

The data obtained pointed out that three (75%) of the lecturers often provide their students with opportunities to formulate questions in the classroom, whereas only one of the lecturers (25%) very seldom provides the students with the same opportunity. To allow students to formulate their own questions very seldom can be detrimental to the enhancement of their critical thinking skills. In support of Kellough and Kellough (2007:95) (*cf.* 3.5.9), lecturers should encourage their students to ask questions that will challenge the learning content in their textbooks, the teaching process as a whole as well as statements made by other students in the classroom.

In summary, from the responses obtained in this section, the researcher is of the opinion that most of the lecturers understand that they should use different types of questions in their classrooms in order to enhance their students' critical thinking skills. However, not all of the lecturers appear to make use of these different questioning strategies on a frequent basis. Question types such as reversed and contextuality implicit questions that are ideal for enhancing critical thinking skills appear not to be used frequently (Borich, 2004:260; Davies, 1981:170; Kellough & Kellough, 2007:87-88; Wragg & Brown, 2001:33 (*cf.* 3.3). However, search questions and open questions that are important for enhancing critical thinking skills (Borich, 2004:260; Davies, 1981:170; Kellough & Kellough, 2007:87-88; Wragg & Brown, 2001:33 (*cf.* 3.3), appear to receive attention in the classrooms of the lecturers who took part in the study to some extent.

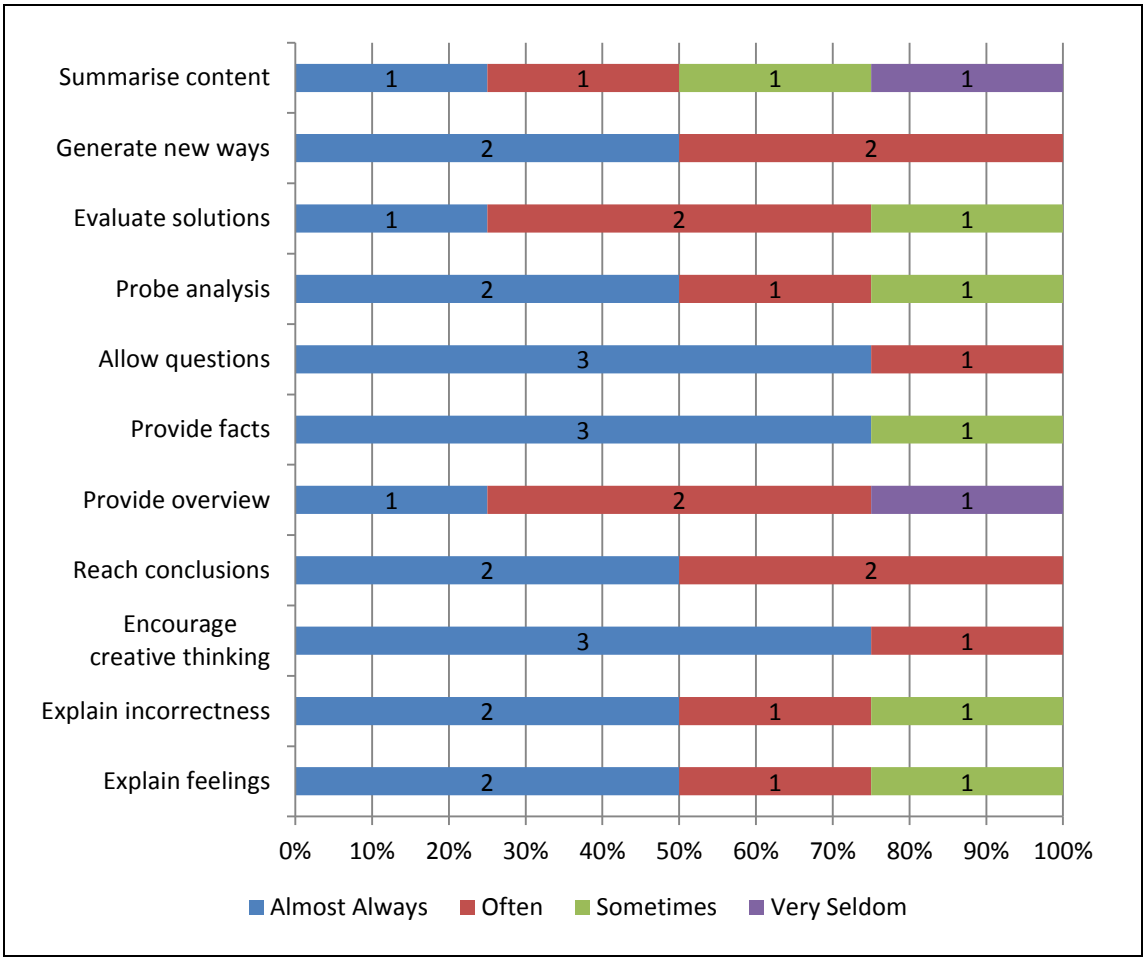
In the following section, the lecturers' responses for Section E, questioning strategies/techniques of the lecturer questionnaire, are discussed.

5.4.4 Lecturer responses: Section E – Questioning strategies/techniques

The purpose of Section E in the questionnaire was to focus attention on the frequency with which the lecturers apply different questioning strategies/techniques (*cf*. 3.6) in the EFAL classroom. By focusing attention on the frequency of the application of these different questioning strategies/techniques, the researcher wanted to determine whether the lecturers apply questioning strategies/techniques that enhance their students' critical thinking skills on a frequent basis. The table below, Table 5.17, reports on the lecturers' responses to Section E of the lecturer questionnaire.

Table 5.17: Questioning strategies/techniques

Statement	Almost Always	Often	Some-times	Very Seldom
1. I ask questions, which give my students an opportunity to explain how they feel about a specific topic.	2	1	1	0
	50%	25%	25%	0%
2. I ask questions, which give my students the opportunity to explain what is wrong/ incorrect in a specific section of the work.	2	1	1	0
	50%	25%	25%	0%
3. I ask questions, which encourage my students to think more creatively about issues.	3	1	0	0
	75%	25%	0%	0%
4. I ask questions which expect of my students to come to conclusions about specific learning content.	2	2	0	0
	50%	50%	0%	0%
5. I ask questions, which request my students to provide an overview of what they have learned.	1	2	0	1
	25%	50%	0%	25%
6. I ask questions which focus on the provision of to the point facts/information.	3	0	1	0
	75%	0%	25%	0%
7. I allow students to ask questions in the class.	3	1	0	0
	75%	25%	0%	0%
8. I ask questions, which probe my students to analyse work content.	2	1	1	0
	50%	25%	25%	0%
9. I ask questions, which request my students to evaluate the solutions to problems they have come up with.	1	2	1	0
	25%	50%	25%	0%
10. I ask questions, which allow my students to generate new ways of thinking about things.	2	2	0	0
	50%	50%	0%	0%
11. I ask questions, which expect my students to summarise content in their own words.	1	1	1	1
	25%	25%	25%	25%



The data obtained points out that two (50%) of the lecturers almost always provide their students with an opportunity to explain how they feel about a specific topic. One of the lecturers (25%) often provides the students with such opportunities and another lecturer (25%) sometimes provides the students with these opportunities. In support of the literature most of the lecturers seemingly expect of students to express their feelings, intuitions and emotional views through the questions asked during teaching, which are important activities for enhancing the development of critical thinking skills (Borich, 2004:271; De Bono, 1985:31-32;) (*cf.* 3.6.1, 3.6.2).

Two of the lecturers (50%) almost always provide their students with opportunities to explain what is wrong/incorrect in a specific section of the work content that is being covered in the classroom. Only one lecturer (25%) often provides the students with these opportunities while another lecturer (25%) only sometimes provides these opportunities to the students. For the enhancement of critical thinking skills, it is important to provide regular

opportunities so that students can think for themselves, analyse, and judge specific problems (Borich, 2004:270; De Bono, 1985:31-32) (*cf.* 3.6.1, 3.6.2).

Three of the lecturers (75%) agreed that they almost always encourage their students to think more creatively about specific problems, whereas one lecturer (25%) often seems to encourage the students to think creatively. According to the literature, critical thinking skills can be enhanced when students are encouraged to think more creatively. Students must be aware that they have to come up with more unique solutions and responses to answers that show that they thought about new ideas, alternatives and proposals to problem solving (Borich, 2004:271; De Bono, 1985:31-32) (*cf.* 3.6.1, 3.6.2). It appears that the majority of the lecturers motivate their students positively in order to think more creatively.

The data obtained further indicate that two lecturers (50%) almost always expect their students to draw conclusions about specific learning content, whereas another two lecturers (50%) often expect their students to draw conclusions. The responses support the literature that emphasises the importance for students to draw conclusions for the enhancement of critical thinking skills, because it teaches students to understand the facts they are working with (Borich, 2004:268) (*cf.* 3.6.1).

Only one of the lecturers (25%) almost always requests the students to provide an overview of what they have learned during a specific lesson in the classroom, whereas two of the lecturers, 50%, often request overviews from their students, and another lecturer, 25%, very seldom requests overviews from the students. The literature regards overviews from students as very important for the enhancement of critical thinking skills, since students are expected to comprehend and understand information in order to provide answers which show that they have summarised, explained and elaborated their thoughts and ideas from what they have learned (Borich, 2004:268) (*cf.* 3.6.1). The researcher is of the opinion that the lecturers who almost always and often request overviews from their students will probably enhance their students' critical thinking skills more than the lecturer who very seldom requests overviews from the students. Students who need to provide overviews will be more exposed to thinking by themselves and providing

explanations to answers they give, than those students who very seldom get the opportunity to express their views.

The obtained data indicate that three of the lecturers (75%) almost always and one lecturer (25%) sometimes focus on the provision of to the point facts or information from their students. The development of critical thinking could be hampered by three of the lecturers' apparent persistent use of questions that ask of students to only recall facts. This practice supports the view of Borich (2004:259) (*cf.* 3.4.2) who indicates that lecturers 70% - 80% of the time ask questions that deal with the recall of facts, and only 20% - 30% of the time they ask questions that is used for higher order thought processes to be developed, like clarifying and analysing. Adding to this statement is De Bono's argument that to ask questions which only deal with the recall of facts is only a convenient way of asking questions to students (De Bono, 1985:35) (*cf.* 3.6.2). The development of students' critical thinking skills cannot be enhanced if they are constantly asked to recall facts. This response corresponds with the response obtained in the previous section, where the frequent use of closed questions was highlighted (*cf.* Table 5.16).

In support of the literature, where student formulated questions are regarded as important for enhancing critical thinking (Kellough & Kellough, 2007:95; Sadker *et al.,* 2011:138) (*cf.* 3.5.9), three of the lecturers (75%) seemingly request that their students ask questions in class, whereas one lecturer (25%) often requests the students to ask questions. When students are asked to formulate questions, they are encouraged to challenge and be critical about information.

Two of the lecturers (50%) almost always request their students to analyse work content, whereas one lecturer (25%) often, and another (25%) sometimes probe students to analyse. Being able to analyse means to be critical of intended relationships among statements and arguments (Chartlrand & Rose, 2008:3; Facione, 2009:6) (*cf.* 2.3.1.1). It is disconcerting that not all the lecturers seemingly involve their students frequently in analysis activities.

One of the lecturers (25%) almost always requests the students to evaluate the solutions to problems they have come up with, whereas two lecturers (50%) often pose this request, and another lecturer (25%) sometimes poses this request. The researcher supports the opinion of De Bono (1985:31-32) (*cf*. 3.6.2) that it is important to note that when lecturers request their students to evaluate solutions to problems, they are actually teaching their students how to judge specific problems, which is an important critical thinking skill. The lecturers who almost always and often request their students to evaluate solutions to problems probably enhance their students' critical thinking skills more effectively than the lecturer who only sometimes requests the students to evaluate solutions to problems.

The data obtained pointed out that two of the lecturers (50%) almost always allow their students to generate new ways of thinking about things. Another two lecturers (50%) often allow their students to generate new ways of thinking. All four the lecturers seem to acknowledge that students need to be creative in order to develop new ways of critically thinking about solving problems (De Bono, 1985:31-32) (*cf.* 3.6.2). Thus, it seems that all four lecturers understand that to allow their students to think in new ways is important to enhance critical thinking during problem solving. According to Treffinger *et al.* (2000:7-8) (cf. 2.2.1, 3.6.1), creative thinking helps students with the formulation of possible solutions to problems, which advances the development of their critical thinking skills.

One of the lecturers (25%) almost always expects students to summarise content in their own words, whereas one lecturer (25%) often has this expectancy of the students. Another lecturer (25%) sometimes fosters this expectancy among students, and one lecturer (25%) very seldom expects of students to summarise content in their own words. The researcher is concerned that the lecturers share divided beliefs about this fact, because part of enhancing critical thinking entails that students need to be able to prove that they understand the facts they are busy learning by means of summarising, explaining and elaborating the newly obtained information in their own words (Borich, 2004:268) (*cf.* 3.6.1). It appears that not all the

students who took part in the study will be equally challenged in the EFAL classroom when it comes to enhancing critical thinking skills.

In summary, although the responses reveal that some lecturers apparently do enhance critical thinking, varied responses obtained in this section, indicate that not all the lecturers regard the application of different questioning strategies/techniques for enhancing critical thinking equally important. The strong focus on the provision of facts appears to be problematic for enhancing critical thinking. On the other hand, it appears that creative thinking and the application of facts, which play an important role in critical thinking, receive frequent attention. Moreover, the apparent under emphasis on providing opportunities for students to analyse and evaluate work, explain their feelings, indicate what is correct/incorrect regarding information, and providing overviews or summaries of information disconcerting, is problematic, as the aforementioned skills are central in the execution of critical thinking (Facione, 2009: 5-7; Chartlrand & Rose, 2008:3) (*cf*. 2.3.1.1).

In the following section, the responses of the lecturers for Section F, questioning tactics, are discussed.

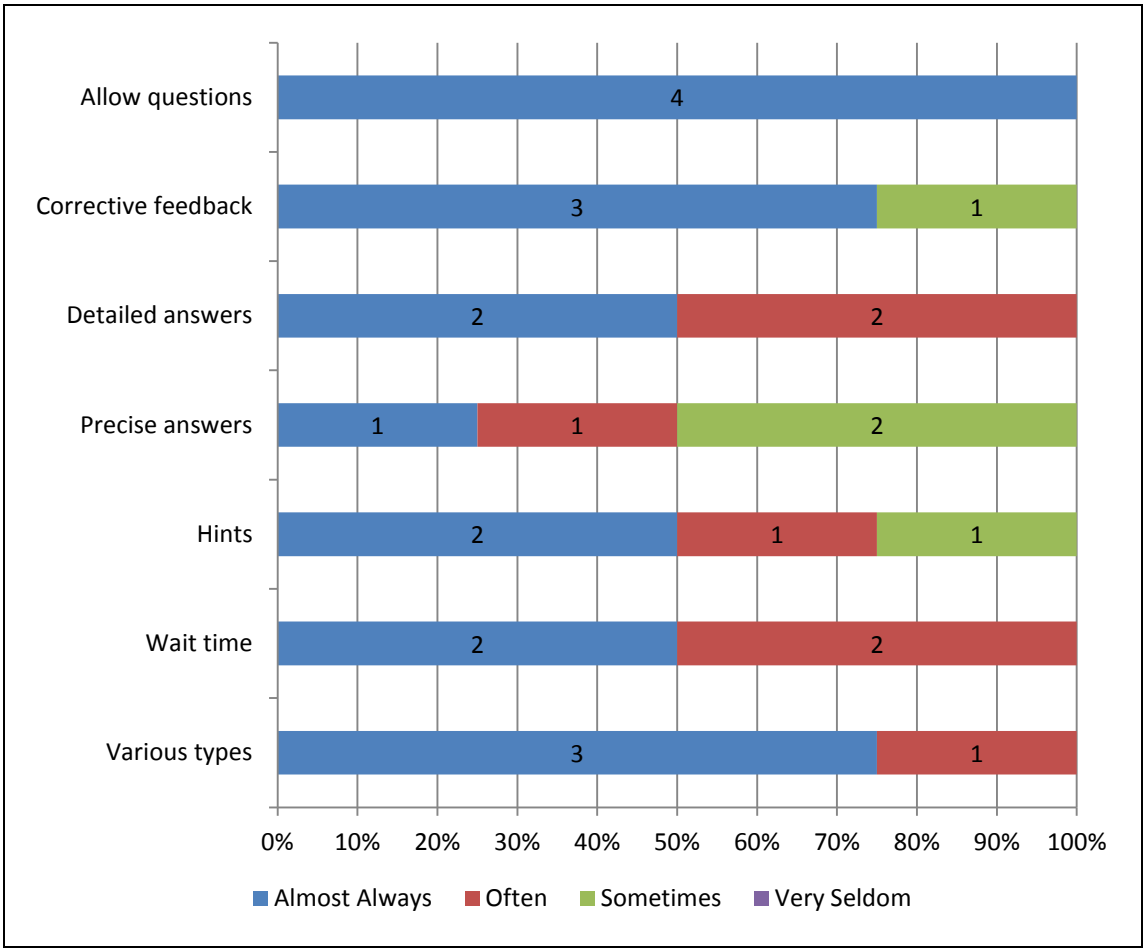
5.4.5 Lecturer responses: Section F – Questioning tactics

The purpose of Section F in the questionnaire was to determine the frequency with which the lecturers utilize different questioning tactics (*cf*. 3.7) that would enhance their students' critical thinking skills in the EFAL classroom. The following table, Table 5.18 reports on the lecturers' responses on questioning tactics in Section F of the lecturer questionnaire.

Table 5.18: Questioning tactics

Statement	**Almost Always**	**Often**	**Some-times**	**Very Seldom**
1. I vary the types of questions that I ask in the classroom.	3	1	0	0
	75%	25%	0%	0%
2. I provide students with wait time in order to think before they answer the questions that I	2	2	0	0
	50%	50%	0%	0%

Statement	Almost Always	Often	Some-times	Very Seldom
ask.				
3. I guide my students with hints in order to get to the right answer.	2	1	1	0
	50%	25%	25%	0%
4. I expect precise answers from my students.	1	1	2	0
	25%	25%	50%	0%
5. I request detailed answers from my students.	2	2	0	0
	50%	50%	0%	0%
6. I provide corrective feedback on the answers of my students.	3	0	1	0
	75%	0%	25%	0%
7. I allow students to ask questions in the class.	4	0	0	0
	100%	0%	0%	0%



Three of the lecturers (75%) apparently vary the types of questions that they ask in classroom, and one lecturer (25%) often varies questions. The

literature review pointed out that to enhance critical thinking it is important that lecturers ask a variety of questions that will expect students to not only repeat memorised work, but also to encourage students to think for themselves and to acquire new insights (Monyai, 2006:130) (*cf.* 3.7). All four lecturers seemingly support this view and use a variety of questions during teaching to enhance their students' critical thinking skills.

Two of the lecturers (50%) answered that they almost always make use of wait time after they have asked a question in their classrooms, whereas the other two lecturers (50%) often make use of wait time. The data seem to indicate that all four the lecturers agree that wait time plays an important role in enhancing critical thinking skills, and therefore support the literature (Ma, 2008:96; Wragg & Brown, 2001:32) (*cf*. 3.7.4). According to Ma (2008:97), wait time allows students to think critically about information. When students are allowed wait time before providing feedback to their lecturers, more students will answer questions and also provide longer answers, and more students will also start to ask questions in return (Wragg & Brown, 2001:32; Ma, 2008:97) (*cf.* 3.7.4). Because all the lecturers seem to agree on the use of wait time in the classroom, their students may have opportunities to think about the answers they want to provide to their lecturers, thus, resulting in greater opportunity for enhancing their critical thinking skills.

Regarding the use of hints, two lecturers (50%) apparently almost always guide their students with hints in order to get to the right answers, whereas one lecturer (25%) often uses hints, and another lecturer (25%) sometimes guides students in finding answers. Prompts/hints is one of the questioning tactics lectures can make use of in order to guide their students towards thinking more detailed and critically about their answers (Wragg & Brown, 2001:33) (*cf.* 3.8.5). The lecturers who almost always and often make use of prompts to guide their students' thinking, will probably enhance their students' critical thinking skills more effectively than the lecturer who only sometimes uses prompts.

One of the lecturers (25%) almost always expects precise answers from students when asking them questions. Another lecturer (25%) often expects precise answers from students and two of the lecturers (50%) sometimes

expect their students to give precise answers. Providing precise answers, calls for White Hat Thinking (De Beer & Gravett, 2010:90) (*cf*. 3.6.2). In support of the literature, it could be argued that the lecturers could more frequently ask students questions, which require precise answers since it will help to assess the students' levels of understanding (Dymoke & Harrison, 2008:134) (*cf*. 1.5.2).

From the data obtained, two of the lecturers (50%) almost always expect detailed answers from their students, whereas another two lecturers (50%) often expect detailed answers from their students. It seems as if the lecturers understand that it is important that students need to provide detailed answers when solving problems. Expecting more detailed and precise answers leads a student to higher levels of critical thinking (Sadker *et al*., 2011:112) (*cf*. 3.7.5).

Three of the lecturers (75%) confirmed that they almost always provide corrective feedback on the answers of their students, whereas one of the lecturers (25%) indicated that corrective feedback is provided sometimes. The researcher is concerned about the fact that one of the lecturers seemingly does not provide corrective feedback on a regular basis. Literature regards feedback as an important component for promoting critical reflection and deeper thinking (Kellough & Kellough, 2007:261; Kerry, 2002:81) (*cf*. 3.5.8), and it appears as if three of the lecturers acknowledge the importance of feedback for critical reflection.

All the lecturers pointed out that they almost always allow their students to ask questions in the classroom. This response supports the literature that reveals that it is better for students to ask question than to provide correct answers, because the students derive knowledge form asking questions (Kellough & Kellough, 2007:95) (*cf.* 3.5.9). All four the lecturers appear to adhere to what the literature review points out regarding students asking questions in the classroom. Recognising problems and formulating questions about those problems serves as a key to problem solving and critical thinking skills development (Kellough & Kellough, 2007:95) (*cf.* 3.5.9).

From the responses obtained in this section, the researcher is of the opinion that the majority of the lecturers do understand that they need to utilize a variety of questioning tactics that enhancing students' critical thinking skills. Noteworthy form the responses, is the emphasis that the lecturers place on varying their questions, providing corrective feedback and allowing students to ask questions. The aforementioned tactics are important for developing critical thinking skills (Kellough & Kellough, 2007:95; Kerry, 2002:81; Monyai, 2006:130) (*cf.* 3.5.8, 3.5.9, 3.7).

The following section focuses on the data analysis and interpretation of the student responses with regard to the student questionnaire.

5.5 DATA ANALYSIS AND INTERPRETATION: STUDENT RESPONSES

5.5.1 Student responses: Section B – Perceptions on enhancing critical thinking

The purpose of the open questions in Section B of the student questionnaire was to determine the following:

- The students' understanding regarding the importance of work provided by their lecturers that will enhance their critical thinking skills.
- The importance of being guided by their lecturers in developing critical thinking through questioning.
- Whether the students are allowed to think independently while dealing with class work.
- Whether the students are allowed to think together with their class mates while dealing with class work.
- To determine to what extent the students think their lecturers are helping them to think more critically in the classroom.

Table 5.19 presents the frequency of the student responses from Campus A and Campus B respectively regarding the importance of being guided by lecturers that provide work that enhances their critical thinking.

Table 5.19: Enhancing critical thinking

	Response	Campus A		Campus B	
1	Very important, extremely important, important.	24	54.5%	47	48.0%
2	Practical application of learned theory.	4	9.1%	6	6.1%
3	Reason logically and cohesively.	4	9.1%	5	5.1%
4	Assessing information.	3	6.8%	8	8.2%
5	Describe feelings.	1	2.3%	0	0.0%
6	Make judgements.	1	2.3%	2	2.0%
7	Question and challenge existing knowledge and social order.	2	4.5%	2	2.0%
8	Describe various phenomena.	1	2.3%	0	0.0%
9	Solve problems.	0	0.0%	2	2.0%

The literature review strongly emphasizes the importance of lecturers enhancing their students' critical thinking skills, since thinking is one of the most essential characteristics of all human beings, and is intrinsic to almost everything we do (Shiraev & Levy, 2004:56) (*cf.* 2.4.1).

The data obtained from the student responses for this part of the questionnaire revealed the following:

It is evident that many of the students from both campuses understand that it is important that their lecturers enhance their critical thinking skills in order for them to think and reason more effectively. However, it appears that a large number of the students apparently do not understand the importance of critical thinking skills, which raises great concern. The researcher is of opinion that when students know what critical thinking skills are, and understand what the teaching of critical thinking skills entail; they will be more willing to engage in tasks that focus on the application of critical thinking. Only a few students on both campuses seemed to know that critical thinking involves reasoning, judging, solving problems and questioning (Chartlrand & Rose, 2008:3; Facione, 2009:5) (*cf.* 2.3.1.1).

The following table, Table 5.20, presents the students' responses regarding the importance of guiding thinking through questioning.

Table 5.20: Guiding thinking through questioning

	Response	Campus A		Campus B	
1	Very important, highly important, crucial, important.	18	40.9%	35	35.7%
2	Promotes deeper thinking levels.	13	29.5%	36	36.7%
3	Encourages problem solving thinking skills.	3	6.8%	2	2.0%
4	Promotes communication between students.	2	4.5%	2	2.0%
5	Helps students to express their knowledge verbally.	6	13.6%	6	6.1%
6	Arouses interest and curiosity.	2	4.5%	0	0.0%
7	Signals an interest in students' ideas and thoughts.	0	0.0%	2	2.0%
8	Encourages thinking aloud and the intuitive leap.	0	0.0%	2	2.0%

From Campus A, a number of the responses confirmed the literature that indicates questioning facilitates learning (Dymoke & Harrison, 2008:134; Wragg & Brown, 2001:11) (*cf.* 3.5). The respondents were mainly of the opinion that it is important that their lecturers ask questions since questioning promotes deeper thinking levels (29.5%, 36.7%), encourages problem solving skills (6.8%, 2%), promotes communication between students (4.5%, 2%), helps them to express their knowledge verbally (13.6, 6.1%), and arouses their curiosity (4.5%).

The respondents did not seem to be convinced that the questions their lecturers ask them in the classroom signal an interest in their ideas and thoughts, as well as encourage thinking aloud and providing an intuitive leap

(creative and critical thinking) (Tomlinson, 2011:168; Kellough & Kellough, 2007:89) (*cf*. 3.5.2).

These responses indicate that there might be students from Campus A who do not regard questioning as important for enhancing critical thinking.

The aforementioned responses prove that there are students who apparently do not understand the importance of questioning for guiding thinking.

In the following table, Table 5.21, the student responses for the extent to which they are allowed to think independently, are reported.

Table 5.21: Independent thinking

	Response	Campus A	Campus B
1	Yes.	37	72
2	No.	4	13
3	No response.	3	13
	Motivation		
4	Student interaction.	4	2
5	Students must be active enquirers.	2	2
6	Lecturers and students pay respect to each other's interests and ideas.	7	7
7	Student participation.	3	5
8	Students must seek help when necessary.	1	2
9	Students must work together.	0	5

The data obtained revealed that the majority of the students on both campuses felt that their lecturers allow them to think independently. More students on Campus B (13) than on Campus A (4) were of the opinion that they do not get the opportunity to think independently.

The students' motivations for their being involved in independent thinking answers were as follow:

In line with literature, only a few students on both campuses indicated that independent thinking is enhanced by allowing them to interact with other students, to become active enquirers, to respect the interests and ideas of one another, to participate in classroom activities, and to seek help when necessary. It appears that independent thinking could play a stronger role in the EFAL classroom at both campuses. By thinking independently, students could reconsider and revise their views and make changes (Facione, 20109:10) (*cf.* 2.3.2.1) which are important ways to enhance critical thinking.

Thinking also has a social element attached to it and students need to develop communication and interpersonal skills that are necessary for participating in group problem solving (Adams, 2002:162; Eggen & Kauchak, 2010:228) (*cf*. 2.4.2.9). The aforementioned aspect also appears to be underemphasized on both campuses, as many students did not note working together, sharing and participation.

The next table, Table 5.22, presents the student responses regarding the opportunities to work with their classmates.

Table 5.22: Working with class mates

	Responses	Campus A	Campus B
1	Yes.	33	67
2	No.	5	12
3	No response.	6	19
	Explanation		
4	Students learn from each other.	5	17
5	Helps students to learn and practice skills.	8	4
6	Social skills/Communication.	10	13
7	Group work.	12	32

Effective critical thinkers need to develop problem solving skills through communication with others. It is for this reason that the development of critical

thinking has a social element attached to it (Eggen & Kauchak, 2010:228, 419) (*cf.* 2.4.2.9). The literature review also explains that classrooms should consist of communities of students where the lecturers and students work together in order for everyone to achieve (Eggen & Kauchak, 2010:228) (*cf*. 2.4.2.9).

It seems as if the lecturers on both campuses allow their students to think together in groups while dealing with class work, as to the majority of the students indicated that they are allowed to learn and together with their classmates.

In support of the literature some of the students mentioned that when they are allowed to think together with their classmates, they learn from each other, practice skills and communicate. This response contradicts the previous response in Table 5.21, where working together appeared to be underemphasized.

As the majority of the students' responses from both campuses indicated that they are allowed to think together with their class mates, the researcher carefully concludes that their critical thinking skills are apparently enhanced to a certain extent. Group work enables students to think by themselves as well as together in order to come up with solutions to problems and answers to questions.

The next table, Table 5.23, presents a summary of the student responses related to the extent to which their lecturers help them to think more critically.

Table 5.23: How critical thinking is enhanced

Campus A		**Campus B**	
Responses	***f***	**Responses**	***f***
Ideas are shared.	1	Ideas are shared.	0
Students are allowed to voice their own opinions.	2	Students are allowed to voice their own opinions.	4

Campus A		Campus B	
Responses	***f***	**Responses**	***f***
Students participate in classroom activities and their lecturers distribute questions to them.	1	The lecturers provide their students with wait time after they have asked questions.	2
The lecturers provide their students with wait time after they have asked questions.	3	The lecturers provide clues (hints) to their students in order to answer and understand learning content.	5
The lecturers provide clues (hints) to their students in order to answer and understand learning content.	1	Examples are used to reinforce ideas.	0
Examples are used to reinforce ideas, and to make use of group work.	1	Lecturers ask their students questions.	14
The lecturers motivate their students to work harder.	3	Lecturers make use of practical work to test their students'/ thinking.	2
Lecturers ask their students questions.	4	Students are expected to assess their own strengths and weaknesses.	3
The lecturers make use of role-play.	1	Students are provided with opportunities to ask questions in the classroom.	2
Students are expected to assess their own strengths and weaknesses.	1	Learning content is explained to students.	2
Students are expected to elaborate on topics that they talk about in the classroom.	1	Students are being taught problem solving skills.	2

The students from both campuses mentioned the following aspects regarding the enhancing of their critical thinking skills:

- Only one student from Campus A felt that they are allowed to share their ideas with their lecturers. Literature regards social interaction as important

for developing critical thinking skills (Gouws, 2002:74) (*cf*. 2.4.2.1). Based on the poor response rate for the sharing of ideas, the researcher concludes that sharing of ideas, which are important for the development of critical thinking (Brookfield, 2012:201; Eggen & Kauchak, 2010:419) (*cf.* 3.5.7), do not seem to have an important place in the classrooms that took part in the research.

- Six students noted they are allowed to voice their own opinions. These six responses support the literature which states that lecturers should make use of questioning to enhance critical thinking because they want their students to put their ideas, opinions and thoughts into words (Kerry, 1998:18; Kerry, 2002:79) (*cf.* 3.5.4). It is however disturbing that only six students held this view. It seems as if the lecturers seldom allow their students to voice their own opinions.

- Only one student indicated that they participate in classroom activities. This response creates the impression that the enhancement of critical thinking skills in the EFAL classroom does not receive priority. For the development of critical thinking skills students should construct their knowledge by developing their own understanding by means of actively participating in the classroom activities (Eggen & Kauchak, 2010:230, 275-278) (*cf*. 2.4.2.3). The poor response rate supports the data in Table 5.21, where many students did also not cite student participation as a way in which independent thinking is enhanced.

- Five students felt that they are provided with wait time after lecturers have asked questions. As only five students responded in support of wait time being given after questioning, it appears that wait time is not always provided to all students. It takes time to answer a question, and this is why wait time plays such an important role. If students are allowed enough wait time, they will start to ask more questions in return or provide longer answers (Ma, 2008:97; Wragg & Brown, 2001:32) (*cf.* 3.7.4) which will assist them with the development of their critical thinking skills. Since the aim in every classroom should be for students be well cultivated critical thinkers, the lecturers' provision of wait time will help students raise and formulate questions and problems (Paul & Elder, 2005:1) (*cf*. 2.3.2). This

response does not support the lecturers' views in Table 5.18, where it appeared that the lecturers provide wait time before expecting answers from students.

- As only six students noted that they are provided with clues (hints) in order to answer questions and understand learning content, some of the lecturers appear not to use important tactics such as clues (hints) to enhance critical thinking. The use of hints (prompts) lead students back to the original questions, and also creates opportunity for critical thinking reviewing the learning content and asking questions about it (Wragg & Brown, 2001:33) (*cf.* 3.7.5).
- One student remarked that the lecturers use examples to reinforce ideas and make use of group work. In support of the literature, students appear to be allowed to work in groups, where they construct more powerful understanding that they would have individually (Eggen & Kauchak, 2010:419) (*cf.* 2.4.2.9). Ideally, more respondents should have held the same view, and therefore this response could indicate that critical thinking skills might not be enhanced effectively among the students who took part in the study. The researcher finds this response strange, as 44 students indicated in Table 5.22 that group work takes place in their classrooms.
- A number of students, 18, indicated that their lecturers ask questions, and two students replied that the lecturers from Campus B also make use of practical work to test their students' thinking. A closer look at the students' point of view indicates that not many their lecturers apparently make use of questioning in their classrooms to enhance critical thinking skills. The responses do not support the literature where it is indicated that lecturers should inquire, probe and challenge students to think, speculate and contribute in the classroom (Kerry, 1998:13-14; Kerry, 2002:75-76) (*cf.* 3.5.1), as these activities contribute to the development of critical thinking.
- One student responded that the lecturer makes use of role-play. Lecturers should allow their students to play different roles that provide opportunity to practice different ways of thinking (Moseley *et al*., 2005:135) (*cf*. 3.6.2). Since only one student responded in this regard, it raises a concern that

the lecturers do not provide opportunities to students' to practice different modes of thinking.

- Four students indicated that they are expected to assess their own strengths and weaknesses. One needs to possess the ability to apply critical self-reflection (Adams & Hamm, 1996:37) (*cf*. 2.4.1). It seems as if some lecturers, but not all, teach students the skill of critical self-reflection by allowing students to assess themselves. The ability to reflect on one self is a higher order thinking skill (Halpern, 2007:6) (*cf*. 2.2.2.1), which forms part of the metacognitive skills one needs to possess in order to think critically.
- One student responded that the lecturer expects the students to elaborate on topics that they talk about in the classroom. Lecturers should make use of comprehension questions in the classroom since those questions require students to clearly indicate that they can summarise, explain and elaborate on the facts that they have learned (Borich, 2004:268) (*cf*. 3.6.1). It appears that one of the Campus A lecturers makes use of these types of questions, and therefore possibly enhances deeper thinking among the students. On the other hand, the Campus B lecturers apparently do not ask of their students to elaborate on topics, which could hamper the development of the students' critical thinking skills. The responses tend to indicate that not all the students have equal opportunity to develop critical thinking skills. The responses of the students do not support the literature where Lipman (2003:208) (*cf*. 2.4.2.5) explains that if conditions are provided that encourage the application of students' thinking to the world they are living in, students would think better.
- Two students felt that their lecturers provide them with opportunities to ask questions in the classroom. According to the literature, formulating questions is not only a skill, but questioning stimulates further questioning, discussions and critical investigations (Kellough & Kellough, 2007:95) (*cf.* 3.5.9. These two responses once again point out that not all the students shared the same opinion regarding the asking of questions by the students.

- Two students felt that their lecturers explain the learning content to their students. It is of great concern that only two students out of the 142 students responded in this way. Lecturers must learn how to provide detailed explanations to their students (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7), as explanations aid students in problem solving (Monyai, 2006; 114, 115) (*cf.* 3.5.3). The responses do not convince the researcher that the explanation of learning content receives priority on both the campuses that took part in the study.
- Two students felt that their lecturers teach them problem solving skills. When students enter adult life at the work place and advanced training institutions, they will need behaviours that focus on higher levels of cognitive complexity that involves critical thinking skills such as synthesis, analysis and evaluation (Borich, 2004:259) (*cf.* 3.4.2). Based on the responses it appears that not many lecturers teach their students how to synthesise, analyse and evaluate, which are important critical and problem solving skills.

Only a few students from both campuses provided a wide variety of responses, which corresponded with the literature regarding the enhancing of critical thinking skills. The responses therefore do not provide sufficient evidence that the lecturers from both campuses enhance their students' critical thinking skills effectively. Although it appears that some lecturers do ask their students to voice their own opinions, provide their students with wait time and clues (hints), ask their students questions, and expect their students to assess their own strengths and weaknesses, these actions appear to be limited.

In the subsequent section, the responses to Section C of the student questionnaire, the purpose of questioning, are analysed.

5.5.2 Student responses: Section C – The purpose of questioning

The purpose of Section C in the students' questionnaire was to examine the students' perceptions regarding the purpose of questioning in the EFAL

classroom. Table 5.24 reports on the frequencies obtained for the student responses regarding the purpose of questioning in the EFAL classroom.

All the statements in this section of the questionnaire involved important reasons for using questioning to enhance critical thinking skills. The researcher was therefore particularly interested in the "*Strongly Agree*" and "*Agree*" responses from the students. The student responses for both campuses (Campus A and Campus B) are presented together to make comparisons possible.

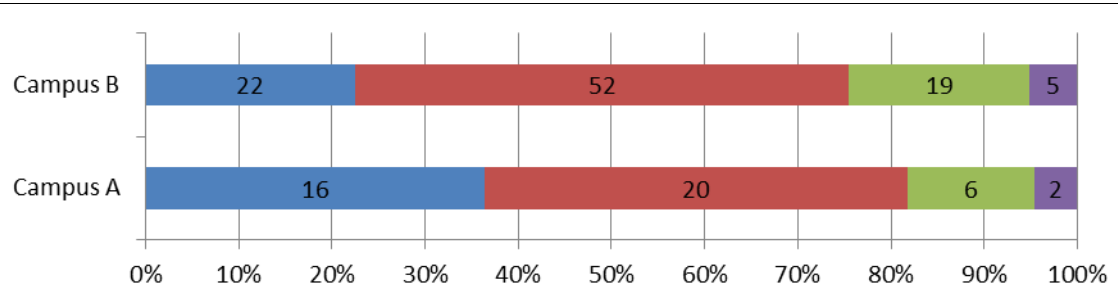
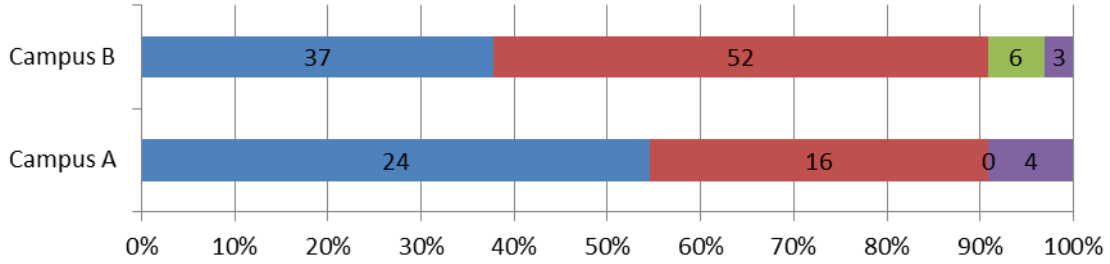
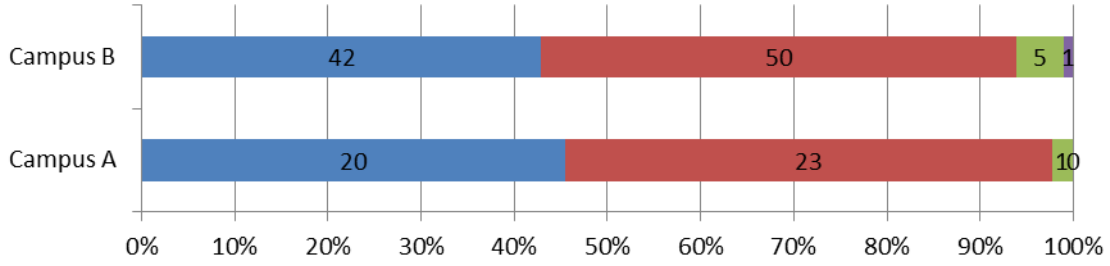
The following table, Table 5.24, presents the student responses regarding the purpose of questioning.

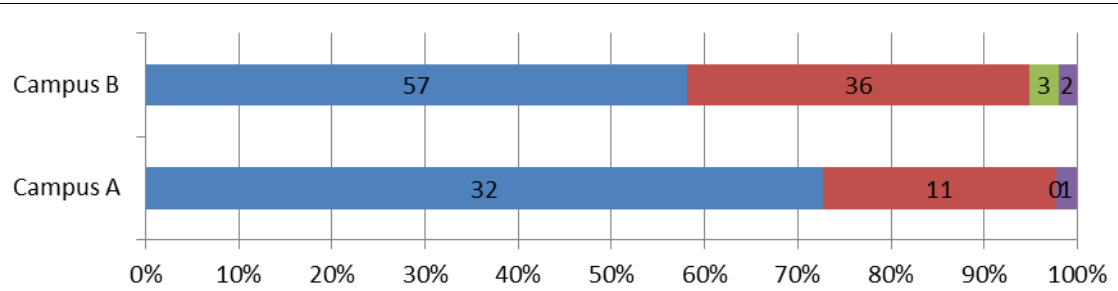
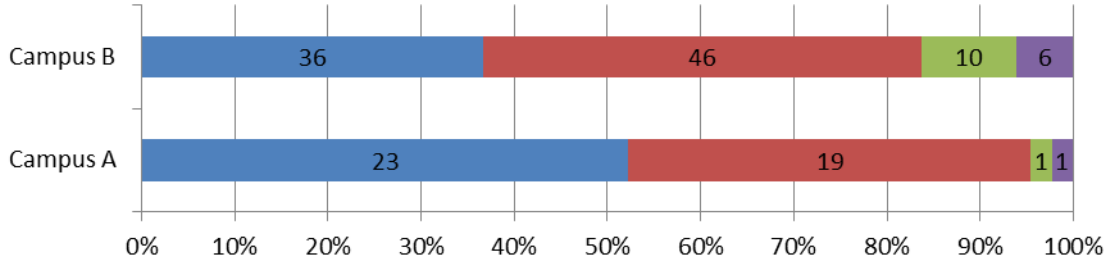
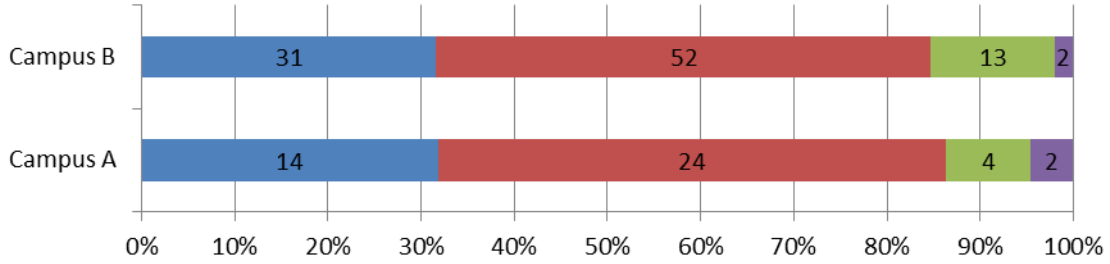
Table 5.24: The purpose of questioning

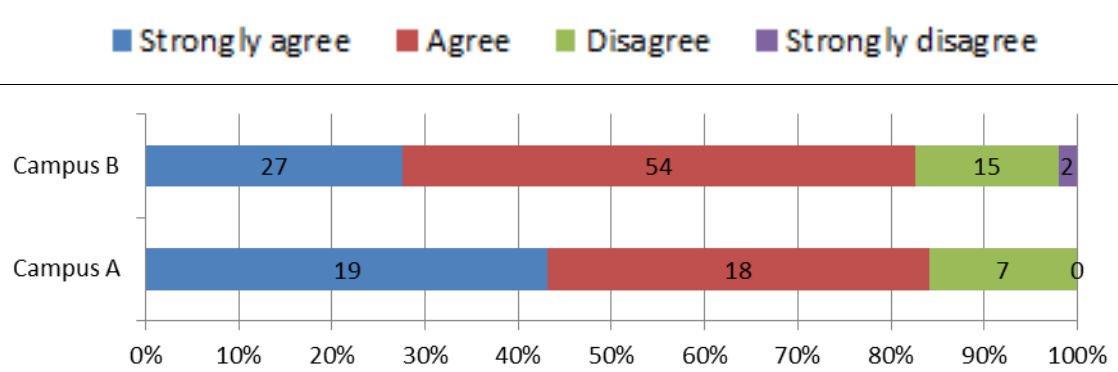
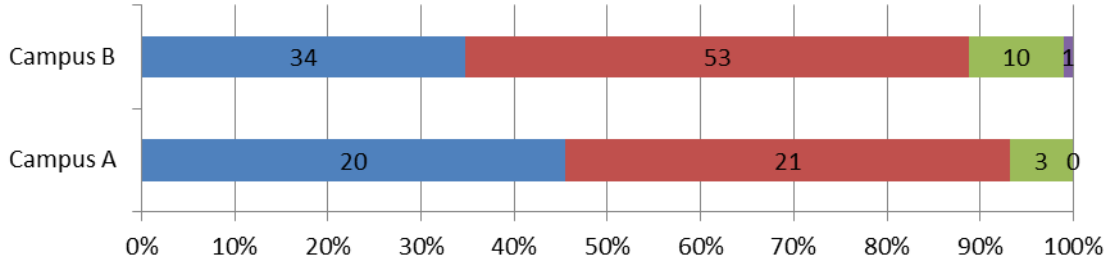
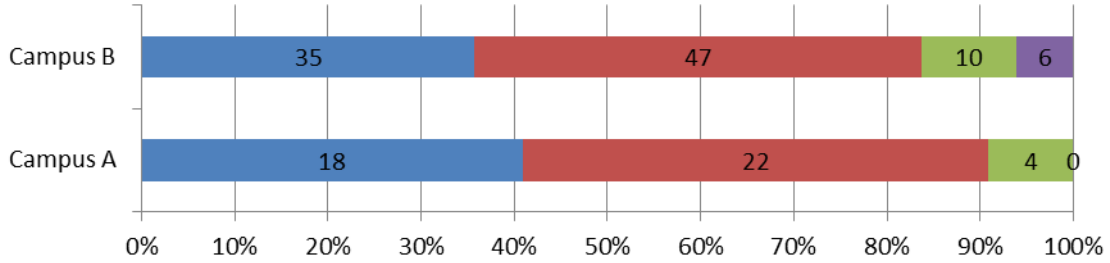
Statement	Campus A				Campus B			
	Strongly agree	Agree	Disagree	Strongly disagree	Strongly agree	Agree	Disagree	Strongly disagree
1. My lecturer uses questioning to arouse curiosity among students.	16	20	6	2	22	52	19	5
	36.4%	45.5%	13.6%	4.5%	22.4%	53.1%	19.4%	5.1%
2. My lecturer uses questioning to promote involvement in the classroom.	24	16	0	4	37	52	6	3
	54.5%	36.4%	0%	9.1%	37.8%	53.1%	6.1%	3.1%
3. My lecturer uses questioning to revise work.	20	23	1	0	42	50	5	1
	45.5%	52.2%	2.3%	0%	42.9%	51.0%	5.1%	1.0%
4. My lecturer uses questioning to check our understanding.	32	11	0	1	57	36	3	2
	72.7%	25.0%	0%	2.3%	58.2%	36.7%	3.1%	2.0%
5. My lecturer uses questioning to promote clarification in the communication process between the lecturer and the students.	23	19	1	1	36	46	10	6
	52.2%	43.2%	2.3%	2.3%	36.8%	46.9%	10.2%	6.1%

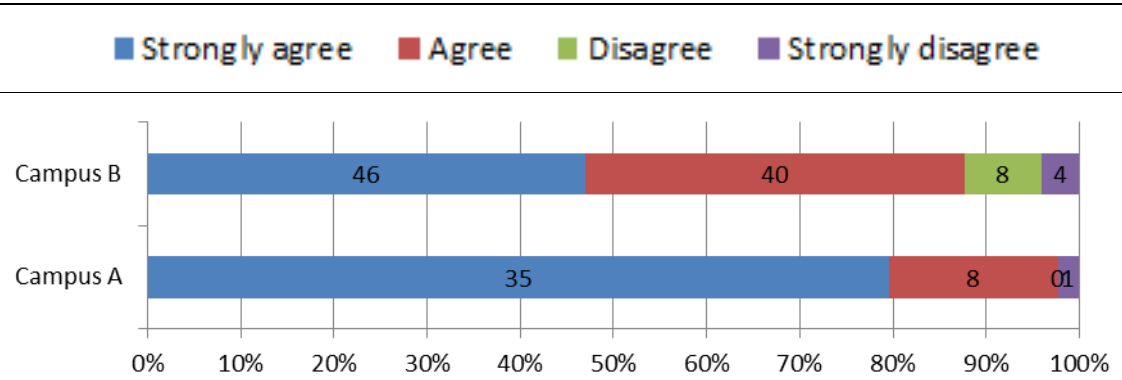
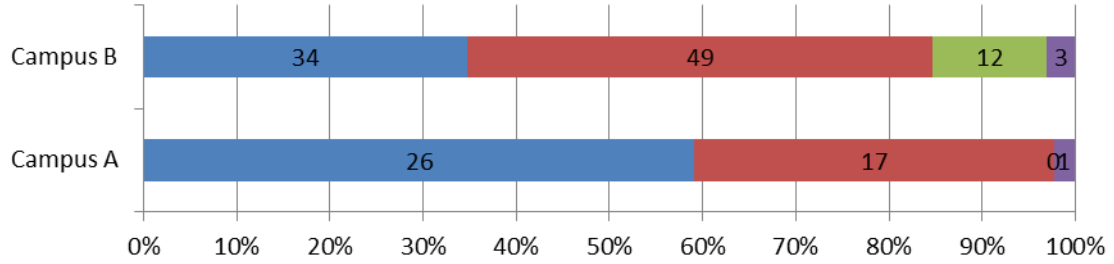
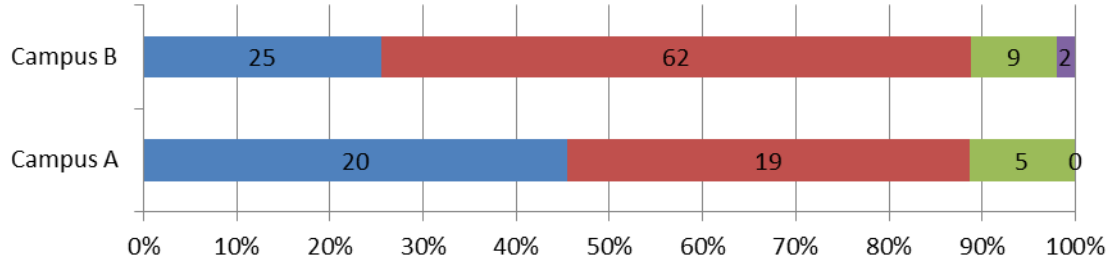
	Campus A				Campus B			
Statement	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
6. My lecturer uses questioning to promote in-depth thinking about a specific topic being discussed in the classroom.	14	24	4	2	31	52	13	2
	31.9%	54.5%	9.0%	4.5%	31.6%	53.1%	13.3%	2.0%
7. My lecturer uses questioning to determine students' pre-knowledge.	19	18	7	0	27	54	15	2
	43.2%	40.9%	15.9%	0%	27.6%	55.1%	15.3%	2.0%
8. My lecturer uses questioning to start a discussion in the classroom about a specific topic.	20	21	3	0	34	53	10	1
	45.5%	47.7%	6.8%	0%	34.7%	54.1%	10.2%	1.0%
9. My lecturer uses questioning to provide students with the opportunity to think about cause and effect.	18	22	4	0	35	47	10	6
	40.9%	50.0%	9.1%	0%	35.7%	48.9%	10.2%	6.1%
10. My lecturer uses questioning to create opportunities for students to provide their own opinions.	35	8	0	1	46	40	8	4
	79.5%	18.2%	0%	2.3%	46.9%	40.8%	8.2%	4.1%

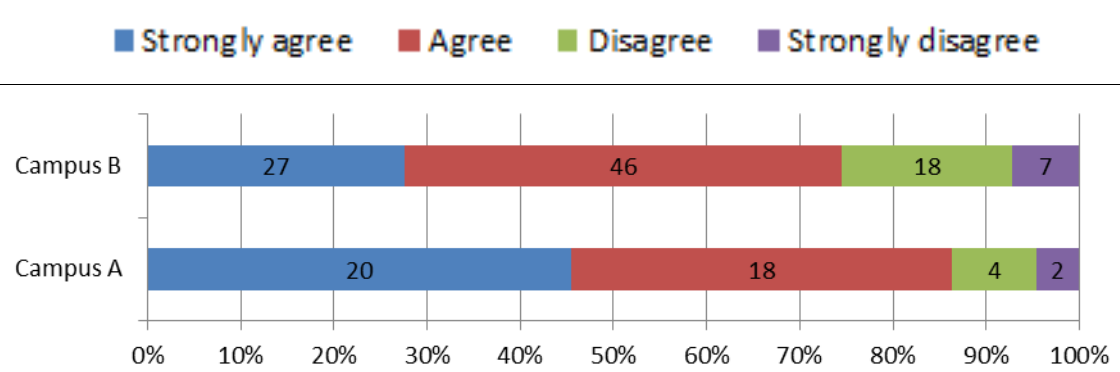
	Campus A				Campus B			
Statement	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
11. My lecturer uses questioning to encourage students to look for solutions to problems.	26	17	0	1	34	49	12	3
	59.1%	38.6%	0%	2.3%	34.7%	50.0%	12.2%	3.1%
12. My lecturer uses questioning to find out how successful a lesson has been.	20	19	5	0	25	62	9	2
	45.5%	43.2%	11.3%	0%	25.5%	63.3%	9.2%	2.0%
13. My lecturer uses questioning to prompt students to come up with original answers.	20	18	4	2	27	46	18	7
	45.5%	40.9%	9.1%	4.5%	27.6%	46.9%	18.4%	7.1%

Arouse curiosity	
Promote involvement	
Revise work	

Check understanding	
Clarify communication	
Promote in-depth thinking	

Determine pre-knowledge	
Start discussion	
Cause and effect	

Provide own opinions	
Look for solutions	
Determine success	

Prompt original answers	

Lecturers need to make use of teaching material that will capture their students' attention in terms of topics that interest them (Tomlinson, 2011:168) (*cf*. 3.5.2), and possibly the students' interest to think critically about the topics.

A number of students (36.4%, 22.4%) strongly agreed and agreed (45.5%, 53.1%) that their lecturers use questioning in order to arouse their curiosity. Only 13.6% and 19.4% of the students disagreed and 4.5% and 5.1% strongly disagreed that their lecturers arouse their curiosity through questioning.

The responses from the majority of the students on both campuses support what literature says regarding the use of questioning to arouse curiosity. When lecturers establish conversations that interest students, they will find it easier to use various questioning techniques that will arouse curiosity and eventually promote learning, because curiosity is a valuable aid to critical thinking (Kerry, 1998:15; Kerry, 2002:76-77; Ruggiero, 2004:161) (*cf*. 3.5.2). It is however problematic that there are still students who do not seem to have the same experience in the classroom. Students need to be active respondents in the classroom, which consists out of a variety of meaningful and relevant learning experiences (Eggen & Kauchak, 2010:275-278) (*cf.* 2.4.2.3).

The majority of students (54.5%, 37.8%) strongly agreed and agreed (36.4%, 53.1%) that questioning is used to promote their involvement in the classroom. A small percentage disagreed (6.1%) and strongly disagreed (9.1%, 3.1%) with this statement.

The viewpoint of the majority of the students from both campuses is that their lecturers use questioning in order to promote their individual involvement in the classroom and therefore apparently enhance their critical thinking skills development. Lecturers should employ strategies such as prompting their students for supporting reasons and challenging their students with counter-arguments (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7). This will encourage the students to participate actively in the classroom, as the thinking and solving of problems will be left to them (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7).

Regarding the use of questioning to revise work, and therefore mastering learning, the students noted the following. The majority of the students on both campuses strongly agreed (45.5%, 42.9%) and agreed (52.3%, 51%) that their lecturers make use of questioning in order to revise work they have done. In the context of the research, the data appear to support the literature, that highlights the fact that lecturers should monitor students' levels of learning (Kellough & Kellough, 2007:261; Kerry, 2002:181) (cf. 3.5.8). A small percentage of students (2.3%, 6.2%) did however not feel this way.

The data obtained from the students' responses regarding the use of questioning to check for understanding revealed the following. The majority of the students (72.7%, 58.2%) strongly agreed and agreed (25%, 36.7%) that their lecturers make use of questioning to check their understanding. Only a small percentage of students (2.3%, 5.1%), did not share this view.

Based on the preceding responses it could be argued that the lecturers indeed seem to use questioning in their classrooms in order to check their students' understanding and reasoning about the learning content. Revising work allows students to evaluate what they know and to think critically about the learning content they acquired (Kellough & Kellough, 2007:261) (*cf*. 3.5.8).

The responses for the use of questioning to promote clarification during communication revealed the following. The majority of students on both campuses (52.2%, 36.8%) strongly agreed and agreed (43.2%, 46.9%), that their lecturers use questioning to promote clarification in the communication process between lecturers and students. Only a few students (2.3%, 10.2%) disagreed and strongly disagreed (2.3%, 6.1%) with this statement.

Kerry (1998:13-14) and Kerry (2002:75-76) (*cf.* 3.5.1) reason that questioning transfers the emphasis in learning from the lecturer on to the students, thus, the lecturer requests, probes and challenges the students to think, speculate and contribute to communication in the classroom. The fact that the majority of the students from both campuses strongly agreed and agreed that the questions their lecturers use in the classroom promote clarity in the communication process between them and their lecturers could imply that

communication is taking place among the students and their lecturers and that thinking is promoted in the respective classrooms.

Many students (31.9%, 31.6%) strongly agreed and agreed (54.5%, 53.1%) that their lecturers use questioning to promote in-depth thinking about a specific topic being discussed in the classroom. Only a few students (9.0%, 13.3%) disagreed and strongly disagreed (4.5%, 2.0%) that the questioning of lecturers promotes in-depth thinking.

Although the majority of the students strongly agreed and agreed that their lecturers promote in-depth thinking (higher levels of thinking) by means of questioning, some students had different views. The responses therefore support the literature to some extent where it is argued that learning experiences should provide opportunities for reflective questioning about the work content (Adams, 2002:163) (*cf*. 2.4.2.10).

In response to whether questioning is used by lecturers to determine students' pre-knowledge, the majority of students (43.2%, 27.6%), strongly agreed and agreed (40.9%, 55.1%) that their lecturers use questioning to determine their pre-knowledge. A small percentage of students (15.9%, 15.3%) disagreed to this statement. Only 2% of the students on Campus B strongly disagreed that questioning is used to determine pre-knowledge.

The researcher wants to emphasise the importance of reflection to establish pre-knowledge in the classroom. Lecturers should ask questions that will direct their students to reflect critically on their pre-knowledge and recall previously learned work that links with newly acquired information (Adams, 2002:163) (*cf.* 2.4.2.10). The data obtained for this specific statement in the questionnaire proves to support the literature, as some lecturers apparently use questioning to help students to reflect critically on their pre-knowledge.

The data obtained from the students' responses regarding their lecturers' use of questioning to start a discussion about a specific topic, highlighted the following. Many students (45.5%, 34.7%) strongly agreed and agreed (47.7%, 54.1%) that their lecturers use questioning to start a discussion in the classroom about a specific topic. Only 6.8% and 10.2% of the students

disagreed with this statement, and only on Campus B did 1% of the students strongly disagree with the statement.

Conversation is the main method used by people to interact socially. Lecturers who allow their students to engage with them in conversation through questioning, will automatically prepare the grounds for developing critical thinking (Kerry, 1998:15; Kerry, 2002:76-77) (*cf*. 3.5.2). The researcher is of the opinion that the responses indicated that some lecturers probably guide their students' thinking so that they can share their thoughts, ideas and solutions to problems with the rest of their peers in the classroom, thus, enabling students to engage critically in problem solving activities through communication.

Regarding their lecturers' use of questioning that provides them with opportunities to think about cause and effect the majority of the students (40.9%, 35.7%), strongly agreed and agreed (50.0%, 48.9%) that their lecturers use questioning to provide students with opportunities to think about cause and effect. Only 9.1% and 10.2% of the students disagreed with this statement. A small percentage of students on Campus B, 6.1%, strongly disagreed that their lecturer provides them with opportunities to think about cause and effect.

Critical thinking includes the responsible assessment of reasons and arguments as well as responsible deliberation (Bailin *et al*., 1999:289) (*cf*. 2.3.1.3). Critical thinking also includes constructive responses to reasons and arguments given by others in the context of discussion (Bailin *et al*., 1999:289) (*cf*. 2.3.1.3). Even though critical thinking involves the interpretation and analysis of information, students should be able to assess reasons and arguments against the given context of a specific discussion or situation.

Although the majority of the students from both campuses strongly agreed and agreed that their lecturers make use of questioning in order to provide them with opportunities to think about cause and effect, some students did not share this view. The researcher argues that these students may be passive respondents in the classroom, who are not engaged in critical thinking.

The data obtained from the students' responses regarding their lecturers' use of questioning in order to create opportunities to provide their own opinions, made the researcher aware of the following issues. Many students (79.5%, 46.9%) strongly agreed and agreed (18.2%, 40.8%) that their lecturers use questioning to create opportunities for them to provide their own opinions. A small percentage of students on Campus B (8.2%) disagreed and only 2.3% and 4.1% of the students strongly disagreed with this statement.

Lecturers who encourage their students to provide own opinions involve students in problem solving, allow students to think critically by analysing, drawing conclusions, making generalisation and suggesting solutions to problems (Monyai, 2006:114-115) (*cf.* 3.5.1.4).

Based on the responses, the researcher is of opinion that some of the lecturers might in fact be enhancing their students' critical thinking skills in the EFAL classroom. It however appears that the lecturers on Campus A provide more opportunities for enhancing critical thinking skills through voicing opinions, than the lecturers on Campus B.

The data regarding the lecturers' use of questioning to encourage students to look for solutions to problems reported that a large number of students (59.1%, 34.7%) strongly agreed and agreed (38.6%, 50%) that their lecturers use questioning to encourage their students to look for solutions to problems. Only 12.2% of the students on Campus B disagreed and 2.3% and 3.1% of the students strongly disagreed with this statement.

Students need to think creatively so that they can come up with new ideas and solutions to problems. When they start to implement and test these ideas and solutions, they think critically (Halpern, 2007:6) (*cf*. 2.2.2.1). Lecturers should remember that problems are best expressed as questions and that problem solving forces students to think critically by analysing, drawing conclusions, making generalizations and suggesting new solutions (Monyai, 2006:114,115; Ruggiero, 2004:109) (*cf*. 3.5.3).

From the data obtained, many lecturers apparently enhance their students' critical thinking skills. There are however students who differ in opinion.

The data obtained from the students' responses regarding their lecturers' use of questioning in order to determine how successful a lesson has been revealed that the majority of students (45.5%, 25.5%), strongly agreed and agreed (43.2%, 63.3%), that their lecturers use questioning in order to check how successful a lesson has been. Only 11.3% and 9.2% students disagreed with this statement, and 2% of the students on Campus B, strongly disagreed.

In order to check how successful a lesson has been, lecturers should pay special attention to the feedback their students give since it is seen as an important aspect in the classroom with regard to the learning content that was done (Kerry, 1998:20; Kerry, 2002:81) (*cf*. 3.5.8). The students' feedback will provide an indication of their critical involvement with the learning content (Kellough & Kellough, 2007:261) (*cf*. 3.5.8). The responses seem to indicate that student feedback is given some priority in the classrooms that took part in the research.

A number of students strongly agreed (45.5%, 27.6%) and agreed (40.9%, 46.9%) that their lecturers prompt them to come up with original answers (*cf*. 5.4.2). Only 9.1% and 18.4% of the students disagreed, and 4.5% and 7.1% students strongly disagreed that their lecturers do not prompt them with questions in order to come up with original answers.

Based on the data obtained for this section in the student questionnaire, it seems that the students' responses indicate that some lecturers make use of questioning to enhance their critical thinking skills. This response supports the literature, which argues that if prompting is employed on a frequent basis, critical thinking skills will be enhanced. Prompting instils behaviours in students that encourage them to challenge basic information, use cognitive and meta-cognitive reasoning, confront discrepancies, focus on issues, peruse tentative questions and scaffold for information (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7).

In summary, the majority of the student responses for this section of the questionnaire support the purpose of questioning for developing the following important skills and dispositions that are required for effective critical thinking in accordance with the literature, namely stimulating curiosity (Kerry, 2002:76-

77; Tomlinson, 2011:168) (*cf.* 3.5.2), promoting involvement in learning (Kellough & Kellough , 2007:95) (*cf.* 3.5.9), enhancing understanding of learning content (Borich, 2004:269) (*cf*. 3.6.1), revising work through reflection (Brookfield, 2012:200) (*cf.* 3.5.6; 3.2), promoting communication of information (Churches , 2010:84) (*cf*. 3.5.1), voicing opinions (Kerry, 1998:15; Kerry, 2002:76-77) (*cf*. 3.5.2), and coming up with original answers (Kellough & Kellough, 2007:76-77) (*cf.* 3.5.2). The student responses correspond well with the responses obtained by the lecturers regarding the purpose of using questioning in the classroom (*cf*. 5.4.2).

In the following section, the student responses with regard to the types of questions their lecturers use in the classroom to enhance their critical thinking skills are discussed.

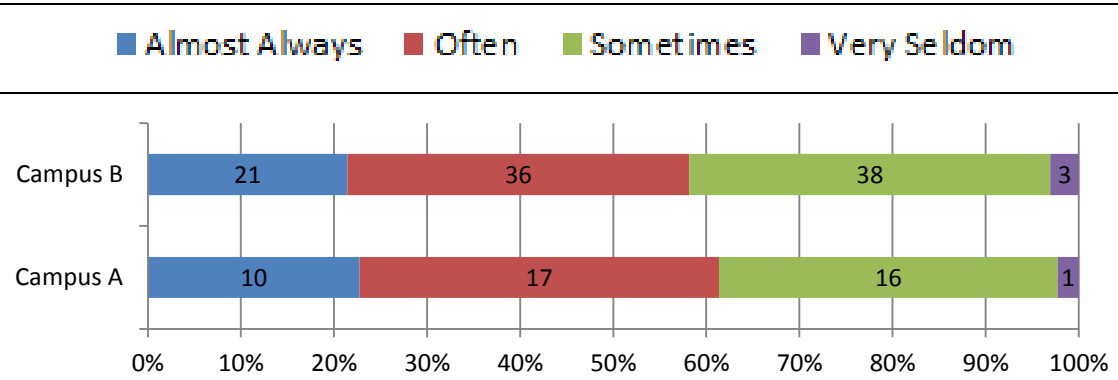
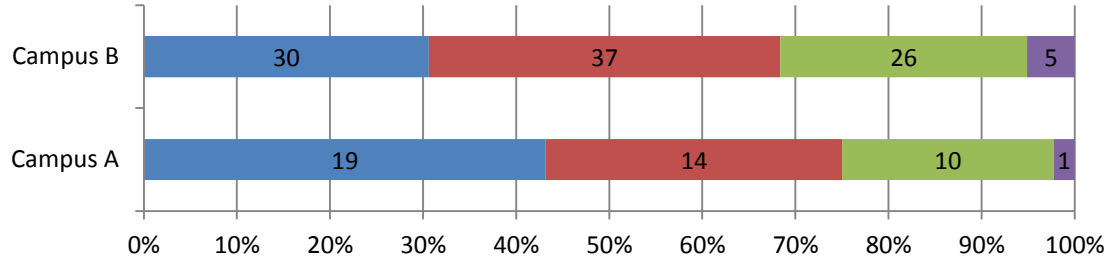
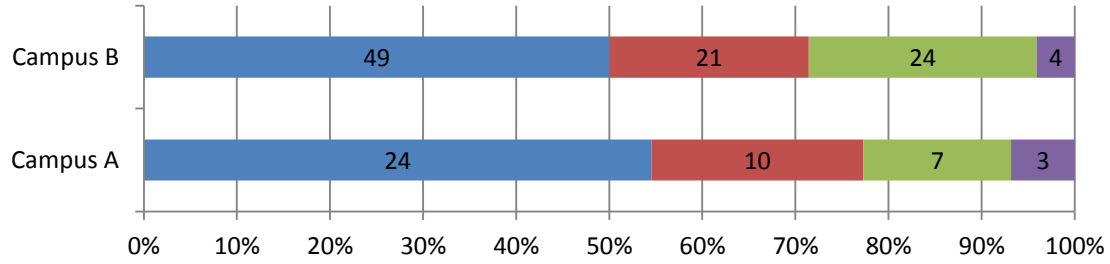
5.5.3 Student responses: Section D – Question types

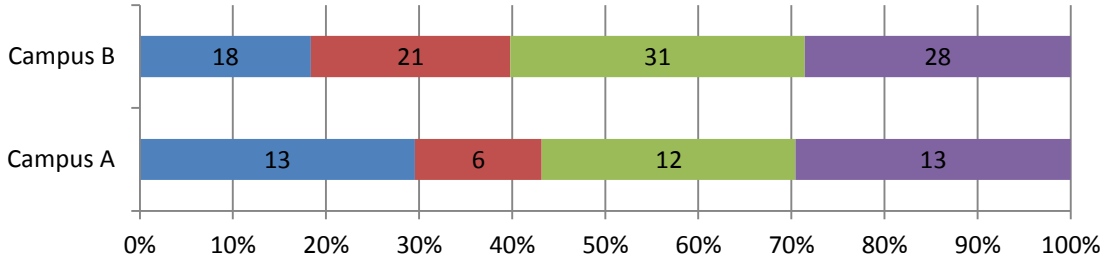
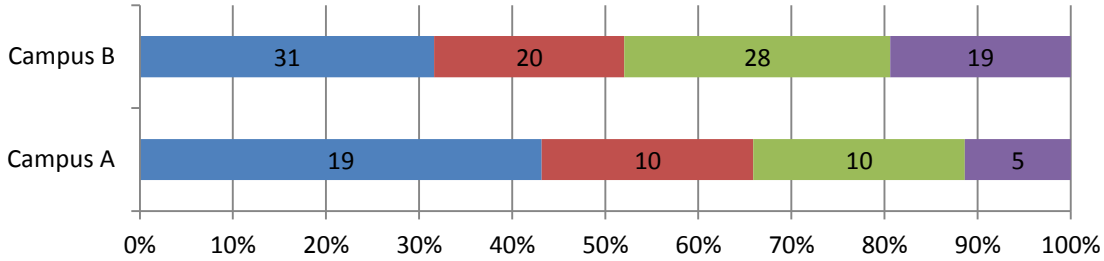
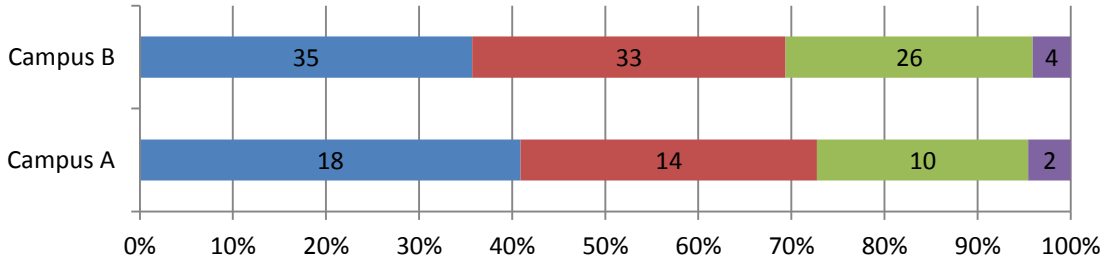
The purpose with Section D in the student questionnaire was to focus the attention on the frequency with which lecturers utilize different types of questions in the EFAL classroom. Table 5.25 below, highlights the responses obtained from the students.

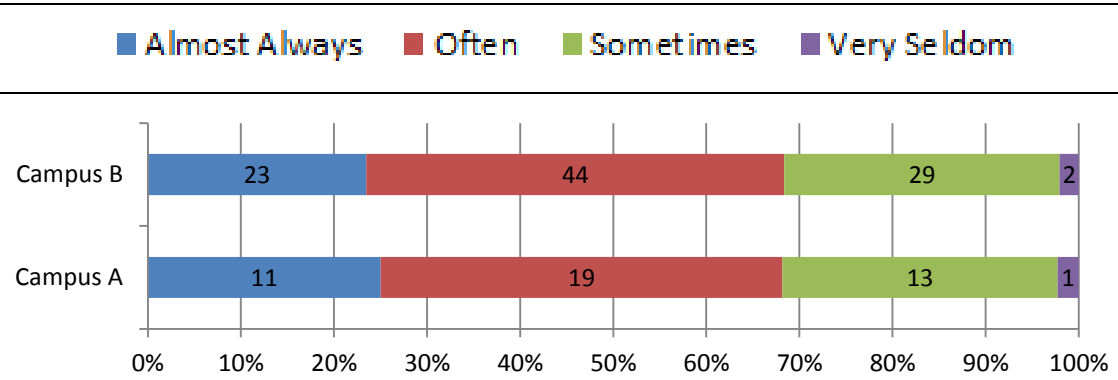
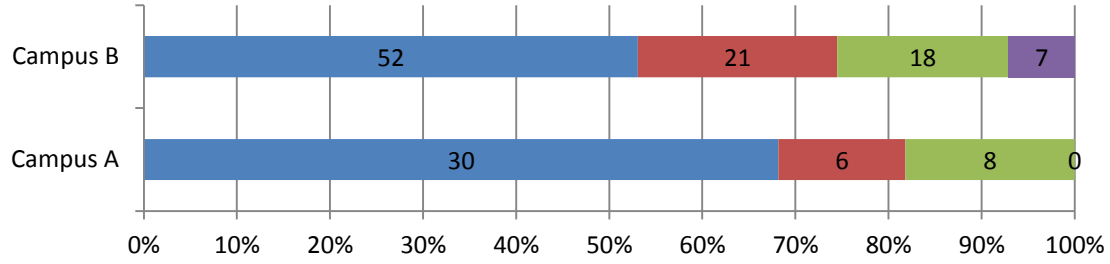
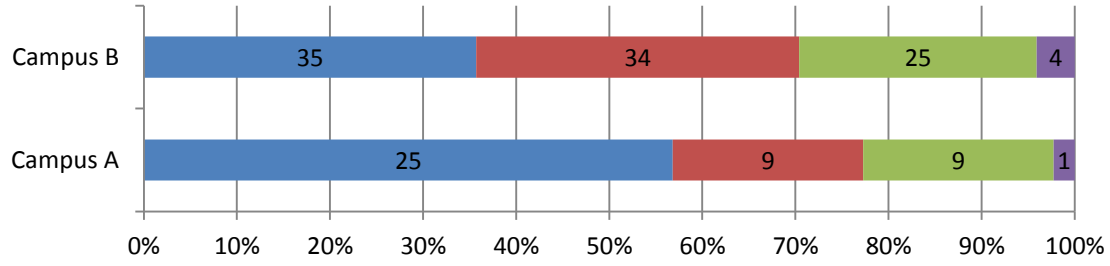
Table 5.25: Types of questions

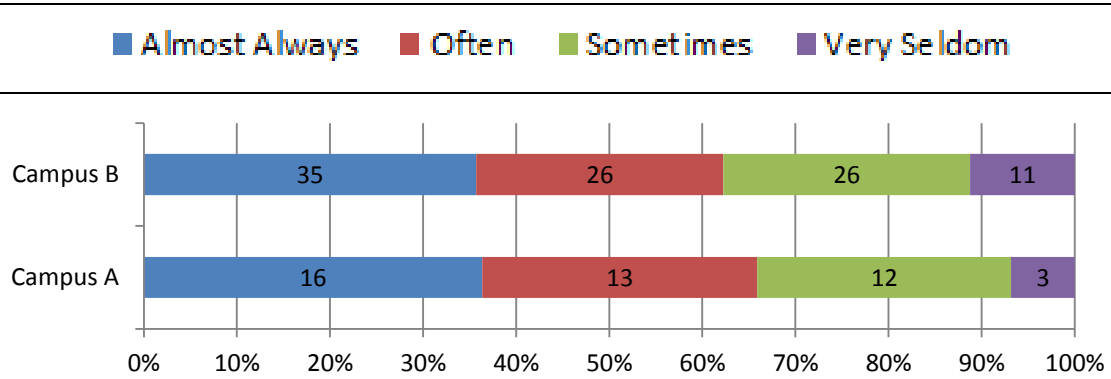
	Campus A				Campus B			
Statement	**Almost always**	**Often**	**Some-times**	**Very seldom**	**Almost always**	**Often**	**Some-times**	**Very seldom**
1. My lecturer uses questions that allow one single prescribed answer (closed questions).	10	17	16	1	21	36	38	3
	22.7%	38.6%	36.4%	2.3%	21.4%	36.7%	38.8%	3.1%
2. My lecturer uses questions that allow a wide range of acceptable answers (open questions).	19	14	10	1	30	37	26	5
	43.2%	31.8%	22.7%	2.3%	30.6%	37.8%	26.5%	5.1%
3. My lecturer uses questions that anyone in the class can answer (overhead questions).	24	10	7	3	49	21	24	4
	54.5%	22.8%	15.9%	6.8%	50.0%	21.4%	24.5%	4.1%
4. My lecturer uses questions that are directed to a specific student in the class (directed questions).	13	6	12	13	18	21	31	28
	29.5%	13.7%	27.3%	29.5%	18.4%	21.4%	31.6%	28.6%
5. My lecturer asks the students to answer their own questions in order to think for themselves (reverse questions).	19	10	10	5	31	20	28	194
	43.2%	22.7%	22.7%	11.4%	31.6%	20.4%	28.6%	19.4%

Statement	Campus A				Campus B			
	Almost always	Often	Some-times	Very seldom	Almost always	Often	Some-times	Very seldom
6. My lecturer uses questions that involve the evaluation of different answers and choosing the best one (convergent questions).	18	14	10	2	35	33	26	4
	40.9%	31.9%	22.7%	4.5%	35.7%	33.7%	26.5%	4.1%
7. My lecturer uses questions that involve the recall of facts (lower order questions).	11	19	13	1	23	44	29	2
	25.0%	43.2%	29.5%	2.3%	23.5%	44.9%	29.6%	2.0%
8. My lecturer uses questions that are linked directly to the work that was done (contextuality explicit questions).	30	6	8	0	52	21	18	7
	68.2%	13.6%	18.2%	0%	53.1%	21.4%	18.4%	7.1%
9. My lecturer uses questions that expect of students to interpret the content that was done in class (contextuality implicit questions).	25	9	9	1	35	34	25	4
	56.7%	20.5%	20.5%	2.3%	35.7%	34.7%	25.5%	4.1%
10. My lecturer expects of his/her students to formulate questions in class.	16	13	12	3	35	26	26	11
	36.4%	29.5%	27.3%	6.8%	35.8%	26.5%	26.5%	11.2%

Closed questions	
Open questions	
Overhead questions	

Directed questions	
Reverse questions	
Convergent questions	

Low order /memory questions	
Contextuality explicit questions	
Contextuality implicit questions	

Student formulated questions	

The literature strongly suggests that it is important for lecturers to ask the right questions in the classroom in order to develop their students' critical thinking skills. In this regard, research by Borich (2004:259) (*cf*. 3.4.2) show that not all questions asked in the classroom engage students actively in the learning process and enhance critical thinking.

The data obtained from this section in the student questionnaire regarding their lecturers' use of questions that allow one single prescribed answer (closed questions) indicated the following. Only 22.7% and 21.4% of the students noted that their lecturers use closed questions almost always. A mere 38.6% and 36.7% of the students said that their lecturers often make use of closed questions. A further 36.4% and 38.8% of the students who said that their lecturers sometimes make use of closed questions, and only 2.3% and 3.1% of the students mentioned that their lecturer very seldom makes use of closed questions.

It was already mentioned that when lecturers make use of closed questions, they already have a single prescribed answer in mind, which they want to receive from their students (Cole & Chan, 1994:176; Kerry, 2002:7; Dymoke & Harrison, 2008:134) (*cf*. 3.3). The researcher is of opinion that the lecturers from both campuses, who almost always and often make use of closed questions, may not be enhancing their students' critical thinking skills. Too much time appears to be devoted to the mere recalling of facts, which do not contribute to the development of critical thinking skills. Closed questions do not challenge students enough to think for themselves. The lecturers who sometimes and very seldom make use of closed questions in their classrooms may provide more opportunities to students to engage in critical thinking, since their focus is not recalling of facts, but to challenge their students to think for themselves. Under no circumstances does the researcher defy the use of closed questions in the classroom. The recalling of previously learned work can enhance critical thinking skills if the students are encouraged to use the knowledge they already possess in order to solve new content related problems in the classroom, where they need to reflect on previous experiences and on what they already know (Adams, 2002:163) (*cf.* 2.4.2.10).

Open questions are used to allow for a wide range of acceptable responses from students, and therefore provide greater opportunities for critical thinking by students (Cole & Chan, 1994:176; Kerry, 2002:7; Dymoke & Harrison, 2008:134) (*cf.* 3.3). It seems reasonable to conclude that the lecturers who took part in the study should make more use of open questions.

The data obtained regarding the lecturers' use of questions that allow a wide range of answers (open questions) indicated that some of the students (43.2%, 30.6%) responded that their lecturers almost always make use of open questions. A number of students (31.8%, 37.8%), noted that their lecturers often make use of open questions, whereas 22.7% and 26.5% were of the opinion that their lecturers sometimes make use of open questions. Only 2.3% and 5.1% of the students said that their lecturers very seldom make use of open questions in the classroom.

Open questions are used to stress divergent or creative thinking and also to allow a wide range of acceptable responses, and provide greater opportunities for critical thinking by students (Cole & Chan, 1994:176; Kerry, 2002:7; Dymoke & Harrison, 2008:134) (*cf*. 3.3). The data obtained pointed out that the majority of the students on both campuses feel that their lecturers make use of open questions. However, some of the responses indicate that there might be lecturers who do not make use of open questions on a regular basis, which supports the previous response that emphasized the use of closed questions which focus on the mere recalling of facts.

Many students (54.5%, 50%) responded that their lecturers almost always make use of overhead questions. A further 22.8% and 21.4% responded that their lecturers often use these types of questions. Only 15.9% and 24.5% of the students said that their lecturers sometimes make use of these questions, and 6.8% and 4.1% of the students said that their lecturers very seldom use overhead questions in the classroom.

The responses from the students point out that the majority of the students from both campuses feel that their lecturers pose questions to everyone in the classroom to answer (Wragg & Brown, 2001:31-32) (*cf*. 3.7.3). This implies that the majority of the students seemingly have to engage in thinking

constantly because they do not know to whom the lecturer will pose the question answer the question. According to Wragg and Brown (2001:31-32) (*cf.* 3.7.3), the use of overhead questions results in better opportunities for enhancing critical thinking skills.

Another questioning strategy to make use of in the classroom to foster thinking skills among students is the use of directed questions. Directed questions are predetermined questions asked by lecturers to individual students. The lecturer usually calls upon a student's name to answer a question (Davies, 1981:168; Walsh & Sattes, 2005:170) (*cf*. 3.3). The researcher agrees with Ma (2008:96) and Wragg and Brown (2001:31-32) (*cf*. 3.7.3) that lecturers should nominate students in the classroom to answer the questions asked, but that lecturers should ask the question first before nominating a specific student to answer the question in order to prevent that only the nominated student will do all the thinking in the classroom.

The students responded in the following way concerning the questions their lecturers use to direct to specific students in class. Not many students, (29.5%, 18.4%), responded that their lecturers almost always direct questions to specific students in the classroom. Only 13.7% and 21.4% of the students responded that their lecturers often direct questions to students individually, whereas 27.3% and 31.6% of the students said that their lecturers sometimes make use of directed questions. Furthermore, 29.5% and 28.2% of the students pointed out that their lecturers very seldom make use of directed questions in the classroom.

It is clear from the students' responses that the majority of the students are sometimes or very seldom asked a directed question in the classroom. These responses concur with the lecturers' responses regarding the use of directed questions (*cf*. 5.4.3). The literature review points out that the lecturers are the ones who should inquire, probe and challenge their students to think, and to speculate and contribute in the classroom (Kerry, 1998:13-14; Kerry, 2002:75-76) (*cf*. 3.5.1). The researcher argues that directed questions should not be used in abundance. Although directed questions are used to ask individual students predetermined questions (Davies, 1981:168; Walsh & Sattes, 2005:170) (*cf*. 3.3), lecturers sometimes ask questions only to the high

achievers in the classroom who usually sit in the front, without even realising it. Directed questions could therefore result in the improper distribution of the questions to students and leaving many students uninvolved in thinking about answers (Ma, 2008:97) (*cf*. 3.7.3).

Apart from directed questions, lecturers should also use reverse questions. Reverse questions are used when lecturers' students ask them questions and they direct their students' questions back at them in order for them to think about the answers to their questions themselves (Davies, 1981:170) (*cf.* 3.3).

The student responses from both campuses regarding the involvement of students in answering reverse questions were as follow. Many of the students (43.2%, 31.6%) responded that their lecturers almost always make use of reverse questions in their classrooms, whereas 22.7% and 20.4% of the students agreed that their lecturers use these questions often (*cf*. 5.4.3). Some students (22.7%, 28.6%) mentioned that their lecturers use it sometimes and only 11.4% and 19.4% of the students pointed out that they feel that their lecturers very seldom use reverse questions in their classrooms.

In support of Davies (1981:170) (*cf.* 3.3), the researcher is of opinion that the more lecturers expect of their students to think for themselves, the greater the opportunity for their students' critical thinking skills to be enhanced, as the students have to engage in deeper thinking processes in order to derive an answer from their own questions. The aforementioned argument might be partially true, since the majority of the students from both campuses agreed that their lecturers make use of reverse questions on a very frequent basis. There are however students who do not share this viewpoint, which implies that reverse questions are apparently no used by all the lecturers who took part in the research.

Borich (2004:260), Walsh and Sattes (2005:170) and Kellough and Kellough (2007:87-88) (*cf*. 3.3) concur that convergent questions are used to limit an answer to acceptable or correct responses. The data obtained regarding the lecturers' use of convergent questions that involve an evaluation of the best answer to a question, indicated the following. Many students (40.9%, 35.7%), responded that their lecturers almost always make use of convergent

questions, whereas 31.9% and 33.7% of the students replied that their lecturers often make use of convergent questions. A few students, 22.7% and 26.5% said that their lecturers sometimes make use of these questions and only 4.5% and 4.1% felt that their lecturers very seldom make use of convergent questions in the classroom.

According to the students' responses, it seems that the majority of them on both campuses feel that their lecturers do make use of convergent questions are apparently used to enhance their critical thinking skills. The overuse of convergent questions could deprive students of opportunities to apply core critical thinking skills such as comprehension, application, analysis, synthesis and evaluation of certain subject matter which involves more than the mere recalling of facts (Cole & Chan, 1994:174; Kerry, 2002:71; Borich, 2004:25-26) (*cf*. 3.3). However, some students seemingly do not support this viewpoint, which could imply that some lecturers do not frequently make use of convergent questions.

Students need to recall information that they have learned in order to explain what it means, and calls for lower order questions (memory questions) that focus on the recall of facts and specifics (Cole & Chan, 1994:174, 176-179; Kerry, 2002:71; Borich, 2004:25, 26) (*cf*. 3.3).

The responses from the students regarding their lecturers' use of lower order questions in their classrooms highlighted the following. Some students (25.0%, 23.5%), responded that their lecturers almost always made use of lower order questions (memory questions) in their classrooms, and 43.2% and 44.9% of the students replied that their lecturers often make use of lower questions (memory questions). Only 29.5% and 29.6% said that their lecturers sometimes use lower order questions (memory questions) and only 2.3% and 2% of the students responded that that their lecturers very seldom make use of lower order questions (memory questions) in the classroom.

According to the majority of the students' responses, it could be concluded that the lecturers apparently do make frequent use of lower order questioning (memory questions) in their classrooms. Only a few students felt that their lecturers sometimes or very seldom make use of lower order questioning

(memory questions) in the classroom. This response is of concern to the researcher, and it seems as if the lecturers do not guide their students to higher levels of thinking more frequently (Kellough & Kellough, 2007:89) (*cf*. 3.5.6).

In response to their lecturers' use of contextuality explicit questions, the following information was derived. Many students (68.2%, 53.1%) responded that their lecturers almost always make use of contextuality explicit questions. Only 13.6% and 21.4% of the students mentioned that their lecturers often make use of these types of questions, and 18.2% and 18.4% of the students replied that their lecturers sometimes make use of these types of questions. Only 7.1% of the students on Campus B viewed the use of content explicit questions as very seldom.

The researcher can conclude from the students' responses that the majority of the students from both campuses seem to feel that their lecturers frequently make use of contextuality explicit questions. Contextuality explicit questions are used when lecturers want students to derive answers form the explicit content of the lesson (Chan, 1994:176-179) (*cf*. 3.3). Students are required to provide facts related to content, which correspond with the lower order use of convergent questions (Kellough & Kellough, 2007:87-88) (*cf.* 3.3, 3.5.6). The responses confirm the apparent overemphasis on lower order, factual questions that do not nurture critical thinking.

With regard to the use of contextuality implicit questions, the majority of students from on campuses (56.7%, 35.7%) responded that their lecturers almost always make use of contextuality implicit questions, whereas 20.5% and 34.7% of the students said that their lecturers often make use of these questions. Another 20.5% and 25.5% of the students mentioned that their lecturers sometimes make use of these questions and only 2.3% and 4.1% noted that their lecturers very seldom make use of contextuality implicit questions. More students than lecturers (*cf*. 5.4.3) felt that contextuality implicit questions are frequently used in the classroom.

Borich (2004:272) (*cf*. 3.6.1) reasons that questions dealing with evaluation require from students to form their own judgements as well as to make

decisions by using subjective and objective criteria, which are important critical thinking skills.

Lecturers should encourage their students to ask questions that challenge their textbooks, the teaching process and statements made by other persons, as well as to seek supporting evidence behind given statements (Kellough & Kellough, 2007:95) (*cf*. 3.5.9). Kellough and Kellough (2007:95) argue that if students are encouraged to ask questions it will motivate the students' involvement in critical discussions and investigations.

Only 36.4% and 35.8% of the students responded that their lecturers almost always allow them to ask questions in the classroom. A few students (29.5%, 26.5%) of the students said that they are often allowed to ask questions (*cf*. 5.4.3), whereas 27.3% and 26.5% of the students responded that they are sometimes allowed to ask questions. Only 6.8% and 11.2% of the students said that they are very seldom allowed to ask questions in the classroom.

Although the majority of the students from both campuses were of the opinion that their lecturers do allow them to formulate questions in the classroom, it is disconcerting that there are lecturers who apparently do not involve their students in the formulation of their own questions.

In the light of the responses to this section of the student questionnaire, it can be concluded that the lecturers from both the campuses appear to make use of various types of questions in the EFAL classroom to some extent in order to enhance their students' critical thinking skills.

In order to provide an overview of the types of questions used the most and least frequently according to student and lecturer responses, Table 5.26 provides a summary.

Table 5.26: The ordering of question types

	Campus A		Campus B	
	Question types most frequently used		**Question types most frequently used**	
	Students	**Lecturers**	**Students**	**Lecturers**
	Questions are linked directly to the work that was done (68.2%).	Search questions (75.0%). Student formulated questions (75.0%).	Questions are linked directly to the work that was done (53.1%).	Search questions (75.0%). Student formulated questions (75.0%).
	Question types least frequently used		**Question types least frequently used**	
	Students	**Lecturers**	**Students**	**Lecturers**
	Questions that involve the recall of facts are used (25.0%).	Reverse questions (25%) Lower order questions (25%) Contextuality explicit (25%) Contextuality implicit (25%)	Questions are used that allow one single prescribed answer (21.4%).	Reverse questions (25%) Lower order questions (25%) Contextuality explicit (25%) Contextuality implicit (25%)
	Questions are used that allow one single prescribed answer (22.7%).		Lecturers direct questions to specific students in the class (18.4%).	

Table 5.26 reveals that on both campuses the lecturers most frequently made use of questions that are linked directly to the work that was done. The students on the other hand were of the opinion that search questions and student-formulated questions were the most frequently used, and therefore indicate that the lecturers did not frequently focus on the recall of facts and single answers. The researcher regards this response as positive, as the recall of facts stifle the application of critical thinking. It is however disconcerting that questions that promote the development of critical thinking skills such as, reverse and contextuality implicit questions, appear to be underutilized by the lecturers.

In the following section, the student responses to Section E, the use of questioning strategies/techniques, are discussed.

5.5.4 Student responses: Section E - Questioning strategies/techniques

The purpose of Section E was to determine how frequent and whether the lecturers from the two campuses apply different questioning strategies/techniques in the EFAL classroom.

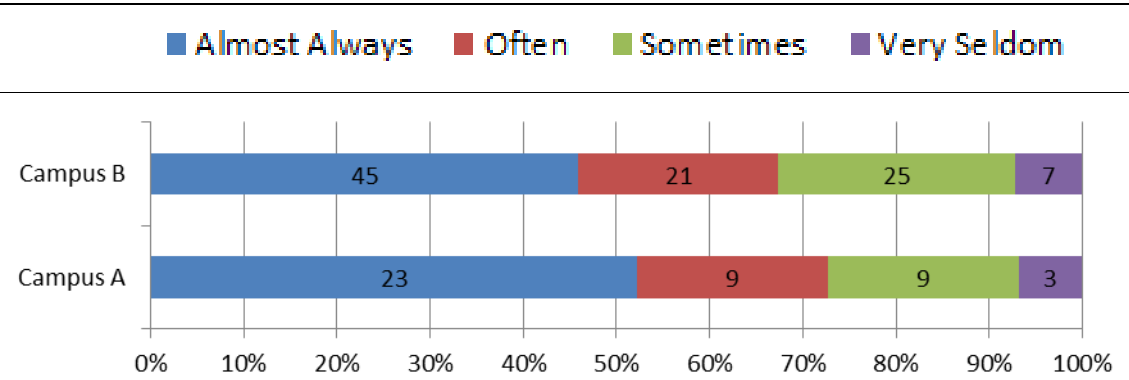
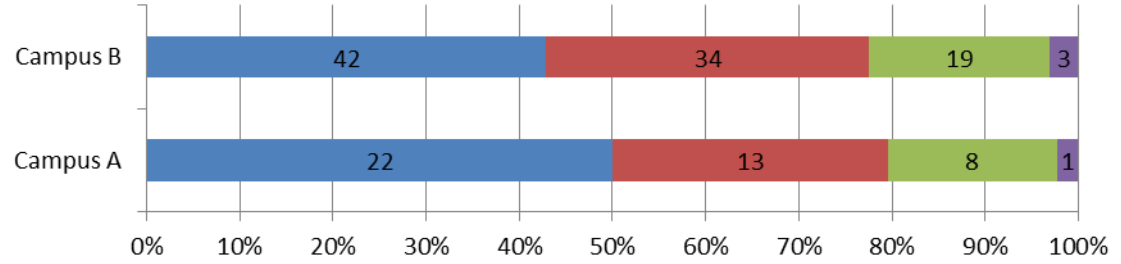
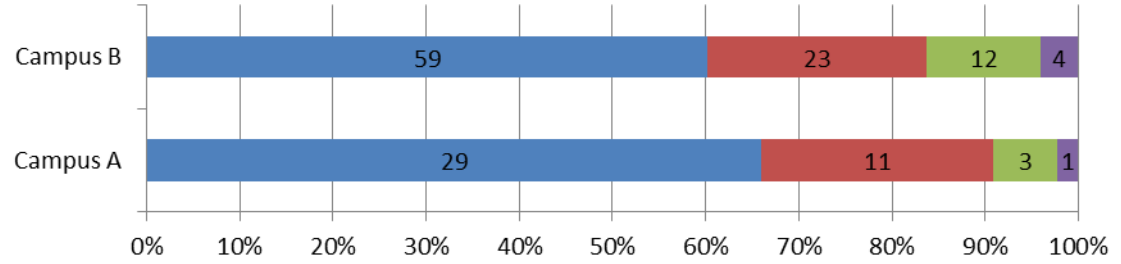
A sophisticated teaching skill that is central to the repertoire of effective teaching strategies is effective questioning, and therefore lecturers should acquire the essential skill of asking the right questions at the right time (Monyai, 2006:130) (*cf*. 3.7). It is also mentioned by Monyai (2006:130) (*cf*. 3.7) that the questions lecturers ask determine whether their students only recall memorised work, or whether they are actually thinking for themselves as well as to acquire their own insights.

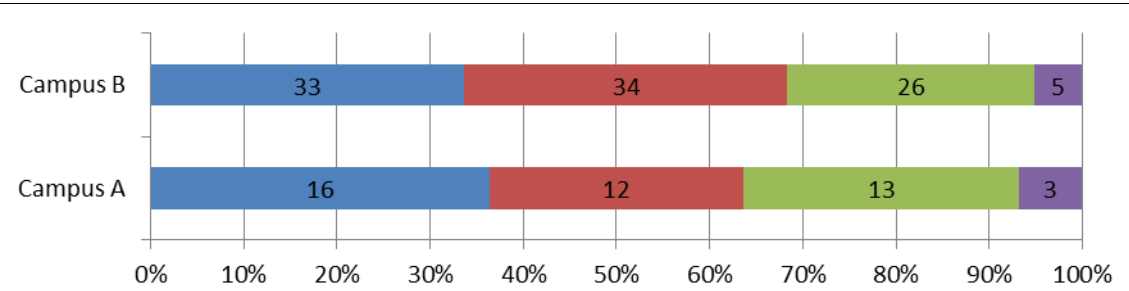
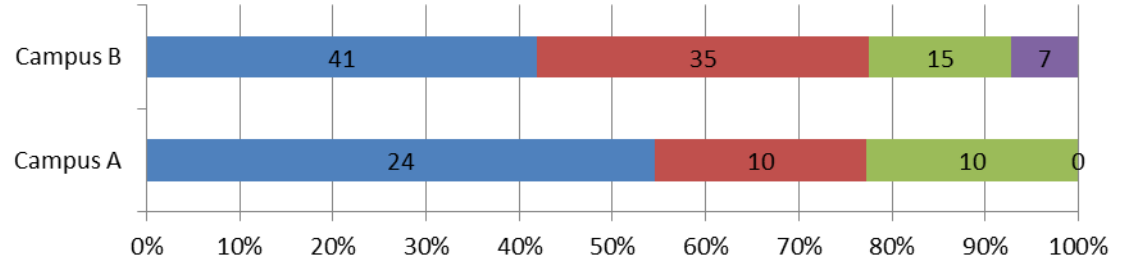
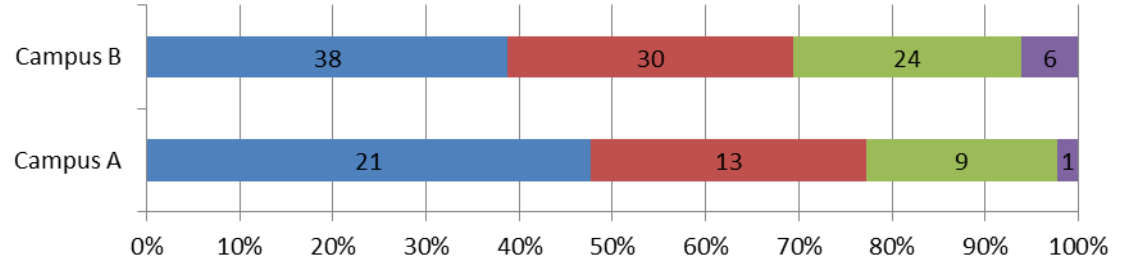
Table 5.27 classifies the responses obtained from the students.

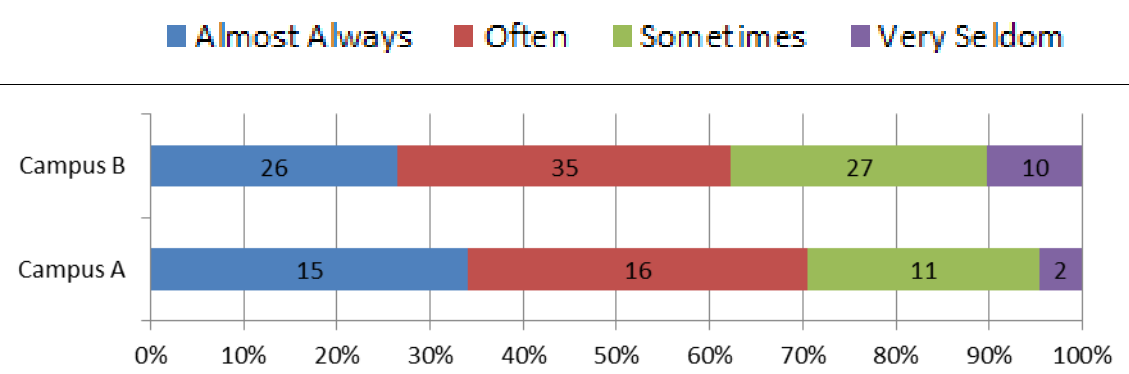
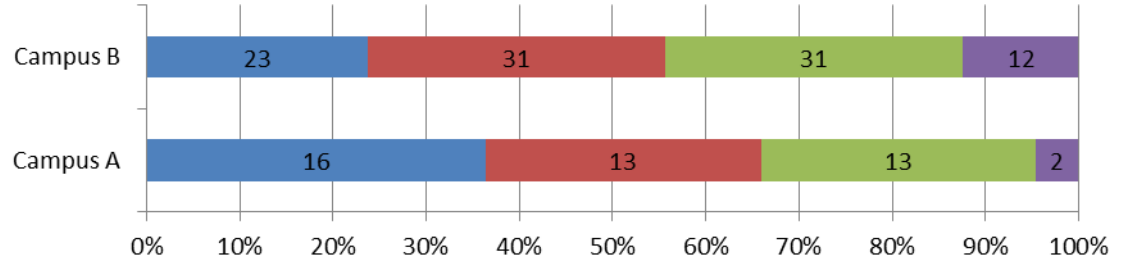
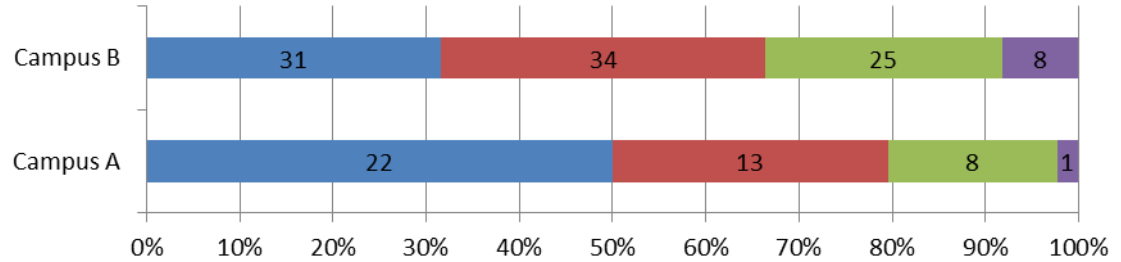
Table 5.27: Application of questioning strategies/techniques

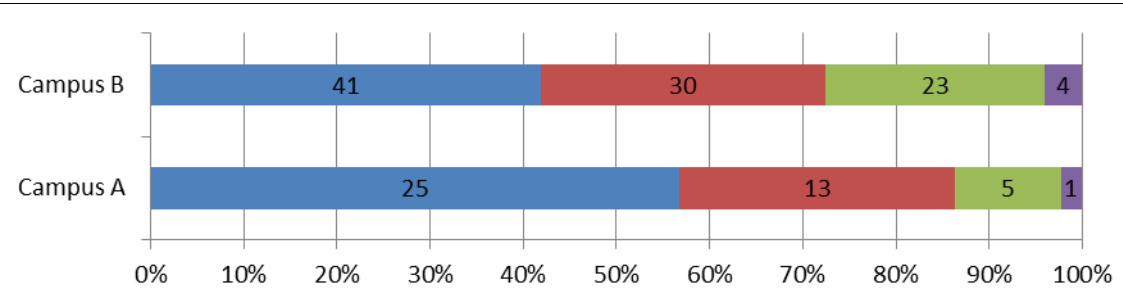
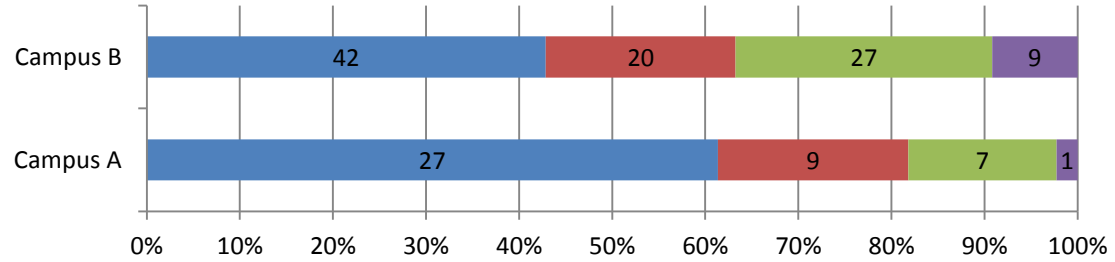
Statement	Campus A				Campus B			
	Almost always	Often	Some-times	Very seldom	Almost always	Often	Some-times	Very seldom
1. My lecturer asks questions, which give students the opportunity to explain how they feel about a specific topic.	23	9	9	3	45	21	25	7
	52.3%	20.5%	20.5%	6.7%	45.9%	21.5%	25.5%	7.1%
2. My lecturer asks questions, which give students the opportunity to explain what is wrong/incorrect in a specific section of the work.	22	13	8	1	42	34	19	3
	50.0%	29.5%	18.2%	2.3%	42.8%	34.7%	19.4%	3.1%
3. My lecturer asks questions, which encourage students to think more creatively about issues.	29	11	3	1	59	23	12	4
	65.9%	25.0%	6.8%	2.3%	60.2%	23.5%	12.2%	4.1%
4. My lecturer asks questions which expect of students to come to conclusions about specific learning content.	16	12	13	3	33	34	26	5
	36.4%	27.3%	29.5%	6.8%	33.7%	34.7%	26.5%	5.1%
5. My lecturer asks questions, which request students to provide an overview of what they have learned.	24	10	10	0	41	35	15	7
	54.6%	22.7%	22.7%	0%	41.9%	35.7%	15.3%	7.1%

	Campus A				Campus B			
Statement	**Almost always**	**Often**	**Some-times**	**Very seldom**	**Almost always**	**Often**	**Some-times**	**Very seldom**
6. My lecturer asks questions which focus on the provision of to the point facts/information.	21	13	9	1	38	30	24	6
	47.7%	29.5%	20.5%	2.3%	38.8%	30.6%	24.5%	6.1%
7. My lecturer asks questions, which request students to apply newly obtained information.	15	16	11	2	26	35	27	10
	34.1%	36.4%	25.0%	4.5%	26.5%	35.7%	27.6%	10.2%
8. My lecturer asks questions, which probe students to analyse work content.	16	13	13	2	23	31	31	12
	36.5%	29.5%	29.5%	4.5%	23.7%	31.6%	31.6%	12.3%
9. My lecturer asks questions, which request students to evaluate the solutions to problems they have come up with.	22	13	8	1	31	34	25	8
	50.0%	29.5%	18.2%	2.3%	31.6%	34.7%	25.5%	8.2%
10. My lecturer asks questions, which allow students to generate new ways of thinking about things.	25	13	5	1	41	30	23	4
	56.8%	29.5%	11.4%	2.3%	41.8%	30.6%	23.5%	4.1%
11. My lecturer asks questions, which expect students to summarise content in their own words.	27	9	7	1	42	20	27	9
	61.3%	20.5%	15.9%	2.3%	42.8%	20.4%	27.6%	9.2%

Explain feelings	
Explain incorrectness	
Encourage creative thinking	

Reach conclusions	
Provide overview	
Provide facts	

Allow questions	
Probe analysis	
Evaluate solutions	

Generate new ways	
Summarise content	

Many students (52.3%, 45.9%) responded that their lecturers almost always ask them questions which give them an opportunity to explain how the feel about a specific topic. Only 20.5% and 21.5% of the students said that their lecturers often provide them with such opportunities. Another 20.5% and 25.5% responded that their lecturers often provide them with these types of opportunities, and only 6.7% and 7.1% felt that their lecturers very seldom ask them questions that provide them with the opportunity to explain how they feel about a specific topic.

From the students' responses, it is clear that the majority of them on both campuses feel that their lecturers ask them questions that provide them with opportunities to explain how they feel about a specific topic in the classroom. However, many students appeared not to share this view, and did not support the literature. Wright (2009:42) (*cf*. 1.1) explains that in order to test understanding among learners, lecturers should use questioning, and that students' emotions and feelings should be allowed as inputs in their thinking processes, or they will lurk in the background and affect the rest of their thinking (De Bono, 1985:56) (*cf.* 3.6.2).

The majority of the students (50.0%, 42.8%) responded that their lecturers almost always provide them with opportunities to explain what is wrong/incorrect in a specific section of the work. Only 29.5% and 34.7% mentioned that their lecturers often provide them with such opportunities, and 18.2% and 19.4% said that their lecturers sometimes provide them with such opportunities. Only 2.3% and 3.1% noted that their lecturers very seldom provide them with opportunities in the classroom to explain what is wrong/incorrect in a specific section of the work.

In support of the literature, it can be concluded that the majority of the students are apparently provided with the opportunity to explain what is wrong/incorrect in a specific section of the work they are covering in the classroom. The literature suggests that lecturers need to teach their students how to evaluate (judge) certain subject matter in order to assess the credibility of statements which ultimately depicts one's perceptions, experiences and judgements in a specific situation (Facione, 2009:6) (*cf*. 2.3.1.1). Even though

the majority of the students responded that their lecturers give them an opportunity to explain wrong/incorrect about a specific topic in the classroom, many students do not share this view. It therefore sees that there are lecturers who do not involve all of their students in evaluation activities that are required for the development of critical thinking.

Many students (65.9%, 60.2%) responded that they are almost always allowed to think creatively about solutions and explanations in the classroom. Another 25.0% and 23.5% said that they are often allowed to think creatively. Only 6.8% and 12.2% mentioned that they are sometimes allowed to think creatively, and 2.3% and 4.1% of the students felt they are very seldom provided with an opportunity to think creatively in the classroom.

Since the majority of the students from both campuses felt that their lecturers almost always or often make use of questions which allow them to think creatively about possible solutions and explanations to problems and phenomena, the researcher argues that it appears that the lecturers' questioning is in line with what the literature reveals. According to the literature, lecturers should make use of open questions which stress creative thinking, that allows for a wide range of acceptable responses and provide more opportunities for critical thinking (Cole & Chan, 1994:176; Kerry, 2002:7; Dymoke & Harrison, 2008: 134) (*cf*. 3.3).

Only 36.4% and 33.7% of the students responded that their lecturers almost always expect of them to come up with conclusions about specific learning content. Some students, 27.3% and 34.7% said that their lecturers often expect of them to draw conclusions, 29.5% and 26.5% mentioned that their lecturers sometimes ask them to come up with conclusions. Only 6.8% and 5.1% were of the opinion that their lecturers very seldom ask them to come up with conclusions about specific learning content.

Based on the responses it appears that some lecturers make use of pivotal questions to provide their students with opportunities to come to conclusions about specific learning content. Pivotal questions are important for enhancing critical thinking as they direct thoughts to different topics that ultimately form a

a connected series of thoughts that lead to a conclusion (Shipley, 1972:109; Walsh & Sattes, 2005:171) (*cf.* 3.3).

More than half of the students on Campus A (54.6%), and 41.8% on Campus B, responded that their lecturers almost always ask them questions which expect them to summarise what they have learned. A mere 22.7% and 35.7% mentioned that their lecturers often ask them to summarise. Another 22.7% and 15.3% said that their lecturers sometimes ask them to summarise what they have learned. Only 7.1% of the students on Campus B reported that they are seldom requested to provide an overview of what they have learned.

In support of the literature, the majority of the student responses from both the campuses seem to indicate that the lecturers at both campuses do use questioning for overview purposes to a certain extent. Comprehension questions are important for enhancing critical thinking skills, as they require from students to indicate that they can provide an overview, summarise, explain and elaborate all the facts that they have learned (Borich, 2004:268) (*cf*. 3.6).

Only 47.7% and 38.8% of the students responded that their lecturers almost always ask them questions which expect from them to provide to the point facts and information. Some students (29.5%, 30.6%), replied that their lecturers often ask them these types of questions, and 20.5% and 24.5% said that their lecturers sometimes ask them questions which expect of them to provide to the point facts and information. Only 2.3% and 6.1% of the students felt that their lecturers very seldom make use of these types of questions in the classroom.

It is clear from the majority of the students' responses that the lecturers on both campuses expect students to provide to the point information. The students' responses are in line with the majority of the lecturers' responses (75%), which also indicated that the lecturers almost always make use of questions which expect of students to provide to the point factual information (*cf*. 5.4.4). Lecturers should remember that the frequent use of questions that request from their students to recall certain subject matter or facts and specifics do not enhance critical thinking (Dymoke & Harrison, 2008:135) (*cf*.

3.3). What is encouraging about the responses is that there are lecturers who do not expect the recall of facts on a frequent basis. These lecturers might enhance the critical thinking skills of their students to a greater extent than the lecturers who almost always expect students to recall facts.

Only 34.1% and 26.5% of the students responded that their lecturers almost always ask them questions which request from them to apply their newly obtained knowledge. Some (36.4%, 35.7%), mentioned that their lecturers often make use of such questions, and 25.0% and 27.6% said that their lecturers sometimes make use of such questions. Only 4.5% and 10.2% felt that their lecturers very seldom ask them questions, which request of them to apply their newly obtained knowledge.

Although the majority of the students responded that their lecturers ask them to apply newly obtained knowledge, the researcher wants to point out that there are students who apparently do not share this viewpoint. In order to enhance critical thinking it is important that the lecturers have to make use of questions which deal with the application of facts to a specific problem or context which is different from the one the information was learned (Borich, 2004:269) (*cf*. 3.6.1).

The data obtained regarding the lecturers' use of questions dealing with analysis alerted the researcher to the fact that it seems as if only 36.5% and 23.7% of the students felt that their lecturers almost always make use of questions dealing with analysis. A further 29.5% and 31.6% of the students mentioned that their lecturers often make use of such questions. Another 29.5% and 31.6% of the students felt that their lecturers sometimes ask them questions which force them to think analytically, and only 4.5% and 12.3% of the students said that their lecturers very seldom ask them these types of questions.

Once again, the majority of the students from both campuses agreed that their lecturers either almost always or often make use of questions which require of them to think analytically. These responses support the viewpoint of Borich (2004:270) (*cf.* 3.6.1) who assert that questions, which deal with analysis, involve important critical thinking skills. These questions require from students

to break a problem up into smaller parts and then to draw relationships among these parts so that they can identify errors, differentiate among facts, opinions and assumptions and also to derive conclusions, draw inferences or generalisations (Borich, 2004:270) (*cf*. 3.6.1). Some of the student responses however tend to point out that the development of analytic skills through questioning, does not receive priority.

Half of the students on Campus A (50%), and only 31.6% of the students on Campus B, responded that their lecturers almost always ask them questions which deal with the evaluation of solutions to problems. Only 29.5% and 34.7% of the students said that their lecturers often make use of these questions. A further 18.2% and 25.5% noted that their lecturers sometimes use such questions and 2.3% and 8.2% responded that their lecturers very seldom use these types of questions.

According to the majority of the students' responses, it can be concluded that some lecturers enhance their students' critical thinking skills by using questions that deal with evaluation. It is however disturbing that many of the responses do not support this view. Questions that deal with evaluation promote critical thinking as evaluation questions expect students to judge information with caution (De Bono, 1985:31-32; Borich, 2004:272) (*cf.* 3.6.1, 3.6.2). The researcher is convinced that when lecturers make use of evaluation questions, that request their students to think analytically about specific problems and how to solve them effectively by means of judging all possible solutions and answers. It seems that many of the lecturers involved in the study do not yet realise the importance of evaluation questions for enhancing critical thinking skills.

Many students (56.8%, 41.8), responded that their lecturers almost always ask them questions which deal with generating new ways of thinking, and 29.5% and 30.6% students mentioned that their lecturers often make use of these questions. Only 11.4% and 23.5% of the students said that their lecturers sometimes make use of these questions, and 2.3% and 4.1% replied that their lecturer very seldom makes use of these types of questions.

The majority of the students from both campuses once again agreed that their lecturers almost always or often make use of questions that require from them to generate new ways of thinking. Therefore, the researcher concludes that it seems as if some lecturers from both campuses do enhance their students' critical thinking skills. The responses support the literature where it is argued that when lecturers apply Green Hat Thinking (De Bono, 1985:31-32) (*cf*. 3.6.2), they are actually requiring form their students to think critically about new ideas and alternatives, which may serve as possible solutions and answers to problems and questions.

More than half of the students on Campus A (61.3%), and 42.8% of the students on Campus B, responded that their lecturers almost always provide them with opportunities in which they are allowed to summarise content in their own words. Only 20.5% and 20.4% of the students felt that their lecturers often ask them to summarise content in their own words, whereas 15.9% and 27.6% said that their lecturers sometimes expect from them to summarise content in their own words. Only 2.3% and 9.2% were of the opinion that their lecturer very seldom asks them to summarise content in their own words.

The majority of the students from both campuses felt that their lecturers either almost always or often make use of questions that provide them with the opportunity to summarise content in their own words. However, some of the lecturers appear not to emphasize the summarizing of content in own words. When lecturers want to enhance their students' critical thinking skills they should make use of questions that deal with comprehension. These types of questions require that students must understand all the facts that they have memorised so that when they reply to comprehension questions they will be able to clearly indicate that they can summarise, explain and elaborate all the facts that they have learned (Borich, 2004:268) (*cf*. 3.6.1).

In the light of the responses to this section of the questionnaire, it can be assumed that many of the lecturers from both campuses apply various questioning strategies/techniques that enhance their students' critical thinking skills. A comparison of lecturer and student responses based on the

frequencies noted for the questioning strategies/techniques utilized the most and the least, are summarised in Table 5.28.

Table 5.28: The use of questioning strategies/techniques

Campus A		Campus B	
Most frequently applied questioning strategies/techniques		**Most frequently applied questioning strategies/techniques**	
Students	**Lecturers**	**Students**	**Lecturers**
Encourage students to think more creatively about issues (65.9%). Expects students to summarise content in their own words (61.4%)	Encourage students to think more creatively about issues (75.0%). Focus on the provision of to the point facts/information (75.0%). Requests students to apply newly obtained information (75.0%).	Encourage students to think more creatively about issues (60.2%).	Encourage students to think more creatively about issues (75.0%). Focus on the provision of to the point facts/information (75.0%). Requests students to apply newly obtained information (75.0%).
Least frequently applied questioning strategies/techniques		**Least frequently applied questioning strategies/techniques**	
Students	**Lecturers**	**Students**	**Lecturers**
Requests students to apply newly obtained information (34.1%). Probe students to analyse work content (36.5%).	Summarise content in own words (25%)	Requests students to apply newly obtained information (26.5%). Probe students to analyse work content (23.5%).	Summarise content in own words (25%)

According to Table 5.28, the students feel that the majority of the lecturers on both campuses seem to focus on frequently using similar questioning strategies/techniques for enhancing creative thinking, which supports the literature. De Beer & Gravett (2010:90), De Bono (1985:135) and McGregor (2007:141) (*cf.* 3.6.2) argue that the development of critical thinking skills involves generating new ways of thinking. The lecturers on both campuses support this response. In addition, Campus A lecturers apparently also focus on questions that expect of their students to summarise information, and therefore request students to provide an overview of what they have learned (Chartlrand & Rose, 2008:3; Facione, 2009:6; Sadker *et al.,* 2011:121) (*cf.* 2.3.1.1, 3.6.1), which is important for enhancing critical thinking skills. On Campus A and B, lecturers tend to favour questions that focus on factual recall and application of information. Although students need to be able at times to provide to the point facts/information (De Beer & Gravett, 2010:90) (*cf*. 3.6.2), a strong emphasis on recalling information, can stifle the development of critical thinking skills (Azmi & Harith, 2012:21; Halpern, 2007:6) (*cf.* 2.2.2.1).

The least frequently applied questioning strategies/techniques according to the students on both campuses relate mainly to the application and analysis of information. These responses do not confirm the literature. The enhancement of critical thinking skills requires that students should be probed to analyse work content (Sadker et al., 2011:112) (*cf.* 3.7.5), and apply newly obtained information (McCaslin & Hickey, 2001:133-141; Schraw & Olafson, 2003:186) (*cf*. 2.5.3).

According to the lecturers, the least frequently used questioning strategy/technique seems to relate to requesting students to summarise content in their own word. Critical thinking skills can be enhanced by engaging students in summaries of work in their own words (Sadker *et al.,* 2011:121) (*cf*. 3.6.1),

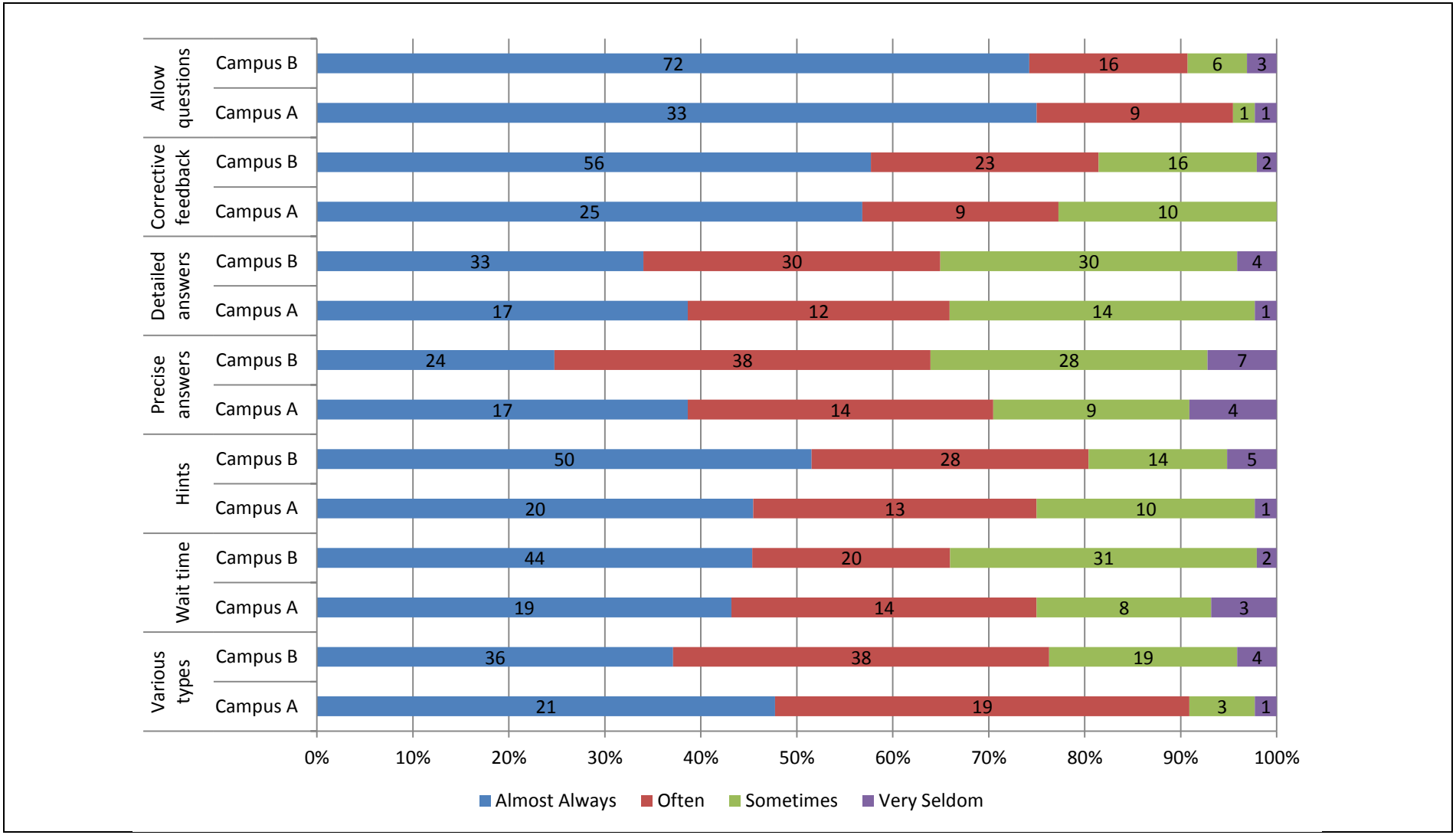
In the following section, the students' responses regarding their lecturers' use of different questioning tactics are discussed.

5.5.5 Student responses: Section F – Questioning tactics

The purpose of Section F in the student questionnaire was to focus attention on the frequency with which the lecturers utilize different questioning tactics in the EFAL classroom in order to enhance their students' critical thinking skills. Table 5.29 highlights the responses obtained from the students.

Table 5.29: Questioning tactics

	Campus A				Campus B			
Statement	**Almost always**	**Often**	**Some-times**	**Very seldom**	**Almost always**	**Often**	**Some-times**	**Very seldom**
1. My lecturer varies the types of questions that are asked in the classroom.	21	19	3	1	36	38	19	4
	47.7%	43.2%	6.8%	2.3%	37.1%	38.9%	19.6%	4.1%
2. My lecturer provides students with waiting time in order to think before they answer the questions asked.	19	14	8	3	44	20	31	2
	43.2%	31.8%	18.2%	6.8%	44.9%	21.4%	31.7%	2.0%
3. My lecturer guides students with hints in order to get the right answer.	20	13	10	1	50	28	14	5
	45.5%	29.5%	22.7%	2.3%	51.5%	28.9%	14.4%	5.2%
4. My lecturer expects precise answers from students.	17	14	9	4	24	38	28	7
	38.6%	31.8%	20.5%	9.1%	24.5%	39.8%	28.6%	7.1%
5. My lecturer requests detailed answers from students.	17	12	14	1	33	30	30	4
	38.6%	27.3%	31.8%	2.3%	34.7%	30.6%	30.6%	4.1%
6. My lecturer provides corrective feedback on the answers of students.	25	9	10	0	56	23	16	2
	56.8%	20.5%	22.7%	0%	58.1%	23.6%	16.3%	2.0%
7. My lecturer allows students to ask questions in the class.	33	9	1	1	72	16	6	3
	75.0%	20.4%	2.3%	2.3%	74.2%	16.5%	6.2%	3.1%


Allow questions
Campus B
72
16
6
3
Campus A
33
9
1
1
Corrective feedback
Campus B
56
23
16
2
Campus A
25
9
10
Detailed answers
Campus B
33
30
30
4
Campus A
17
12
14
1
Precise answers
Campus B
24
38
28
7
Campus A
17
14
9
4
Hints
Campus B
50
28
14
5
Campus A
20
13
10
1
Wait time
Campus B
44
20
31
2
Campus A
19
14
8
3
Various types
Campus B
36
38
19
4
Campus A
21
19
3
1
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Almost Always
Often
Sometimes
Very Seldom

Since questions are only as good as the answers provided to them, it is important to consider not only the types of questions that are asked by lecturers, but also the tactics employed in asking those questions (Wragg & Brown, 2001:27) (*cf*. 3.7).

The majority of the students (47.7%, 37.1%) responded that their lecturers almost always vary the types of questions they use in the classroom, whereas 43.2% and 38.2% replied that their lecturers often vary the types of questions they use in the classroom. A mere 6.8% and 19.6% said that their lecturers sometimes vary their questioning types, and only 2.3% and 4.1% responded that their lecturer very seldom varies the questioning types he/she is using in the classroom.

According to the majority of the students from both campuses, it seems as if their lecturers do vary the types of questions they use in the classroom in order to enhance their students' critical thinking skills, and support the literature. Monyai (2006:130) (*cf.* 3.8) asserts that lecturers should ask a variety of questions that cover different levels of thinking (*cf.* 3.6.1, 3.6.2).

In order for students to answer questions successfully, they need time to think about the answers that they want to give (Ma, 2008:97) (*cf.* 3.7.4). Most of the students (43.2% 44.9%), mentioned that their lecturers almost always provide them with wait time after asking them questions. Some of the students (31.8%, 21.4%) mentioned that their lecturers often make of use wait time in the classroom, and 18.2% and 31.7% said that their lecturers sometimes make use of wait time. Only 6.8% and 2.0% said that their lecturers very seldom make use of wait time in the classroom when they are asked to answer questions. The data reveal that the lecturers on both campuses apparently place emphasis on providing students with wait time before expecting an answer to a question. However, not all the students held this view, which could imply that some lecturers do not support what the literature reveals regarding the importance of wait time for enhancing critical thinking skills. Tobin in Wragg and Brown (2001:32) (*cf.* 3.7.4) mention that when lecturers allow their students wait time as well as to pause before providing them with feedback, more of their students will answer their questions, and

also provide longer answers and more students will ask questions in return so that they can check their understanding. Ma (2008:96) (*cf*. 3.7.4) points out that very few lecturers actually make use of wait time in their classrooms. By providing wait time, more students will ask questions in return, in order to double check their understanding, since it will give the reflective students a chance to think and answer, as well as involving the students who instantly knew what to answer (Tobin in Wragg & Brown, 2001:32 and Ma, 2008:97) (*cf*. 3.7.4). If sufficient wait time is not provided to students, they will show lower participation in the classroom (Sadker *et al*., 2011:115) (*cf*. 3.7.4), which could lead to their critical thinking skills not being enhanced (Eggen & Kauchak, 2010:230, 275-278) (*cf*. 2.4.2.3). The responses indicate that there might be some lecturers who do not allow wait time, which could hamper the development of effective critical thinking skills.

Students first answers to questions are sometimes inadequate or inappropriate, and therefore lecturers need to make use of prompts, since prompts are hints they provide to their students in order to guide them to the correct answers (Wragg & Brown, 2001:33) (*cf*. 3.7.5). Prompting improves students' critical thinking and learning by instilling behaviours in students that will encourage them to challenge basic information, use cognitive and meta-cognitive reasoning, confront discrepancies, focus on issues, peruse tentative questions and scaffold for information (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7).

Most of the students (45.5%, 51.5%) responded that their lecturers make use of prompts in the classroom in order to guide their thinking in the right direction so that they can come up with the correct answers to questions. Some students, 29.5% and 28.9% mentioned that their lecturers often make use of prompts, whereas 22.7% and 14.4% said that their lecturers sometimes make use of prompts. Only 2.3% and 5.1% felt that their lecturers very seldom make use of prompts in the classroom in order to guide their thinking towards the correct answers.

It seems as if many of the lecturers use questions that challenge students' critical thinking, as the use of prompts creates awareness to think about solutions to problems (Churches, 2010:84; Wragg & Brown, 2001:33) (*cf*. 3.5.1, 3.7.5). Paul and Elder (2007:4) (*cf.* 2.3.2) assert that critical thinking is

enhanced when problem solving abilities are practiced (Paul & Elder, 2007:4) (*cf*. 2.332).

In response to lecturers expecting precise answers from students, the following responses were obtained. Many students (38.6%, 24.5%) mentioned that their lecturers usually expect precise answers from them in the classroom. Some students (31.8%, 39.8%) noted that their lecturers often want them to provide precise answer to their questions, and 20.5% and 28.6% said that their lecturers sometimes want them to provide precise answers. A few students (9.1%, 7.1%) indicated that their lecturers very seldom ask them questions in which they are expected to provide precise answers.

In support of the literature it seems that many lecturers expect precise answers form their students that will move their students to higher order critical thinking (Sadker *et al*., 2011:112; Wragg & Brown, 2001:33) (*cf*. 3.7.5).

The data obtained in relation to the provision of detailed responses to questions, highlighted the following**.** Most of the students (38.6%, 34.7%) responded that their lecturers almost always request detailed answers of them. Some students (27.3%, 30.6%) mentioned that their lecturers often request of them to provide detailed answers to the questions that were asked, and 31.8% and 30.6% noted that their lecturers sometimes request detailed answers from them. A mere 2.3% and 4.1% felt that their lecturer very seldom requests detailed answers from him/her in the classroom.

When lecturers want their students to provide them with detailed answers, they should make use of probing in the classroom (Wragg & Brown, 2001:33) (*cf*. 3.7.5). Prompts are used to elicit clarification of students' responses. Prompts solicit new information in order to extend student responses, and direct student responses in a more productive direction so that students do not venture to other responses that are not in accordance with the questions that were asked (Borich, 2004:274-275) (*cf.* 3.7.5). Based on the responses, the researcher argues that some lecturers indeed seem to make use of prompting to elicit answers that are more detailed. The more lecturers employ prompting, as mentioned previously, they will have better opportunities to improve their students' critical thinking by instilling behaviours in their students

that will encourage them to challenge basic information, use cognitive and meta-cognitive reasoning, confront discrepancies, focus on issues, peruse tentative questions and scaffold for information (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7).

In order for lecturers to provide their students with the correct corrective feedback, they need to be able to listen carefully to the responses of their students, otherwise they will reply inappropriately to their students' answers (Wragg & Brown, 2001:34) (*cf.* 3.7.6). Careful listening will enable lecturers to prompt and probe for deeper clarification and thinking about an answer (Sadker *et al*., 2011:115) (*cf*. 3.7.6). It is for this reason that the researcher was interested in whether the lecturers do provide corrective feedback to their students' responses to questions.

The data obtained from the student responses indicated that the majority of students (56.8%, 58.1%) responded that their lecturers almost always provide them with corrective feedback after they have answered their lecturers' questions. Some students (20.5%, 23.6%) said that their lecturers often provide them with corrective feedback, and 22.7% and 16.3% felt that their lecturers sometimes provide them with corrective feedback. Only on Campus B did 2% of the students indicate that corrective feedback is very seldom provided.

It can be concluded from the majority of the students' responses that their lecturers apparently provide them with corrective feedback that directs their thinking to being more critical. However, there were students who felt that their lecturers do not make use of corrective feedback. This could imply that the lecturers provide corrective feedback to most of the students in their classrooms but not to all, thus, hampering opportunities for deeper thinking.

In order to build knowledge, stimulate thinking and spark off investigations lecturers are responsible to encourage their students to ask and formulate questions (Kellough & Kellough, 2007:95; Sadker *et al.,* 2011:138) (*cf.* 3.5.9).

The data obtained from the student responses for this section of the questionnaire made the researcher aware that most students (75.0%, 74.2%) responded that their lecturers almost always allow them to ask questions in

the classroom. Some students (20.4%, 16.5%) said that their lecturers often allow them to ask questions in the classroom. Only 2.3% and 6.2% mentioned that their lecturers only sometimes allow them to ask questions, and another 2.3% and 3.1% said that their lecturers very seldom allow them to ask questions in the classroom.

Based on the responses obtained from the majority of the students, it seems as if their lecturers do enhance their critical thinking skills by allowing them to formulate their own questions in the classroom. However, a small percentage of the students did not agree with this view. The latter view could imply that some students might be inactive respondents in the classroom who do not get the opportunities to develop their critical thinking skills through student-formulated questions. However, based on the majority response, it seems as if the lecturers do allow their students to ask questions in the classroom and in this manner enhance their students' critical thinking skills.

In summary, the tactics noted by the lecturers on both campuses that they use the most frequently, appear to be the use of corrective feedback to students, allowing students to ask questions, as well as varying the types of questions asked. The majority of the students supported the use of corrective feedback and that students are frequently allowed to ask questions. One tactic that was used the least according to the lecturers and the students on both campuses was expecting students to provide precise answers (*cf.* 5.4.5). In addition, the students on both campuses also cited that the lectures very seldom request detailed answers. Noteworthy form the responses is that in support of the literature the lecturers seemingly place strong emphasis on varying their questions (Monyai, 2006:130) (*cf.* 3.7), providing corrective feedback (Brookfield, 2012:200; Kellough & Kellough, 2007:89) (*cf.* 3.5.6), and allowing students to ask questions (Kellough & Kellough, 2007:95; Sadker *et al.,* 2011:138-139) (*cf*. 3.5.9). The aforementioned tactics are important for developing critical thinking skills.

As the researcher wished to establish if there were any differences between the student responses, she undertook a comparison of the responses.

5.6 DATA ANALYSIS AND INTERPRETATION: A COMPARISON BETWEEN THE TWO CAMPUSES

Table 5.30 presents the statistical significant differences between the responses of the students on the two campuses for Sections C, D, E and F of the questionnaire.

Table 5.30: Differences between student responses

Questionnaire section	Campus A: N = 44 Campus B: N = 98	$\bar{x}$	*S*	t-value	*p*	Cohen *d*	Effect size
C: Purposes of questioning	**Campus A** **Campus B**	1.604 1.821	0.439 0.421	2.757 2.801	0.007*	0.494	Small
D: Questioning types	**Campus A** **Campus B**	1.959 2.118	0.467 0.443	1.945 1.906	0.055*	0.340	Small
E: Application of questioning strategies/techniques	**Campus A** **Campus B**	1.768 1.984	0.506 0.511	2.343 2.334	0.021*	0.422	Small
F: Questioning tactics	**Campus A** **Campus B**	1.756 1.827	0.496 0.493	0.792 0.790	0.431	0.143	No effect
*Statistical significant difference: $p < 0.05$							

In interpreting the data in Table 5.30, the researcher wishes to indicate that it is important to note that the closer the mean is to 1, the more favourable the responses were. A mean closer to 1 indicated that the students were of the opinion that the purpose for which questioning was used, the types of questions used and the questioning strategies/techniques and tactics employed by the lecturers, frequently focused on enhancing critical thinking skills. The researcher wishes to remark that the standard deviations revealed that there was not much variability between the responses obtained from the different students.

5.6.1 Section C: Purposes of questioning

A comparison between the student responses for Section C indicated a statistical significant difference of, $p < 0.05 = 0.007$, between the students' responses regarding the purpose of questioning. The students on Campus A had a more positive view regarding their lecturers' use of questioning to enhance critical thinking skills, than the students on Campus B ($\bar{x} = 1.821$) did. The statistical significant difference had a small effect size of $d = 0.494$.

5.6.2 Section D: Question types

A comparison between the student responses for Section D indicated that there was a statistical significant difference between the students' responses regarding questioning types, $p < 0.05 = 0.055$. The Campus A students were more convinced than the Campus B students that the questioning types of their lecturers enhanced their critical thinking skills. The statistical significant difference only had a small effect size, $d = 0.340$.

5.6.3 Section E: Application of questioning strategies/techniques

A comparison between the student responses for Section E indicated that there was a statistical significant difference between the students' responses regarding questioning strategies/techniques, $p < 0.05 = 0.021$. This difference revealed a small effect size, $d = 0.422$.

5.6.4 Section F: Questioning tactics

A comparison between the student responses regarding the use of questioning tactics indicated that there was no statistical significant difference between the students' responses regarding questioning tactics, $p > 0.05 = 0.431$. This implies that the students did not have different views regarding their lecturers' use of questioning tactics. Both groups had favourable views of their lecturers' use of questioning tactics to enhance their critical thinking skills.

Based on the comparison, it is evident that the Campus A's lecturers provided more stimulation for enhancing their students' critical thinking skills through questioning than the Campus B lecturers.

In order to verify the responses obtained by the questionnaires, and to gain a deeper understanding of how the lecturers employed questioning, observations were conducted in the classrooms of the lecturers who took part in the study. The following section reports on the data analysis and interpretation for the observations.

5.7 DATA ANALYSIS AND INTERPRETATION: OBSERVATIONS

Observations are a vital tool to use in any research process since it offers the investigator an opportunity to gather live data from naturally occurring natural situations, in which the researcher directly looks at what is taking place (Cohen *et al*., 2007:396) (*cf.* 4.3.3.1).

The observations mainly focused on the use of a few questioning strategies/techniques and questioning tactics that are regarded as effective for enhancing critical thinking skills. The observations therefore correspond with Sections E and F in the questionnaire.

The researcher made use of the Six Thinking Hats of De Bono (1985:31-32) (*cf.* 3.6.2) as frame of reference for observing how the lecturers from both campuses use questioning in the classroom in order to enhance their students' critical thinking skills. The Six Thinking Hats strategy covers six

modes of thinking (De Bono, 1985:31-32) (*cf*. 3.6.2), which are important in the development of critical thinking.

In the following sections the contexts and data analyses of the observations for the lecturers are discussed in order to provide a picture of how the lecturers go about enhancing their students' critical thinking skills in a classroom situation.

5.7.1 Contexts of the observations

When a researcher engages in more than one observation, it is necessary to make use of an observation protocol on which all information noted during the observations are recorded (Creswell, 2009:181). The observation protocols consist of descriptive notes of the respondents and accounts of particular events or activities. Demographic information regarding time, place and the date of the field setting where the observations take place are also recorded on the observation protocol (Creswell, 2009:181). The researcher paid attention to the contexts, as they provided rich evidence of activities/events that stifled or enhanced critical thinking.

Detailed information regarding the observation contexts is appended in Appendix I. The following section elucidates the observation context of Lecturer 1 on Campus A.

5.7.1.1 Observation context: Lecturer 1 Campus A

The observation context below provides a synoptic view of the classroom context of Lecturer 1 at Campus A. Based on the three observations done it seemed as if this lecturer had difficulty covering the learning content that was set out for a specific period, since many of the students were constantly late for class, and some disrupted the teaching and learning process by engaging in small talk with their friends. However, Lecturer 1 had a very creative style of teaching and wanted her students to explore their thoughts and ideas. She constantly motivated them to participate and to work harder, by using a wide variety of learning content in order to enhance the students' understanding of the poems that were discussed in the classroom. Irrespective of the bad

behaviour of the students, Lecturer 1 tried to make use of the following to enhancef critical thinking skills in her classroom:

- she encouraged the students to actively participate in the classroom activities (Eggen & Kauchak, 2010:275-278) (*cf*. 2.4.2.3);
- she motivated her students to think (Sadker *et al*., 2011:138) (*cf*. 3.5.9);
- she provided detailed explanations regarding the work content (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7);
- she allowed her students to answer questions (Kerry, 1998:18; Kerry, 2002:79; Nowlan, 1990:30) (*cf*. 3.5.4);
- she made use of memory questions in order to do revision and reflect on the work (Cole & Chan, 1994:176-179) (*cf*. 3.3); and
- she made use of Red Hat Thinking questions in order to have her students express their feelings regarding the work content (De Beer & Gravett, 2010:90; De Bono, 1985:56; Johnston *et al*., 2001:19-25) (*cf*. 2.5.3; 3.6.2).

The relationship between Lecturer 1 and the students was not that good. The students had a tendency to disrupt the teaching of the lecturer. The researcher is of opinion that although the lecturer is good at teaching, it will not be easy to enhance the students' critical thinking skills, because most students are not interested in what is being taught and make it impossible for the few students who are motivated to learn something.

The students constantly made unnecessary comments, did not participate in learning activities and made fun and jokes about the learning content. The students were in general very lazy and they frequently steered the topic of discussion off course by arguing and joking with the lecturer.

The following section reports on the observational context and data obtained for Lecturer 2 at Campus A.

5.7.1.2 Observation context: Lecturer 2 Campus A

The researcher wants to point out that due to time and logistical constraints, only two observations were possible with Lecturer 2 from Campus A, because

of scheduled tests and college holidays that interfered with the scheduled observations.

This lecturer was very involved in what was happening in his classroom. He was observed as an extremely enthusiastic lecturer who has a passion for teaching. His students were also very active respondents in the classroom situation. One thing that particularly stood out was the lecturer's use of wait time in the classroom after he posed questions to the students. Lecturer 2's style of teaching and frequent utilisation of open questions were sure signs that he was busy enhancing his students' critical thinking skills (Borich, 2004:258) (*cf*. 3.4.1).

During both observations, no evidence was provided that could indicate any behaviour or actions that could stifle the enhancing of critical thinking skills in this lecturer's classroom. Lecturer 2 enhanced the students' critical thinking skills in his classroom in the following ways:

- he involved his students in the learning content so that they can actively participated (Eggen & Kauchack, 2010:275-278) (*cf*. 2.4.2.3);
- he motivated his students to think critically (Sadker *et al*., 2011:138) (*cf*. 3.5.9);
- he furthered communication in his classroom (Dymoke & Harrison, 2008:134; Paul & Elder, 2007:4) (*cf*. 2.3.3; 3.2);
- he allowed students to explain their own viewpoints and provide their own examples (Adams, 2002:163; Ruggiero, 2004:63) (*cf*. 2.4.2.10);
- he provided detailed explanations of the learning content to his students (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7);
- he allowed his students to answer questions and he also asked different questions to different students (Kerry, 1998:18; Kerry, 2002:79; Nowlan, 1990:79) (*cf*. 3.5.4),
- he made use of reverse questions to stimulate their thinking (Davies, 1981:170) (*cf*. 3.3); and

- he asked his students to critically reflect on the work they did in class (Costa & Kallick, 2009:15-41; Facione, 2000:62; Facione, 2009:10; Lai, 2011:10; McGregor, 2007:172) (*cf*. 2.2.2.1; 2.3; 2.3.1.2).

The following sections summarise the observation contexts of the lecturers on Campus B.

5.7.1.3 Observation context: Lecturer 1 Campus B

The researcher wants to point out that due to time constraints, only one observation was possible, since scheduled tests, meetings, and college holidays interfered with the scheduled observations.

Based on the one observation done with Lecturer 1 from Campus B, it was evident that she was a very dedicated lecturer who only had her students' best interests at heart. She had a great appreciation for the enhancing of her students' critical thinking skills, and therefore utilised various questioning strategies/techniques together with wait time in order to enhance her students' critical thinking skills even further.

Lecturer 1 enhanced her students' critical thinking skills in her classroom in the following ways:

- she urged them to actively participate in the classroom (Eggen & Kaucahk, 2010:275-278) (*cf*. 2.4.2.3);
- she communicated with her students (Dymoke & Harrison, 2008:134; Paul & Elder, 2007:4) (*cf*. 2.3.3; 3.2);
- she asked her students to provide their own viewpoints (Adams, 2002:163; Ruggiero, 2004:63) (*cf*. 2.4.2.10);
- she provided detailed explanations about the learning content (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7);
- she did revision of the learning content in which her students had to reflect on the work they did (Costa & Kallick, 2009:15-41; Facione, 2000:62; Facione, 2010:10; Lai, 2011:10; McGregor, 2007:172) (*cf*. 2.2.2.1; 2.3; 2.3.2.1);

- she provided her students with wait time after she asked questions (Ma, 2008:97; Sadker *et al*., 2011:115; Tobin cited by Wragg & Brown, 2001:32) (*cf*. 3.7.4); and
- she also distributed different questions to different students in the classroom (Wragg & Brown, 2001:31-32) (*cf*. 3.7.3).

During this one observation, the researcher and co-observer could not observe any attitude or behaviour from the lecturer's side, which would suggest that her students' critical thinking skills were not enhanced in the classroom.

5.7.1.4 Observation context: Lecturer 2 Campus B

Lecturer 2 from Campus B had difficulty in covering the learning content that was set out for a specific period. The students showed a lack of participation in the classroom, and rarely had their English files, manuals and textbooks with them in the classroom in order to work from them when the lecturer gave activities to do.

During the three observations, the observer and co-observer observed attitudes and behaviours from both the lecturer and students' side, which promoted and hampered the enhancing of critical thinking skills. Factors, which promoted the enhancement of critical thinking skills:

- during the third observation the students actively participated in the classroom activities (Eggen & Kauchak, 2010:275-278) (*cf*. 2.4.2.3);
- the lecturer motivated her students to work with her in class, she also motivated them to think (Sadker *et al*., 2011:138) (*cf*. 3.5.9);
- the students were allowed to voice their own opinions (Adams, 2002:163; Ruggiero, 2004:63) (*cf*. 2.4.2.10);
- the lecturer provided detailed explanations about the learning content (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7);
- the students were allowed to answer questions as well as to ask questions in the classroom (Kerry, 1998:18; Kerry, 2002:79; Nowlan, 1990:30) (*cf*. 3.5.4);

- the lecturer always explained to her students what was expected of them (Walker, 2003:64) (*cf*. 2.4.2.7);
- the lecturer asked the students to reflect on the work they did (Costa & Kallick, 2009:15-41; Facione, 2000:62; Facione, 2010:10; Lai, 2011:10; McGregor, 2007:172) (*cf*. 2.2.2.1; 2.3; 2.3.1.2);
- the lecturer practiced learning content with the students and asked them to repeat it at home every day (Louw & Edwards, 2003:263) (*cf*. 2.2.2.1); and
- the lecturer also made use of group work, in which the students actively participated (Booysen & Grosser, 2014:45-67) (*cf*. 2.5.2).

Factors, which hampered the enhancing of critical thinking skills:

- the lecturer mainly focused on factual knowledge (Arends, 2009:293) (*cf*. 2.5.2);
- the atmosphere in this lecturer's classroom was very tense and did not promote lecturer-student interaction and a climate/atmosphere for nurturing thinking;
- some students showed up without their English textbooks, files and manuals, making it difficult for the lecturer to do her work; and
- the students were very reluctant to cooperate with the lecturer.

The next section summarises the data obtained for the various observation sessions.

5.7.2 Observation data

The actual summary of the frequency counts for the various individual observations are appended in Appendix J. The interpretation of the data that follows in this section focuses on the averages of the frequency counts obtained for the various observations as measured by the observer and co-observer in relation to the different observation criteria.

The following guideline guided the interpretation of the observations. If a certain questioning activity was observed between 7 – 10 times during a period, it was regarded as taking place almost always; 5 – 6 times as often; 2 – 4 times as sometimes and once or never as very seldom.

The table below, Table 5.31, displays the averages for the frequency counts obtained.

Table 5.31: Averages for frequency counts for observations

Campus	Campus A	Campus A	Campus B	Campus B
Lecturer	**1**	**2**	**1**	**2**
Number of observations	3	2	1	3
1. Question that leave room for students to air their opinions (Red Hat Thinking)	5.8	6.5	9	3
Interpretation	Often	Often	Almost always	Sometimes
2. Questions that leave room for students to analyse and think (Blue Thinking)	3.1	9.5	9	3.6
Interpretation	Sometimes	Almost always	Almost always	Sometimes
3. Questions that leave room for students to come up with alternative answers (Green Hat Thinking)	2.1	6.7	2.5	0.1
Interpretation	Sometimes	Often	Sometimes	Very seldom
4. Questions that leave room for students to form own judgements (Black Hat Thinking)	2.8	9.7	6.5	0.6
Interpretation	Sometimes	Almost always	Often	Very seldom

Campus	Campus A	Campus A	Campus B	Campus B
Lecturer	**1**	**2**	**1**	**2**
5. Questions that leave room for students to think about reasons why specific ideas will work (Yellow Hat Thinking)	1.1	4	3	1.3
Interpretation	Very seldom	Sometimes	Sometimes	Very seldom
6. Questions dealing with recalling of facts (White Hat Thinking)	8	13.5	14.5	7
Interpretation	Almost always	Almost always	Almost always	Almost always
7. Providing enough wait time to think	5.5	20.2	19	10.6
Interpretation	Often	Almost always	Almost always	Almost always
8. Lecturer answers all questions	8.6	9	5.5	6
Interpretation	Almost always	Almost always	Often	Often

*The interpretations of the average were done according to the guidelines specified in 5.7.2

An overview of the trends noted in the observations of the various lecturers in relation to the different observation criteria are provided below. The researcher acknowledges that in some instances large discrepancies occurred between the frequency counts of the observer and the co-observer, which were difficult to clarify and resolve (*cf.* Appendix J). The researcher is aware that in these instances the data cannot be regarded as reliable, and should not be taken into account to make conclusions. She however reports all the data to provide a complete and true account of what happened during the observations.

5.7.2.1 Questions that leave room for students to air their opinions (Red Hat Thinking)

Lecturers 1 and 2 from Campus A often made use of red hat thinking questions to establish conversations in their classrooms so that the students had the opportunity to air their opinions about the learning content they are covering and discussing in class. Since conversation is the main method by which people interact socially, and an important tool for enhancing critical thinking, lecturers who allow their students to engage with them in conversation through questioning, will automatically prepare the grounds for enhancing critical thinking (Kerry, 1998:15; Kerry, 2002:76-77) (*cf.* 3.5.2). Lecturer 2 was very interested in his students' opinions and thoughts. Red hat thinking has to do with feelings and emotions, and if students are not allowed to express their feelings and thoughts during thinking, it will lurk in the background and affect the rest of their thinking (De Beer & Gravett, 2010:90; De Bono, 1985:56) (*cf*. 3.6.2). The fact that Lecturer 2 converses with his students and took an interest in their feelings and thoughts concurs with what Kerry (1998:15) and Kerry (2002:76-77) (*cf*. 3.5.2) mention, namely that when lecturers establish conversations that interest students, they will find it easier to use various questioning techniques that will arouse curiosity and eventually promote learning and critical thinking. From the abovementioned discussion, it is clear that Lecturer 2 creates more opportunities to enhance the students' critical thinking skills than Lecturer 1.

During the observations in Lecturers 1 and 2's classrooms from Campus B a big difference in the use of the Red Hat Thinking was observed among thetwo

lecturers. Lecturer 1 almost always made use of Red Hat Thinking questions, and Lecturer 2 sometimes made use of it. As previously mentioned, it is important for the development of critical thinking skills that students are allowed to express their opinions and thoughts in the classroom (De Beer & Gravett, 2010:90; De Bono, 1985:56) (*cf*. 3.6.2). It became clear that Lecturer 1 made use of more opportunities to enhance the students' critical thinking skills through questions that expected students to voice their opinions, than Lecturer 2.

5.7.2.2 Questions that leave room for students to analyse and think (Blue Hat Thinking)

A difference in the use of Blue Hat Thinking questions among Lecturer 1 and 2 on Campus A was observed. Lecturer 1 sometimes made use of Blue Hat Thinking questions whereas Lecturer 2 almost always made use of these types of questions. Lecturer 2 provided more opportunities for his students to develop critical thinking skills through Blue Hat Thinking, that challenged students to do self-analysis and evaluation (De Beer & Gravett, 2010:90; De Bono, 1985:31-32; McGregor, 2007:141) (*cf.* 3.6.2).

If Blue Hat Thinking is underemphasized, it could be detrimental to the development of students' critical thinking skills, because students should be challenged to analyse problems, weigh options and look at assumptions and inferences made when making decisions (Walker, 2003:64) (*cf*. 2.4.2.7).

On Campus B, Lecturer 1 almost always made use of Blue Hat Thinking questions, whereas Lecturer 2 only sometimes made use of these questions. This implies that Lecturer 1 apparently enhanced the students' critical thinking skills with Blue Hat Thinking more regularly than Lecturer 2.

5.7.2.3 Questions that leave room for students to come up with alternative answers (Green Hat Thinking)

On Campus A, Lecturer 1 sometimes used Green Hat Thinking questions and Lecturer 2 often used these questions. It is evident that both lecturers could more frequently make use of these questions. Green hat thinking questions have to do with new ideas and new ways of looking at things, by focusing on lateral solutions, creativity and innovative, alternative suggestions (De Beer &

Gravett, 2010:90; De Bono, 1985:135; McGregor, 2007:141) (*cf.* 3.6.2). Questions dealing with **synthesis** (creating ideas) ask that students must produce something unique (Borich, 2004:271) (*cf*. 3.6.1). Synthesis questions are higher order questions that ask of students to perform original and creative thinking. It also requires students to produce original communications, to make predictions and to solve problems, which are important critical thinking skills (Sadker *et al.,* 2011:125) (*cf*. 3.6.1). Successful problem solving depends on using both critical and creative thinking skills, because creative thinking helps students to seek many possibilities to solve problems, whereas critical thinking helps them to focus their thinking (Treffinger *et al*., 2000:7-8) (*cf*. 3.6.1). It seems evident that the limited use of Green Hat Thinking might hamper the enhancement of critical thinking skills on Campus A.

On Campus B, Lecturer 1 sometimes used Green Hat Thinking, and Lecturer 2 very seldom enhanced Green Hat Thinking. Green Hat Thinking is necessary to develop critical thinking skills such as imagination and making judgements. According to the literature, these skills are, however, undervalued (Kerry, 1998:19; Kerry, 2002:80) (*cf*. 3.5.5), which confirms the observation data. Kellough and Kellough (2007:90) (*cf.* 3.5.5) explain that questions that are asked at the highest cognitive level will encourage students to think more intuitively, creatively and hypothetically, encouraging intuitive leaps. It is clear that Lecturer 1 and 2 from Campus B, seemingly undervalue the use of Green Hat Thinking questions in their classrooms. This implies that they might not enhance their students' critical thinking skills effectively.

5.7.2.4 Questions that leave room for students to form own judgements (Black Hat Thinking)

Lecturer 1 from Campus A sometimes made use of Black Hat Thinking questions, whereas Lecturer 2 almost always used these types of questions. The limited use of Black Hat Thinking questions by Lecturer 1, indicates that her students are not encouraged frequently to take caution and think logically about ideas (De Beer & Gravett, 2010:90; De Bono, 1985:80; McGregor, 2007:141) (*cf*. 3.6.2). Little emphasis on Black Hat Thinking questions can stifle the development of critical thinking skills, because Black Hat Thinking is

a very important in critical thinking since it prevents one's emotions from dominating a situation (De Beer & Gravett, 2010:90) (*cf*. 3.6.2). Lecturer 2 appears to place stronger emphasis on enhancing students' critical thinking skills through Black Hat Thinking.

Limited use of Black Hat Thinking questions was also observed in the classrooms of Lecturers 1 and 2 on Campus B. Lecturer 1 often made use of Black Hat Thinking questions, and Lecturer 2 very seldom made use of these types of questions. The limited use of Black Hat Thinking questions could hamper the development of students' critical thinking skills because students will get little exposure to applying core critical thinking skills such as making judgements and formulating decisions by using subjective and objective criteria (Borich, 2004:272; Facione, 2009:5) (*cf*. 3.6.1).

5.7.2.5 Questions that leave room for students to think about reasons why specific ideas will work (Yellow Hat Thinking)

Lecturer 1 from Campus A very seldom used Yellow Hat Thinking questions, and Lecturer 2 sometimes made use of Yellow Hat Thinking questions. Yellow hat thinking is positive thinking, which has to do with a mixture of curiosity, pleasure, greed and the desire to make things happen (De Bono, 1985:110) (*cf*. 3.6.2). Yellow hat thinking also requires from students to look at the positive aspects and to identify the value or advantages of a specific situation or proposal (De Beer & Gravett, 2010:90; McGregor, 2007:141) (*cf*. 3.6.2). The Campus A students appear not to be challenged to be curious and critical about identifying value or advantages, which hampers the development of their critical thinking skills (Ruggiero, 2004:161) (*cf*. 3.5.2).

On Campus B, Lecturer 1 sometimes and Lecturer 2 very seldom used Yellow Hat Thinking questions. Similar to their colleagues on Campus A, the limited use of these types of questions can become detrimental to the development of their students' critical thinking skills. Yellow Hat Thinking encourages curiosity and promotes problem solving skills, which are important critical thinking skills (Kerry, 1998:17; Kerry, 2002:78) (*cf*. 3.5.3).

5.7.2.6 Questions that leave room for students to recall facts and information (White Hat Thinking)

Lecturers 1 and 2 from Campus A almost always made use of White Hat questions in their classrooms. White Hat Thinking questions have to do with the recalling of facts and information and are a convenient way of asking questions (De Beer & Gravett, 2010:35; De Bono, 1985:35) (*cf*. 3.6.2). Literature indicates that not all questions being used in the classroom engage students actively in the learning process, because lecturers ask 70% - 80% of the time only questions which deal with the mere recalling of facts (Borich, 2004:259) (*cf*. 3.4.2). The literature proves to hold true for the lecturers from Campus A, as they apparently almost always used White Hat Thinking questions. This overuse of White Hat Thinking questions could hamper the development of their students' critical thinking because too much emphasis is placed on the recalling of facts and too little emphasis is placed of questions dealing with higher order thought processes such as clarifying, analysing, expanding, evaluating, generalizing and making inferences (Borich, 2004:259) (*cf*. 3.4.2).

Lecturer 1 from Campus B almost always made use of White Hat Thinking questions and Lecturer 2 often made use of these types of questions. A suitable climate for the development of critical thinking is an environment in which students are encouraged to not simply soak up the facts, but to ponder, wonder, enquire and take risks (Adams, 2002:161) (*cf*. 2.4.2.5). It seems as if both these lecturers display a fondness for using White Hat Thinking questions, which could hamper their students' critical thinking skills. The lecturers' questioning should be used to move away from focusing on learning content only, towards understanding and reasoning about the content which are essential skills for problem solving (Kerry, 1998:17; Kerry, 2002:78) (*cf*. 3.5.3).

The fact that all the lecturers seemed to favour White Hat Thinking questions above the other questions raised a concern regarding the enhancement of the students' critical thinking skills.

5.7.2.7 Providing enough wait time

Lecturer 1 from Campus A often provided wait time to her students after asking questions, whereas Lecturer 2 almost always provided wait time. The literature review pointed out that by allowing students wait time before providing them with feedback, more students will answer questions or provide longer answers, because they had time to critically reflect on their answers (Ma, 2008:97; Wragg & Brown, 2001:32) (*cf*. 3.7.4). The literature review also mentioned that if sufficient wait time is not provided to students, the teaching and learning process gets short-circuited because the lecturer will only react to the students' responses with ineffective comments and the students will show lowered participation and thinking in the classroom (Sadker *et al*., 2011:115) (*cf*. 3.7.4). From the observations done in both these lecturers' classrooms, it is evident that Lecturer 2 provides his students with more wait time than Lecturer 1, and therefore possibly more opportunities to think critically before answering.

Both lecturers from Campus B almost always provided their students with wait time after asking questions. When sufficient wait time is provided, more students will ask questions in return in order to double check their understanding because it will give the reflective students a chance to think and answer, as well as involve the students who instantly know what to answer (Wragg & Brown, 2001:32, Ma, 2008;97) (*cf*. 3.7.4). It is reasonable to assume that the two lecturers from Campus B provide sufficient wait time to their students, which will result in more effective enhancement of their critical thinking skills.

5.7.2.8 Lecturer answers all questions

Both lecturers from Campus A almost always answered the questions they asked in class themselves. The literature review points out that lecturers often ask more questions than they can answer, and sometimes they also answer their own questions. This practice does not provide students with the opportunity to come up with an answer themselves, resulting in limited student participation in the classroom and also a lower quality in the students' responses (Sadker *et al*., 2011:115; Wragg & Brown, 2001:32) (*cf*. 3.7.4).

The Campus A students might have limited opportunities available to provide their lecturers with answers because the lecturers almost always answer all the questions themselves, thus, hampering the enhancement of their students' critical thinking skills.

Although the Campus B lecturers answer their own questions to a lesser extent than the Campus A lecturers, the fact that they do answer some of their own questions might stifle the enhancement of their students' critical thinking skills (Sadker *et al*., 2011:115; Wragg & Brown, 2001:32) (*cf*. 3.7.4).

5.7.3 Summary

In summary, some of the trends noted during the observations regarding the lecturers' use of questioning strategies/techniques and tactics, included the following.

- The lecturers mostly used White Hat Thinking followed by Red, Black and Blue Thinking. The questions of the lecturers mainly focused on the recall of information and to a lesser extent, involved students in voicing their own opinion, evaluating information in terms of its negative qualities and providing overviews/summaries of information in their own words.
- The lecturers used questions that improve curiosity among students and reasoning skills (Yellow Hat Thinking) as well as creative thinking skills (Green Hat Thinking), the least.
- All the lecturers provided their students with wait time before expecting answers to questions.
- All the lecturers had a tendency to answer their own questions from time to time.

In the following section, the questionnaire and observation data are integrated.

5.8 TRIANGULATION OF QUESTIONNAIRE AND OBSERVATION DATA

This section of the chapter focuses on the integration of Section E from both the lecturer and student questionnaire data with the observations done by the

researcher and co-observer in the four lecturers' classrooms. The integration of data provides clearer understanding of the extent to which the lecturers, at both campuses, enhance their students' critical thinking skills through questioning.

5.8.1 Application of questioning strategies/techniques and tactics

As the observation focused mainly on some of the questioning strategies/techniques and tactics used by the lecturers, the comparison focuses mainly on integrating the observation data with some of the aspects mentioned in Sections E and F of the questionnaire. The strategies/techniques and tactics that were perceived to be used the most frequently by the lecturers and students according to the questionnaire, are compared to the combined averages obtained for all the observation sessions on each of the campuses, as reported in Table 5.32. Only the questionnaire statements that correspond with the observation criteria were utilised for the purpose of the comparison.

Table 5.32: Comparison: questionnaire and observation data

Questionnaire items: Section E			Observation criteria	
E1: Questions, which give students an opportunity to explain how they feel about a topic.			Questions, which leave room for students to air their own opinions about the topic, they are discussing.	
Lecturers	**Campus A students**	**Campus B students**	**Campus A lecturers**	**Campus B lecturers**
50.0%	52.3%	45.9%	6.1	6
E2: Questions, which give students the opportunity to explain what is wrong/incorrect in a specific section of the work.			Questions, which leave room for students to form own judgements.	
Lecturers	**Campus A students**	**Campus B students**	**Campus A lecturers**	**Campus B lecturers**
50.0%	50.0%	42.9%	6.2	3.5
E3: Questions, which encourage students to think more creatively about issues. E10: Questions, which allow students to generate new ways of thinking about things.			Questions, which leave room for students to come up with alternative answers to proposals on how to solve difficult work content.	
Lecturers	**Campus A students**	**Campus B students**	**Campus A lecturers**	**Campus B lecturers**
75.0% 50.0%	65.9% 56.8%	60.2% 41.8%	4.4	1.3
E4: Questions which expect students to come to conclusions about specific learning content.			Questions, which leave room for students to analyse and think.	

Questionnaire items: Section E			Observation criteria	
E5: Questions, which request students to provide an overview of what, they have learned. E11: Questions which expect students to summarise content in their own words.				
Lecturers	**Campus A students**	**Campus B students**	**Campus A lecturers**	**Campus B lecturers**
50.0% 25% 25%	36.4% 54.5% 41.8%	33.7% 61.4% 42.9%	6.3	6.3
E6: Questions, which focus on the provision of to the point facts/information.			Questions, which deal with the recalling of facts and information.	
Lecturers	**Campus A students**	**Campus B students**	**Campus A lecturers**	**Campus B lecturers**
75.0%	47.7%	38.8%	10.7	10.7
F2: Questions that provide students with waiting time in order to think longer before they answer questions asked.			Wait time	
Lecturers	**Campus A students**	**Campus B students**	**Campus A lecturers**	**Campus B lecturers**
50%	43.2%	44.9%	12.8	14.8

According to the data recorded for E1, it is clear from the lecturer and student questionnaire responses indicated that the lecturers from both campuses seem to ask questions that give their students an opportunity to explain how they feel about a specific topic in the classroom, **often**. The observation data support the questionnaire data, as it was evidenced that the lecturers **often** asked students to voice their opinions.

The lecturer and student responses for E2 in the questionnaires pointed out that the lecturers **often** make use of questions that give their students the opportunity to indicate what is wrong/incorrect in a section of the work. The observation data support the questionnaire data, as it was evidenced that the lecturers **often** requested students to explain what is wrong/incorrect in a specific section of the work.

According to lecturer and student responses to section E3 in the questionnaires, it appeared that the lecturers *almost always* and **often** ask questions that encourage their students to think more creatively about issues, and allow their students to generate new ways of thinking. The observation data however, pointed out that the lecturers only **sometimes** made use of questions that promoted creative thinking among their students. Therefore, the questionnaire responses do not concur with what the observation data indicated.

Based on the responses for E4, E5 and E11, which focused on questions that allow student so analyse and think through overviews and summaries, the lecturer and student responses to the questionnaire could be interpreted that the lecturers only **sometimes** make use of questions that expect of their students to come to conclusions about specific learning content. On closer examination of the observation data, it appears that the lecturers **often** asked their students to draw conclusions. Therefore, the responses from the questionnaires once again do not concur with the data obtained from the observations.

When looking at the responses for E6 from the lecturer and student questionnaires, it seems as if the lecturers, according the students, **sometimes** asked questions that focused on the provision of to the point

facts/information. The lecturer responses however, indicated that the lecturers were of the opinion that they place a strong emphasis on recalling of information. The learner responses differ greatly from the data obtained through observations, which highlighted that the lecturers **almost always** ask their students questions which focus on to the point facts/information. The observation data concur with the lecturer responses to the questionnaire.

Regarding the provision of wait time before expecting answers from students, the lecturer and student responses to the questionnaire indicated that wait time is **sometimes** provided to students. In contrast, the observation data revealed that wait time receives priority in the lecturers' classrooms, and is provided very **frequently.**

5.9 CHAPTER SUMMARY

This chapter highlighted the data obtained from the lecturers' and students' responses for each section of the completed questionnaires, as well as the observations done in each lecturer's classroom.

All four lecturers showed a fair but limited understanding (*cf.* 5.4.1) of the cognitive skills and strategies induced in critical thinking (Facione, 2009:5) (cf. 2.3.1.1). The responses did not indicate any awareness that critical thinking also involves the development of dispositions for critical thinking (Facione, 2009:10; Lai, 2011:10) (*cf.* 2.3.1.2).

It appeared as if the lecturers understand the importance of enhancing critical thinking skills in the classroom (*cf.* 5.4.1) to solve problems, to apply knowledge and to become independent and open-minded thinkers (Adams, 2002:163; Brookfield, 2012: 200; Kellough & Kellough, 2007:89 Paul & Elder, 2005:19; Woolfolk, 2010:279) (*cf.* 2.2.2.2, 2.4.2.10, 3.5.6).

All four lecturers showed a fair but not comprehensive understanding regarding how to develop critical thinking skills among students (*cf.* 5.4.1 by: simplifying learning material (Taba in Wragg & Brown, 2001:37) (*cf.* 3.8.7), using questions that challenge students (Kerry, 2002:79) (*cf.* 3.5.4) , using questions that request students to apply knowledge (Borich, 2004:269) (*cf*.

3.6.1) and participation in evaluation activities (Sadker et al., 2011:115) (*cf.* 3.7.4).

The responses obtained from the lecturers (*cf.* 5.4.2) and students (*cf.* 5.5.2) support the purpose of questioning for developing the following important skills and dispositions that are required for effective critical thinking, namely curiosity (Kerry, 2002:76-77; Tomlinson, 2011:168) (*cf.* 3.5.2), involvement in learning (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7), understanding learning content (Borich, 2004:269) (*cf.* 3.6.1), revising work through reflection (Brookfield, 2012:200; Dymoke & Harrison, 2008:134) (*cf*. 3.5.6; 3.2), to promote communication of information (Churches , 2010:84) (*cf.* 3.5.1), to voice opinions (Kerry, 1998:15; Kerry, 2002:76-77) (*cf.* 3.5.2), and to come up with original answers (Kellough & Kellough, 2007:90) (*cf.* 3.5.5) Question types such as reversed and contextuality implicit questions that are ideal for enhancing critical thinking appear not to be used frequently. However, search questions and open questions that are important for enhancing critical thinking appeared to receive attention in the classrooms of the lecturers who took part in the study to some extent.

The lecturers (*cf*. 5.4.3) most frequently made use of questions that are linked directly to the work that was done (*cf.* 5.4.3). The students on the other hand were of the opinion that search questions and student-formulated questions were the most frequently used. According to the students (*cf.* 5.5.3), questions that focused on recall of facts and single answers were not used frequently. It is disconcerting that questions that promoted the development of critical thinking skills such as, reverse and contextuality implicit questions, appeared to be underutilized by the lecturers.

The majority of the lecturers on both campuses seemed to focus frequently on using questioning strategies/techniques for enhancing creative thinking, which supports the literature (*cf.* 5.4.4). De Beer and Gravett (2010:90), De Bono (1985:135), McGregor (2007:141) and Woolfolk (2010:284) (*cf*. 2.2.2.2, 3.6.2) argue that the development of critical thinking skills involves generating new ways of thinking. In addition, Campus A lecturers apparently also focused on questions that expect of their students to summarise information, and therefore requested students to provide an overview of what they have

learned (Chartlrand & Rose, 2008:3; Facione, 2010:6; Sadker *et al.,* 2011:121) (*cf.* 2.3.1.1, 3.6.1). On Campus A and B, lecturers were inclined to favour questions that focus on factual recall and application of information. Although students need to be able at times to provide to the point facts/information (De Beer & Gravett, 2010:90) (*cf.* 3.6.2), a strong emphasis on recalling information, can stifle the development of critical thinking skills (Azmi & Harith, 2012:21; Halpern, 2007:6) (*cf.* 2.2.2.1).

The least frequently applied questioning strategies/techniques according to the students on both campuses related mainly to the application and analysis of information. These responses did not confirm the literature. The enhancement of critical thinking skills requires that students should be probed to analyse work content (Sadker *et al.,* 2011:112) (*cf.* 3.7.5), and apply newly obtained information (McCaslin & Hickey, 2001:133-141; Schraw & Olafson, 2003:186) (*cf.* 2.5.3).

According to the lecturers, the least frequently used questioning strategy/technique seems to relate to requesting students to summarise content in their own words. Critical thinking skills can be enhanced by engaging students in summaries of work in their own words (Sadker *et al.,* 2011:112) (*cf*. 3.7.5),

The questioning tactics noted by the lecturers on both campuses (*cf.* 5.4.5) that they use the most frequently, appear to be the use of corrective feedback to students, allowing students to ask questions, as well as varying the types of questions asked. The majority of the students supported the use of corrective feedback and that students are frequently allowed to ask questions. One tactic that was used the least according to the lecturers and the students on both campuses was expecting students to provide precise answers (*cf.* 5.4.5). In addition, the students on both campuses also cited that the lectures very seldom request detailed answers (*cf.* 5.5.5). From the responses obtained in this section, the researcher is of the opinion that the majority of the lecturers do understand that utilizing a variety of questioning tactics is beneficial for enhancing students' critical thinking skills. In support of the literature, the responses supported the fact that lecturers place strong emphasis on varying their questions (Monyai, 2006:130) (*cf.* 3.7), providing corrective feedback

(Brookfield, 2012:200; Kellough & Kellough, 2007:89) (*cf*. 3.5.6), and allowing students to ask questions (Kellough & Kellough, 2007:95; Sadker *et al.,* 2011:138-139) (*cf.* 3.5.9). The aforementioned tactics are important for developing critical thinking skills.

Based on the comparison between the student responses for the different questionnaire sections (*cf.* 5.6), it was evident that the Campus A lecturers apparently provide more opportunities for enhancing their students' critical thinking skills through questioning than the Campus B lecturers.

The students' perceptions on enhancing critical thinking skills (*cf.* 5.5.1), proved that there were still a number of students who apparently did not understand the importance of questioning for enhancing critical thinking skills.

The majority of the students' responses from both campuses indicated that they are allowed to think together with their class mates (*cf.* 5.5.1). The researcher therefore carefully concludes that their critical thinking skills are apparently enhanced to a certain extent. Group work enables students to think creatively and critically by themselves as well as together in order to come up with solutions to problems and answers to questions (Booysen & Grosser, 2014:65-67) (*cf.* 2.5.2).

Only a few students from both campuses provided a wide variety of responses, which correspond with the literature regarding the enhancing of critical thinking skills (*cf.* 5.5.1). The responses therefore did not provide sufficient evidence that the lecturers from both campuses enhanced their students' critical thinking skills effectively. Although it appeared that some lecturers asked their students to voice their own opinions, provided their students with wait time and clues (hints), asked their students questions, and expected their students to assess their own strengths and weaknesses, these actions appeared to be limited.

The observations revealed (*cf.* 5.7) that the lecturers mostly used White Hat Thinking that mainly focused on the recall of information. Questions that improve curiosity among students and reasoning skills (Yellow Hat Thinking) as well as creative thinking skills (Green Hat Thinking), were employed the least. All the lecturers provided their students with wait time before expecting

answers to questions, and demonstrated a tendency to answer their own questions from time to time..

In the following chapter, Chapter 6, the summary, findings and recommendations regarding the study are discussed.

CHAPTER 6

SUMMARY, FINDINGS AND RECOMMENDATIONS

6.1 INTRODUCTION

This study was conducted with the purpose of identifying the extent to which and how lecturers use questioning in their NQF Level 2 EFAL classrooms in order to enhance their students' critical thinking skills. The main aim and objectives that were formulated at the onset of the study are revisited in this chapter in order to determine whether they were achieved or not.

It is imperative that the literature study and the data obtained by means of two sets of questionnaires (a lecturer and student questionnaire), as well as observations, answer the problem question on which this study was based. This chapter addresses the following aspects:

- An overview of the study
- Findings from the literature review
- Findings from the empirical research
- Findings in relation to the aims of the study
- Limitations of the study
- Recommendations
- Suggestions for further research
- Contribution of the study

6.2 AN OVERVIEW OF THE STUDY

The gist of the preceding chapters are summarised in order to provide an overview of the study.

6.2.1 Chapter 1

The intended purpose of this chapter was to orientate the reader regarding the purpose statement, the aim and objectives of the study as well as the empirical research design used in the study (*cf.* 1.2, 1.4, 1.6.2.2).

The purpose statement was translated into the main aim of the study, and focused on determining the extent to which and how lecturers at the Flavius Mareka FET Colleges in the Fezile Dabi District enhance critical thinking skills among NQF level 2 EFAL students, using questioning (*cf*. 1.4).

A quantitative non-experimental, descriptive survey and observation research design was utilized for this study (*cf*. 1.6.2.2). The quantitative phase made use of two researcher constructed questionnaires that were administered to lectures and students. The questionnaires determined the lecturers' understanding of what critical thinking implies, the purpose of questioning as well as how lecturers go about enhancing their students' critical thinking skills through various questioning types, strategies/techniques and tactics (*cf*. 1.6.2.5). Observations were employed to enhance the validity of the responses to the questionnaires and to physically observe how the lecturers used questioning in a real classroom setting (*cf*. 1.6.2.3, 1.6.2.7).

The research was conducted with NQF Level 2 EFAL lecturers (n = 4) and students (n = 142) from two campuses of the same college in the Fezile Dabi District (*cf*. 1.6.2.4). Convenient, purposive sampling was used for the selection of the research respondents (*cf*. 1.6.2.4).

6.2.2 Chapter 2

This chapter focused on a conceptualization of critical thinking and its importance for EFAL students.

Critical thinking refers to the use of cognitive and metacognitive skills and strategies that enable one to focus ones thoughts and actions, make tentative decisions, as well as to compare, contrast and reconsider information in the light of what one knows, believes and has discovered (Halpern, 1999:70; Facione, 2000:62; Montgomery, 2005:7; Browne & Freeman, 2000:302; Treffinger *et al*., 2000:7; Ruggiero, 2004:159; Ten Dam & Volman, 2004:361-

362) (*cf.* 2.3). The importance of enhancing critical thinking in the EFAL classroom pointed out that each student at the end of each their school career should be able to identify and solve problems and make decisions using critical and creative thinking; collect, analyse, organise and critically evaluate information; use science and technology effectively and critically, and show responsibility towards the environment and the health of others (Department of Education, 2011:5) (*cf*. 2.4.1).

The reasons for a lack of critical thinking skills among students (*cf*. 2.6) were also explored. Existing cultural differences impact on the nature of a society and its individual's cognitive processes (DiMaggio, 1997:267, 272; Nisbett *et al*., 2001:291) (*cf*. 2.5.1). Instructional practices can enhance or stifle the development of critical thinking. Indirect instruction, independent instruction and interactive instruction that emphasise that learning should be student-centred with a high degree of student involvement (Gawe, 2006:209; Kramer, 2006:101) (*cf*. 2.5.2), promote the development of critical thinking skills. Lecturers' epistemological beliefs could hamper the development of critical thinking skills. A pure realist belief has to do with the use of direct teaching (*cf*. 2.5.2) that focused on teaching a body of pre-established knowledge actively to passive students (Schraw & Olafson, 2003:86; Weinert & Helmke, 1995) (*cf*. 2.5.3). Contextualist and relativist beliefs that focus on independent learning and active involvement during teaching and learning, and students have to apply the knowledge they have gained to solve problems (Cobern, 2000:219-246; McCaslin & Hickey, 2001:133-141; Schraw & Olafson, 2003:186) (*cf*. 2.5.3), appear to hold advantages for the development of critical thinking skills.

6.2.3 Chapter 3

This chapter focused on the purpose of using questioning and the use of different types of questions in order to enhance critical thinking skills among students in the English classroom (*cf*. 3.3). The purpose of using questioning highlighted the importance of questioning for focusing the attention of students, engaging students in comparisons and seeking clarification, motivating further inquiry and prompting students to seek for reasons or

explanations (Fisher, 2005:62) (*cf*. 3.4). All of the aforementioned activities are important for the enhancing of critical thinking skills. The researcher focused attention to the reasons for using questions in the classroom (*cf*. 3.5). The literature review pointed at the following reasons, that have a strong emphasis on the development of critical thinking:

- Questioning promotes communication between students.
- Questioning signals interest in students' ideas and thoughts.
- Questioning arouses interest and curiosity.
- Questioning encourages problem solving thinking skills.
- Questioning helps students express their knowledge verbally.
- Questioning encourages thinking aloud and the intuitive leap.
- Questioning promotes deeper thinking levels.
- Questioning helps students to learn from each other.
- Questioning monitors the levels of students' learning. (Borich, 2004:259; Dymoke & Harrison, 2008:134; Kerry, 1998:29-30; Nowlan, 1990:29-30; Wragg & Brown, 2001:7) (*cf.* 3.5).

Emphasis was also placed on the role Bloom's Taxonomy plays as a strategy/technique to develop effective questions to enhance critical thinking (Moseley *et al*., 2005:52) (*cf.* 3.6.1). A closer look at the Six Thinking Hats strategy/technique of Edward De Bono was also given, since these hats represent modes of thinking (evaluative, creative) that are central to critical thinking (De Bono, 1985:31-32) (*cf.* 3.6.2).

Focus was also placed on the different questioning tactics that enhance critical thinking, such as ensuring that the right questions are asked at the right time, providing wait time before expecting answers, that students do not only have memorise work, and that questions should encourage independent thinking (Monyai, 2006:130) (*cf*. 3.7).

Lastly, the importance of questioning in the EFAL classroom was explored. It was found that communication is an outward expression of thought and that it helps in the process of arranging thought and to link one idea to another

(Benham & Pouriran, 2009:117) (*cf.* 3.8). Therefore, lecturers should strive every day to communicate with their students by means of questioning.

6.2.4 Chapter 4

This chapter focused on a detailed explanation and motivation of the empirical research design used to investigate the research problem. Non-experimental, quantitative, descriptive survey and observation research was chosen to conduct this research (Fouché & De Vos, 2011:96; Leedy & Ormrod, 2005:179; Stiponovich & Van der Merwe, 2007:69) (*cf*. 4.3.3.1).

The researcher-constructed Likert-scale questionnaires that also comprised a few open questions that were administered to the NQF Level 2 lecturers and their students by the researcher. The questionnaires focused mainly on the lecturers' and students' understanding of critical thinking, as well as the lecturers' and students' perceptions regarding the utilisation of various questioning types, strategies/techniques and tactics in order to enhance the students' critical thinking skills. The aim of the observations by means of structured event sampling, was to observe how NQF Level 2 lecturers apply different questioning strategies/techniques and tactics in the classroom in order to enhance their students' critical thinking skills.

The observations were used to enable the researcher to gain a deeper insight and understanding of the application of questioning techniques by the lecturers who took part in the study (Nieuwenhuis, 2010b:84) (*cf*. 4.3.3.2).

6.2.5 Chapter 5

The data obtained from the researcher-constructed questionnaires and observations with the lecturers and students were analysed and interpreted in this chapter. Descriptive and inferential statistics were used to analyse the data. The main trends that emanated from the data were the following:

All four lecturers showed a fair but limited understanding of the cognitive skills and strategies induced in critical thinking (*cf.* 5.4.1).

It appeared as if the lecturers understand the importance of enhancing critical thinking skills in the classroom through problem solving and application of knowledge (*cf.* 5.4.1).

All four lecturers showed a fair but not comprehensive understanding as to how one should go about to develop critical thinking skills among students (*cf.* 5.4.1).

The responses obtained from the lecturers (*cf.* 5.4.2) and students (*cf.* 5.5.2) support the purpose of questioning for developing the following important skills and dispositions that are required for effective critical thinking, namely curiosity, involvement in learning, understanding learning content , revising work through reflection, to promote communication of information, to voice opinions and to come up with original answers. Question types such as reversed and contextuality implicit questions that are ideal for enhancing critical thinking appeared not to be used frequently. However, search questions and open questions that are important for enhancing critical thinking appeared to receive attention in the classrooms of the lecturers who took part in the study to some extent.

The lecturers (*cf*. 5.4.3) most frequently made use of questions that are linked directly to the work that was done. The students on the other hand were of the opinion that search questions and student-formulated questions were the most frequently used.

The majority of the lecturers on both campuses seemed to focus frequently on using questioning strategies/techniques for enhancing creative thinking (*cf*. 5.4.4). On Campus A and B, lecturers were inclined to favour questions that focus on factual recall and application of information. Although students need to be able at times to provide to the point facts/information (De Beer & Gravett, 2010:90) (*cf.* 3.6.2), a strong emphasis on recalling information does not promote the development of critical thinking skills (Halpern, 2007:6) (*cf.* 2.2.2.1)

The least frequently applied questioning strategies/techniques according to the students on both campuses related mainly to the application and analysis of information. According to the lecturers, the least frequently used

questioning strategy/technique seems to relate to requesting students to summarise content in their own word.

The questioning tactics noted by the lecturers on both campuses (*cf.* 5.4.5) that they use the most frequently, appear to be the use of corrective feedback to students, allowing students to ask questions, as well as varying the types of questions asked. The majority of the students supported the use of corrective feedback and that students are frequently allowed to ask questions. One tactic that was used the least according to the lecturers and the students on both campuses was expecting students to provide precise answers (*cf.* 5.4.5). In addition, the students on both campuses also cited that the lectures very seldom requested detailed answers (*cf.* 5.5.5).

Based on the comparison between the student responses for the different questionnaire sections (*cf.* 5.6), it was evident that the Campus A lecturers apparently provide more stimulation for enhancing their students' critical thinking skills through questioning than the Campus B lecturers.

The students' perceptions on enhancing critical thinking skills (*cf.* 5.5.1), proved that there were still a number of students who apparently did not understand the importance of questioning for enhancing critical thinking skills. The majority of the students' responses from both campuses indicated that they are allowed to think together with their class mates (*cf.* 5.5.1)

The observations revealed (*cf.* 5.7) that the lecturers mostly used White Hat Thinking that mainly focused on the recall of information. Questions that improves curiosity among students and reasoning skills (Yellow Hat Thinking) as well as creative thinking skills (Green Hat Thinking), were employed the least. All the lecturers provided their students with wait time before expecting answers to questions, and demonstrated a tendency to answer their own questions from time to time..

6.3 FINDINGS FROM THE LITERATURE REVIEW

A literature review that comprised two chapters was conducted to provide a description on what critical thinking is, as well as to emphasise the role questioning plays in enhancing critical thinking skills as well as the types of

questions, questioning strategies/techniques and tactics that hold advantages for developing critical thinking skills. The literature provided the basis on which the questionnaire and observations were constructed.

Chapter 2 revealed that critical thinking involves the application of cognitive and metacognitive skills and strategies such as problem solving, decision-making, conceptualisation, information processing, and reasoning (Paul & Elder, 2005:6,7 & 19; Pienaar, 2001:130; Louw & Edwards, 2003:263; Eggen & Kauchak, 2010:198; Woolfolk, 2010:38) (*cf*. 2.2.2.1, 2.2.2.2).

Other important findings that emerged from the literature review were the identification of an ideal critical thinker (*cf.* 2.3.2), as well as the core critical thinking skills such a person would possess. These core skills are analysis, evaluation, inference, explanation, self-regulation and interpretation (Facione, 2010:5) (*cf*. 2.3.1.1). The researcher specifically focused her research on determining if the core critical thinking skills are enhanced by means of questioning.

Attention was paid to the different types of questions (*cf*. 3.3) lecturers should use for the enhancing of their students' critical thinking skills. From the literature review it was concluded that questioning is an important powerful teaching tool since it plays a significant role in the development of students' ideas and understanding, and optimally enhances their critical thinking skills by creating opportunities for challenging ideas (Eggen & Kauchak, 2010:404,481; Dymoke & Harrison, 2008:134; Seker & Kömür, 20008:392; Burden & Byrd, 2010:126) (*cf.* 3.2).

By having the aforementioned clarification in mind, focus was placed on the factors to consider when asking questions, since these factors can contribute to the enhancing of critical thinking skills, such as avoiding a strong focus on the mere recall of facts (*cf*. 3.4). The literature review also pointed out nine reasons for asking questions in the classroom (*cf.* 3.5). These reasons included the use of questioning to promote communication, arouse curiosity and encourage problem solving as well as deeper thinking, which are important activities for developing critical thinking skills (Churches, 2010:84;

Kerry, 2002:76-77; Ruggiero, 2004:109; Tomlinson, 2011:168) (*cf*. 3.5.1-3.5.9).

Two important strategies that were identified in the literature review that are effective to apply for enhancing students' critical thinking skills are Bloom's Taxonomy and the Six Thinking Hats of Edward de Bono. Bloom's Taxonomy highlighted the importance of asking questions, which deal with application, analysis, evaluation, synthesis, knowledge, and comprehension (Borich, 2004:268-272) (*cf.* 3.6.1. The Six Thinking Hats strategy of De Bono (1985:31-32) (*cf.* 3.6.2) focuses on the recalling of facts and information, thinking that covers intuition, feelings and emotional views, judgements and caution, positive thinking and the reasons why something will work, creative thinking and analysis.

The types of questions, according to Benham and Pouriran (2009:118), Borich (2004:25, 26, 260, 274), Cole and Chan (1994:174, 176-179), Davies (1981:170, 188), Dymoke and Harrison (2008:134, 135), Kellough and Kellough (2007:87-88), Kerry (2002:7, 71), Ma (2008:96), Sadker *et al*. (2011:113), Shipley (1972:109), Walsh and Sattes (2005:170-171) and Wragg and Brown (2001:33) that lectures should employ to enhance critical thinking skills are:

- Open and closed questions
- Convergent and divergent questions
- Overhead and directed questions
- Relay and reverse questions
- Referential and display questions
- Pivotal and probing questions
- Focusing questions
- Higher order and lower order questions
- Product, process and opinion questions
- What, when, how, who and why questions

- Memory and search questions
- Contextuality explicit and contextuality implicit questions (*cf.* 3.3).

The researcher also paid attention to the different questioning tactics that should be used to enhance critical thinking skills. These tactics, according to Wragg and Brown (2001:27) are:

- structuring
- pitching
- directing and distributing
- pausing and pacing
- prompting and probing
- listening to replies and responding (*cf.* 3.7).

A classroom environment for teaching thinking was also investigated. Emphasis should be placed on how students learn instead of what they learn (Jacobs *et al*., 2006:46-47) (*cf*. 2.4.2.1). Factors, which contribute to a lack of critical thinking skills, include culture, instructional practices of lecturers, and lecturers' epistemological beliefs (Borich, 2004:180; DiMaggio, 1997:267) (*cf.* 2.5.1, 2.5.2).

6.4 FINDINGS FROM THE EMPIRICAL RESEARCH

The following findings are derived from the empirical research.

The data revealed that some of the lecturers put in effort to enhance the critical thinking skills of their students through the use of Red, Blue and Black Hat Thinking questions. However, a tendency to overuse White Hat Thinking was observed among all the lecturers. The classrooms that took part in the research therefore appear not to be fully constructivist in nature, and still overemphasize the acquisition of facts (Adams, 2002:160; Shostak in Cooper, 2011:91; Matlin, 2002:318) (*cf*. 2.4.2.1) instead of interaction and construction of knowledge and arguing with others to develop critical thinking skills (Adams, 2002:162; Eggen & Kauchak, 2010:419; Jacobs *et al*., 2006:15-18) (*cf*. 2.4.2.9).

Lecturers appear not make use of questions that frequently arouse students' curiosity and creativity, as Yellow Hat Thinking and Green Hat Thinking questions were used the least. Curiosity keeps students' minds dynamic and it is a valuable aid to critical thinking. In order to engage in critical problem solving, students need to be able to examine ideas from different perspectives, thus being curios and asking questions (Ruggiero, 2004:161) (*cf*. 3.5.2).

Not all classroom atmospheres appeared to be ideal for the development of students' critical thinking skills (*cf.* 5.7.3). Only two of the lecturers had more informal, relaxing classroom atmospheres that allow and encourage a diversity of opinions, inquiry and risk-taking which are important for the development of critical thinking (Adams, 2002:161; Lipman, 2003:208) (*cf*. 2.4.2.5).

All the lecturers were very well prepared for the lessons they had to present, spend the majority of the time in front of the classrooms, and answered almost all of their questions themselves (*cf.* 5.7.8.2). Lecturers play a critical role in promoting interactions among students and engaging them in the learning process (Gilles & Khan, 2009:9) (*cf*. 2.4.2.7). There exists a possibility of an overemphasis on direct instruction (Arends, 2009:293; Borich, 2004:180; Eggen & Kauchak, 2010:409) (*cf*. 2.5.2) framed within a realist epistemological belief (Schraw & Olafson, 2003:186) (*cf.* 2.5.3), that does not allow many opportunities to enhance critical thinking skills.

Although the lecturers provided their students with wait time, the researcher argues that providing wait time could take place more frequently (*cf.* 5.7.2.7). Rushing does not leave time for deliberation and reflection, which are important for effective critical thinking (Sadker *et al*., 2011:138) (*cf*. 2.4.2.8).

Based on the comparison between the student responses (*cf*. 5.6), it is evident that the Campus A lecturers provided more stimulation for enhancing their students' critical thinking skills through questioning than the Campus B lecturers. Only with regard to the use of questioning tactics, the students had similar, positive views about their lecturers' application of questioning tactics that enhance critical thinking skills.

6.5 FINDINGS IN RELATION TO THE AIM AND OBJECTIVES OF THE STUDY

The main aim of this study was to determine the extent to which and how lecturers enhance critical thinking skills using questioning in the EFAL classroom. The study aimed at obtaining information to achieve the overall aim and objectives identified at the onset of the study (*cf*. 1.3). In order to ascertain whether the aim and objectives were achieved, the researcher revisits the aim and objectives.

Objective 1: To determine which critical thinking skills need to be enhanced in the EFAL classroom at FET-level

This objective was achieved through a literature review. It was necessary to achieve this objective before any of the other objectives, since the achievement of this objective determined the focus of the study and provided the framework for the completion of the researcher-constructed questionnaires and observation schedule.

Facione (2010:4) argues that critical thinking is thinking that has a purpose. In other words, it means that critical thinking helps you to prove a point, to interpret information in context, as well as to solve a problem. In order to clarify the concept critical thinking, Facione (2010:5-8) proposes the application of six interrelated cognitive skills. These are as follow:

- Interpretations: to comprehend and express meaning.
- Analysis: to identify relationships among statements, concepts and descriptions.
- Evaluation: to assess the credibility of statements.
- Inference: to identify elements needed to draw reasonable conclusions.
- Explanation: to present in a coherent way the results of one's own reasoning.
- Self-regulation: to self-consciously monitor one's own cognitive activities.

A close examination of these skills reveals a strong link with the Taxonomy of Bloom, which is perhaps the most widely utilized source to conceptualize

cognitive targets. The revised Taxonomy consists of six levels of increasing complexity, namely remember, understand, apply, evaluate and create (Anderson *et al.,* 2001:44). These six levels of complexity can also be seen as a set of cognitive (interpret, analyse, explain) and meta-cognitive (planning, monitoring, evaluating) skills mentioned by Halpern (2007:6) and Woolfolk (2010:270) (*cf*. 1.5.1, 2.2.2.1; 2.2.3).

Objective 2: To determine how do the lecturers who teach EFAL at FET-level interpret the concept "critical thinking"

This objective was achieved by means of an empirical study in which the researcher constructed a questionnaire in order to identify what lecturers know about enhancing critical thinking in the EFAL classroom for NQF Level 2 students.

All four lecturers showed a fair but limited understanding (*cf.* 5.4.1) of the cognitive skills and strategies included in critical thinking (Facione, 2009:5) (*cf.* 2.3.1.1). The responses did not indicate any awareness that critical thinking also involves the development of dispositions for critical thinking (Facione, 2009:10; Lai, 2011:10) (*cf.* 2.3.1.2). In support of the literature, the lecturers understood the importance of enhancing critical thinking skills in the classroom as being necessary to solve problems, to apply knowledge and to become independent and open-minded thinkers (Adams, 2002:163; Brookfield, 2012: 200; Kellough & Kellough, 2007:89 Paul & Elder, 2005:19; Woolfolk, 2010:279) (*cf.* 2.2.2.2, 2.4.2.10, 3.5.6).

Objective 3: To determine how do lecturers who teach EFAL at FET-level interpret the way critical thinking skills can be enhanced in the classroom

This objective was achieved by means of the responses obtained to the questionnaire items (*cf*. 5.4.1).

All four lecturers showed a limited understanding as to how one should go about enhancing critical thinking skills among students. The lecturers mentioned the following: simplifying learning material (Borich, 2004:270) (*cf.* 3.6.1), using questions that challenge students (Kerry, 2002:79) (*cf.* 3.5.4), using questions that request students to apply knowledge (Borich, 2004:269)

(*cf.* 3.6.1) and participation in evaluation activities (Sadker *et al.,* 2011:115) (*cf*. 3.7.4).

Objective 4: To establish which questioning types, strategies/techniques and tactics should be used by lecturers to enhance critical thinking skills among students in the EFAL classroom at FET-level

This objective was achieved by means of a literature review that explored the Bloom's Taxonomy, the Six Thinking Hats strategy and various questioning tactics to enhance critical thinking skills (*cf*. 3.6.1, 3.6.2, 3.7). The questions dealing with comprehension, application, analysis, synthesis, evaluation and knowledge in Bloom's Taxonomy (Borich, 2004:268-272) (*cf*. 3.6.1), and the White, Red, Black, Yellow, Green and Blue Hats of Thinking of De Bono (De Bono, 1985:35, 56, 80, 110, 135) (*cf*. 3.6.2) are valuable strategies/techniques that should be used for enhancing critical thinking skills. Questioning tactics that are effective for enhancing critical thinking skills are: structuring, pitching, directing and distributing, pausing and pacing, prompting and probing as well as listening to replies and responding (Wragg & Brown, 2001:27) (*cf*. 3.7).

Objective 5: To determine to what extent lecturers presently enhance critical thinking skills in the EFAL classroom through questioning at FET-level

This objective was achieved by integrating specific questionnaire data with the observation data (*cf*. 5.8). The data revealed the following:

- Lecturers often ask questions that request students to voice their opinions.
- Lecturers often make use of questions that give their students the opportunity to indicate what is wrong/incorrect in a section of the work.
- Although the questionnaire data indicated that lecturers often ask questions that encourage their students to think more creatively about issues, and allow their students to generate new ways of thinking. The observation data however, pointed out that the lecturers only sometimes made use of questions that promoted creative thinking among their students.

- According to the questionnaire data, the lecturers only sometimes made use of questions that expect of their students to come to conclusions about specific learning content. The observation data however indicated that the lecturers often asked their students to draw conclusions.
- The students were of the opinion that the lecturers sometimes asked questions that focused on the provision of to the point facts/information. The lecturer responses however, indicated that the lecturers were of the opinion that they place a strong emphasis on recalling of information. The observations data supported the lecturers' viewpoint that they almost always asked their students questions which focused on to the point facts/information.
- Regarding the provision of wait time before expecting answers from students, the lecturer and student responses to the questionnaire indicated that wait time is sometimes provided to students. In contrast, the observation data revealed that wait time receives priority in the lecturers' classrooms, and is provide very frequently.

Objective 6: To establish which questioning strategies/techniques and tactics lecturers apply in the EFAL classrooms to enhance critical thinking skills at FET-level.

This objective was achieved by means of the data obtained from the observations.

The data revealed that critical thinking is enhanced by the lecturers' use of Red, Blue and Black Hat Thinking questions (*cf.* 5.7.3). However, a tendency to overuse White Hat Thinking was observed among all the lecturers (*cf.* 5.7.3). Lecturers appear not make use of questions that frequently arouse students' curiosity and creativity, as Yellow Hat Thinking and Green Hat Thinking questions were used the least (*cf.* 5.7.3). Not all classroom atmospheres appeared to be ideal for the development of students' critical thinking skills. Only two of the lecturers had very calm and relaxing classroom atmospheres (*cf.* 5.7.1.1 - 5.7.1.4). All the lecturers were very well prepared for the lessons they had to present, spend the majority of the time in front of the classrooms, and answered almost all of their questions themselves (*cf.*

5.7.3, 5.7.2.8), thus hampering the critical thinking of their students. All the lecturers provided their students with wait time, but the researcher argues that frequent use of wait time should be encouraged (*cf.* 5.7.2.7).

Objective 7: To determine to what extent there is a difference in the way critical thinking skills are enhanced through questioning on Campuses A and B in the EFAL classroom.

This objective was achieved by comparing the means obtained for the different responses of the students on Campus A and B regarding the different sections in the questionnaire

Based on the comparison (*cf*. 5.6), it is evident that Campus A's lecturers provided more stimulation for enhancing their students' critical thinking skills through questioning than the Campus B lecturers. Only with regard to the use of questioning tactics the students on both campuses had fairly similar views that their lecturers frequent use of questioning tactics enhance their critical thinking skills.

Objective 8: To make recommendations to enhance critical thinking skills by means of questioning in EFAL classrooms at FET-level.

Recommendations based on the findings of the study were made and reported in section 6.7 of this chapter.

6.6 LIMITATIONS OF THE STUDY

A number of limitations were identified for the research. Bearing these limitations in mind, the researcher acknowledges that only tentative conclusions regarding the enhancing of critical thinking skills questioning in the English First Additional Language classroom can be formulated. The following limitations were identified:

- The researcher only focused on EFAL at FET Level 2. This limits the scope of the study as deeper insights into the use of questioning in different subject fields and different FET levels could have been gained by including respondents from a variety of subject fields and FET levels.

- The researcher and co-observer could observe some of the lecturers only once or twice, which resulted in limited data being collected for some of the lecturers.
- Large differences that sometimes occurred between the researcher and co-observer's interpretation for the observations made it problematic to interpret the observation data accurately. The researcher acknowledges that she and the co-observer are still novices regarding observation research.
- The current sample was bound only to a conveniently selected sample of Level 2 students at FET colleges in the Fezile Dabi district. This limits the study, because the results obtained cannot be generalised to other students from other FET colleges.

6.7 RECOMMENDATIONS

In light of the findings, the researcher recommended the following in order to enhance critical thinking skills among the students who took part in the study.

6.7.1 Recommendations: Critical thinking and questioning

The lecturers from both campuses had a limited understanding of the metacognitive skills and the dispositions involved in critical thinking (*cf.* 5.4.1). It is important that lecturers receive in-service training so that their conceptualization of the components of critical thinking can be extended. In addition, the importance of critical thinking and a deeper understanding of how to go about practically developing critical thinking skills should form part of in-service training that could be pursued in collaboration with a School of Teacher Training at a university and the Department of Education. The training could also make lecturers aware of how their epistemological beliefs towards teaching and learning can influence the way they approach teaching and learning in the classroom. It is important that lecturers realise that in order to enhance critical thinking, they need to adopt a constructivist approach to teaching and learning.

6.7.2 Recommendations: Types of questions

The lecturers from both campuses appeared to lack knowledge on how to utilise reverse and contextuality implicit questions to enhance critical thinking (*cf.* 5.4.3). Practical in-service workshops that guide lecturers in setting these types of questions could assist lecturers in extending their repertoire of types of questions that they use to enhance critical thinking.

6.7.3 Recommendations: Questioning strategies/techniques

The lecturers mainly focused on the recall of information and provided limited opportunities for students to voice their opinions, evaluate information and provide overview and summaries in their own words (*cf.* 5.7). The practical in-service workshop mentioned in 6.7.1, could model the application of a wider variety of questioning strategies/techniques to lecturers that could enhance critical thinking skills.

6.7.4 Recommendations: Questioning tactics

Although the data revealed that the lecturers do apply questioning tactics that enhance critical thinking, the lecturers should be advised that expecting students to provide precise and detailed answers are two important tactics that enhance critical thinking skills that should be employed (*cf*. 5.4.5, 5.5.5). These two tactics appeared to be underutilized in the classrooms that took part in the research.

6.8 SUGGESTIONS FOR FURTHER STUDY

This study made the researcher aware of the importance of enhancing critical thinking skills through questioning among FET Level 2 students. The following suggestions for further studies are made:

- By extending the same study across Level 2 to 4 students at other FET colleges, it would be possible to obtain findings that could be generalised.
- The same study can be done in FET classrooms across the curriculum to identify strengths and weaknesses in different lecturers' use of questioning to enhance critical thinking skills.

6.9 CONTRIBUTION OF THE STUDY

This study creates an awareness of the importance of nurturing critical thinking skills at FET-level as well as present limitations in this regard. In addition, the findings of the study could inspire lecturers to improve their classroom practice. Furthermore, the study makes recommendations to extend the current theoretical knowledge base concerning the ways in which questioning could be used to enhance critical thinking skills in EFAL classrooms at FET-level.

6.10 CONCLUSIONS

This study set out to identify the extent to which and how lecturers enhance their students' critical thinking skills using questioning in the EFAL classroom. The findings revealed that critical thinking skills are enhanced and developed to a certain extent. However, a strong focus on the recall of information and the limited application of questioning strategies/techniques that enhance creative thinking skills and allowing students to come up with new ideas and alternative answers to problems, create concern that critical thinking skills are not optimally enhanced.

If critical thinking skills are not optimally enhanced by lecturers in the EFAL classrooms, students will have difficulty in becoming independent thinkers and problem solvers who will not survive in the rapid changing world of the 21st century.

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APPENDIX A

CONSENT (COLLEGE PRINCIPAL)

Flavius Mareka
Further Education and Training College
Central Office

Embrace your Future

Inquiries: Thembi Hlekiso Matli.

29 February 2012

Prof.M.M. Grosser
North-West University
Vaal Triangle Campus
P.O.Box 117
Vanderbijlpark

Dear Sir/Madam

Med –Study: Ms N. Voschenk

Correspondence on the said matter has reference

The request in respect of the student in question has been positively considered. The student can begin processes of undertaking her research in our three campuses.

The college wishes her well in her studies.

Many thanks/Khotso

TS Letho
Director

APPENDIX B

INFORMED CONSENT (STUDENTS)

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

INFORMED CONSENT (STUDENTS)

Dear Student

I am busy with a research study for my Masters degree. I need you to participate in my study which will provide me with more information in order to complete the study. This document will provide you with information regarding the study. If you feel comfortable with the content and explanations within this document, it would be greatly appreciated if you could sign the section indicating your consent that you are willing to participate in the study.

Take note of the following before giving your consent to participate in this study:

Nationally, concerns have risen over the past few years of students at school and tertiary level who cannot think and reason critically. Since critical thinking skills are one of the Critical Outcomes needed to be achieved by each student, as pointed out in the National Curriculum Statement, it is the aim of this research project to determine the extent to which lecturers enhance critical thinking within the English First Additional Language classroom through questioning among NQF Level 2 students.

Your participation will entail the following: you will receive one questionnaire in which he/she is requested to answer the questions as honestly as possible. It will not take you longer than 20 minutes to complete the questionnaire. Completion of the questionnaire will not interfere with your academic programme. The purpose of the questionnaire is to determine your viewpoint on how teachers make of use questioning in the English First Additional Language classroom. In addition to the completion of the questionnaire, three of your lectures will observed by a co-observer and me, to obtain information on the lecturer's use of questioning. You will not be requested do anything during the observations. Please note that you may withdraw from the research project at any given time, since it is not compulsory to participate. In addition

Confidentiality:

You will complete the questionnaire anonymously, and the information that you will disclose on the questionnaires will be kept confidential by the researcher. When reporting on the information obtained, no respondent will be identified by his/her name. Codes will be used to identify respondents within the study.

The research is conducted by a Masters student, Mrs N. Volschenk, under the supervision of Prof. M.M. Grosser from the School of Educational Sciences, North-West University (Vaal Triangle Campus). If you have any queries regarding this research project, you are welcome to contact Prof. Grosser at (016) 910 3063 (at work).

Consent:

I _____ (full names) have read and understand the nature of the participation in the project, and agree that I will participate in this study.

_____ _____

Signature Date

APPENDIX C

INFORMED CONSENT (LECTURERS)

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

INFORMED CONSENT (LECTURERS)

Dear Lecturer

I am busy with a research study for my Masters degree. I need you to participate in my study which will provide me with more information in order to complete the study. This document will provide you with information regarding the study. If you feel comfortable with the content and explanations within this document, it would be greatly appreciated if you could sign the section indicating your consent that you are willing to participate in the study.

Take note of the following before giving your consent to participate in this study:

Nationally, concerns have risen over the past few years of students at school and tertiary level who cannot think and reason critically. Since critical thinking skills are one of the Critical Outcomes needed to be achieved by each student, as pointed out in the National Curriculum Statement, it is the aim of this research project to determine the extent to which lecturers enhance critical thinking within the English First Additional Language classroom through questioning among NQF Level 2 students.

Your participation will entail the following: at the onset of the study, a co-observer and I will conduct an observation in three of your English First Additional Language lectures to establish to what extent you utilize questioning to enhance critical thinking among your students. One visit will be announced and two unannounced. Before the observation, you will be requested to complete a questionnaire which aim it is to determine your perceptions regarding the enhancing of critical thinking in the English First Additional Language classroom. Please note that you may withdraw from the research project at any given time, since it is not compulsory to participate.

Confidentiality:

The information that the respondents will disclose on the questionnaires will be kept confidential by the researcher; and when reporting on the information obtained, no respondent will be identified by her name. Codes will be used to identify respondents within the study. The questionnaires will be completed anonymously, and at not stage of the research process will you or the college be identified.

The research is conducted by a Masters student, Mrs N. Volschenk, under the supervision of Prof. M.M. Grosser from the School of Educational Sciences, North-West University (Vaal Triangle Campus). If you have any queries regarding this research project, you are welcome to contact Prof. Grosser at (016) 910 3063 (at work).

Consent:

I _____ (full names) have read and understand the nature of the participation in the project, and agree that I will participate in this study.

_____ _____

Signature Date

APPENDIX D

ETHICS CLEARANCE

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT

Private Bag X6001, Potchefstroom
South Africa 2520

Tel: (018) 299-4900
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Web: http://www.nwu.ac.za

Ethics Committee
Tel +27 18 299 4850
Fax +27 18 293 5329
Email Ethics@nwu.ac.za

Dr. Mary Grosser

Dear Dr Grosser

21 Oktober 2008

ETHICS APPROVAL OF PROJECT

The North-West University Ethics Committee (NWU-EC) hereby approves your project as indicated below. This implies that the NWU-EC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

Project title: Improving the critical thinking abilities of prospective teachers

Ethics number: NWU-03838-08-S1

Approval date: 29 September 2008 **Expiry date:** 28 September 2013

Special conditions of the approval (if any): None

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- *The project leader (principle investigator) must report in the prescribed format to the NWU-EC:*
  - *annually (or as otherwise requested) on the progress of the project,*
  - *without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.*
- *The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-EC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.*
- *The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-EC and new approval received before or on the expiry date.*
- *In the interest of ethical responsibility the NWU-EC retains the right to:*
  - *request access to any information or data at any time during the course or after completion of the project;*
  - *withdraw or postpone approval if:*
    - *any unethical principles or practices of the project are revealed or suspected,*
    - *it becomes apparent that any relevant information was withheld from the NWU-EC or that information has been false or misrepresented,*
    - *the required annual report and reporting of adverse events was not done timely and accurately,*
    - *new institutional rules, national legislation or international conventions deem it necessary.*

The Ethics Committee would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the Ethics Committee for any further enquiries or requests for assistance.

Yours sincerely

Prof MMJ Lowes
(chair NWU Ethics Committee)

Prof M. Monteith
(Chairman: NWU Ethics Committee: Teaching and Learning)

(2008/10/06) Mary Grosser - Re: Fwd: GrosserM NWU 00042 08 A2.doc - Goedgekeur

From: Marietjie Halgryn
To: Mary Grosser
Date: 2008/10/06 09:21 AM
Subject: Re: Fwd: GrosserM NWU 00042 08 A2.doc - Goedgekeur

Goeiemore Mary

Aansoek NWU - 0039-08-A@
Improving the critical thinking abilities of prospective teachers.

Die aansoek is ook finaal goedgekeur. Die sertifikaat sal binnekort uitgereik word.

Hoop dit is goeie nuus.

Dankie en mooi week.

Me. H.M. Halgryn (Marietjie)
Snr Navorsingondersteuningsbeampte /
Snr Research Support Official
Institutionele Navorsingondersteuning/ Institutional Research Support
Noordwes Universiteit/North West University
018/2994852 (Tel)
018/2935331 (Faks/Fax)
marietjie.halgryn@nwu.ac.za

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>>> Mary Grosser 2008/10/03 07:21 AM >>>
Hallo Marietjie
Baie dankie hiervoor! Dis goeie nuus! Ek wil net ook graag weet wat die situasie met my ander projek is - "Improving the critical thinking abilities of prospective teachers". Ek het sover ek weet ook aan alles voldoen wat die etiekkomitee aanbeveel het, maar het nog nie finale goedkeuring ontvang nie. Dankie vir die opvolg hiervan!
Mooi dag en mooi naweek!
Mary

>>> Marietjie Halgryn 2008/09/30 09:58 AM >>>
Hello Mary

Hierdie projek van jou is ook nou finaal goedgekeur en die sertifikaat sal binnekort uitgereik word.

Die nuwe nommer is soos volg:

NWU-0042-08-A2 Die "A" status staan vir finaal goedgekeur.

Mooi week vir jou.

Me. H.M. Halgryn (Marietjie)
Snr Navorsingondersteuningsbeampte /
Snr Research Support Official
Institutionele Navorsingondersteuning/ Institutional Research Support
Noordwes Universiteit/North West University
018/2994852 (Tel)
018/2935331 (Faks/Fax)
marietjie.halgryn@nwu.ac.za

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APPENDIX E

QUESTIONNAIRE (STUDENTS)

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

QUESTIONNAIRE: STUDENTS

Dear Student

I am currently busy with my Masters Degree at the North-West University (Vaal Triangle Campus). With the completion of the questionnaire, I would like to determine whether lecturers provide opportunities for nurturing critical thinking skills through questioning during the teaching of English First Additional Language at NQF Level 3. The questionnaire will be completed anonymously and all the information will be handled with the utmost confidentiality. Please answer all the questions pertaining to the teaching in you English First Additional Language classroom as honest as possible. Your time and cooperation are greatly appreciated, thank you.

Me N.Volschenk

SECTION A BIOGRAPHICAL INFORMATION

Complete the following information about yourself by marking with an X in the appropriate block:

1	Gender	Male	Female

2	Age (in years)	Below 21	21-25	26-30	31-40	41-50	51+

3	Cultural group	Black	White	Asian	Coloured	Other

4	Number of lecturer	1	2	3

SECTION B THE STUDENTS' PERCEPTIONS OF THE ENHANCING OF CRITICAL THINKING IN THE ENGLISH FIRST ADDITIONAL LANGUAGE CLASSROOM

Provide answers to the following questions by writing down your own thoughts and opinions:

1. How important do you think it is that your lecturer provides you with work that will stimulate your thinking? Motivate your answer.
2. How important do you think it is that your lecturer guides your thinking in class by asking questions? Motivate your answer.

3. Are you allowed to think independently (on your own) while dealing with class work? Motivate your answer and explain.

4. Are you allowed to think together with your class mates while dealing with class work? Motivate your answer and explain.

5. Critical thinking refers to evaluating and judging issues in terms of their strengths and weaknesses and voicing an own opinion.

   To what extent do you think you lecturer is helping you to think more critically in the classroom? Motivate your answer.

SECTION C THE PURPOSE OF QUESTIONING IN THE ENGLISH FIRST ADDITIONAL LANGUAGE CLASSROOM

Indicate the extent to which you agree with the following statements about the use of questioning in your English First Additional Language classroom. Indicate your response by marking with an X in the applicable block.

	My lecturer uses questioning to:	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
1	Arouse curiosity among students	1	2	3	4
C2	Promote involvement in the classroom	1	2	3	4
C3	Revise work	1	2	3	4
C4	Check our understanding	1	2	3	4
C5	Promote clarification in the communication process between the lecturer and the students	1	2	3	4
C6	Promote in-depth thinking about a specific topic being discussed in the classroom	1	2	3	4
C7	Determine students' pre-knowledge	1	2	3	4
C8	Start a discussion in the classroom about a specific topic	1	2	3	4
C9	Provide students with the opportunity to think about cause and effect	1	2	3	4
C10	Create opportunities for students to provide their own opinions	1	2	3	4
C11	Encourage students to look for solutions to problems	1	2	3	4
C12	Find out how successful a lesson has been	1	2	3	4
C13	Prompt learners to come up with original answers	1	2	3	4

SECTION D QUESTIONING TYPES USED IN THE ENGLISH FIRST ADDITIONAL LANGUAGE CLASSROOM

	Please examine the following statements and indicate the frequency with which your lecturer utilizes the following questioning types in your classroom. Mark your response choice with an X on the numerical scale from 1 – 4.	**Almost always**	**Often**	**Sometimes**	**Very seldom**
D1	Questions that allow one single prescribed answer	1	2	3	4
D2	Questions that allow a wide range of acceptable answers	1	2	3	4

Please examine the following statements and indicate the frequency with which your lecturer utilizes the following questioning types in your classroom. Mark your response choice with an X on the numerical scale from 1 – 4.		Almost always	Often	Sometimes	Very seldom
D3	Questions that anyone in the class can answer	1	2	3	4
D4	Questions directed to a specific student in the class	1	2	3	4
D5	Lecturers ask learners to answer their own questions in order to think for themselves	1	2	3	4
D6	Questions that involve the evaluation of different answers and choosing the best one	1	2	3	4
D7	Questions that involve the recall of facts	1	2	3	4
D8	Questions that expect learners to search for answers on their own	1	2	3	4
D9	Questions that are linked directly to the work that was done	1	2	3	4
D10	Questions that expect of learners to interpret the content that was done in class	1	2	3	4
D11	Students are expected to formulate questions that they ask in class.	1	2	3	4

SECTION E APPLICATION OF QUESTIONING STRATEGIES/TECHNIQUES

Read the following statements and indicate the frequency in which your lecturer uses the following questioning strategies/techniques, by marking your response with an X in the applicable block.

My lecturer asks questions which.....		Almost always	Often	Sometimes	Very seldom
E1	Give students an opportunity to explain how they feel about a specific topic	1	2	3	4
E2	Give students the opportunity to explain what is wrong/incorrect in a specific section of the work	1	2	3	4
E3	Encourage students to think more creatively about issues	1	2	3	4
E4	Expect of students to come to conclusions about specific learning content	1	2	3	4
E5	Request students to provide an overview of what they have learned	1	2	3	4

My lecturer asks questions which.....		Almost always	Often	Sometimes	Very seldom
E6	Focus on the provision of to the point facts/information	1	2	3	4
E7	Request students to apply newly obtained information	1	2	3	4
E8	Probe students to analyse work content	1	2	3	4
E9	Request students to evaluate the solutions to problems they have come up with	1	2	3	4
E10	Allow students to generate new ways of thinking about things	1	2	3	4
E11	Expect students to summarise content in their own words	1	2	3	4

SECTION F QUESTIONING TACTICS

Read the following statements and indicate the frequency with which your lecturer uses the following questioning tactics during teaching by marking your choice with an X in the applicable block.

My lecturer		Almost always	Often	Sometimes	Very seldom
F1	Varies the types of questions that are asked in the classroom	1	2	3	4
F2	Provides students with waiting time in order to think before they answer the questions asked	1	2	3	4
F3	Guides students with hints in order to get to the right answer	1	2	3	4
F4	Expects precise answers from students	1	2	3	4
F5	Requests detailed answers from students	1	2	3	4
F6	Provides corrective feedback on the answers of students	1	2	3	4
F7	Allows students to ask questions in the class	1	2	3	4

Thank you!

APPENDIX F

QUESTIONNAIRE (LECTURERS)

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

QUESTIONNAIRE: LECTURERS

Dear Lecturer

I am currently busy with my Masters Degree at the North-West University (Vaal Triangle Campus). With the completion of the questionnaire I would like to determine whether lecturers provide opportunities for enhancing critical thinking skills through the use of questioning during the teaching of English First Additional Language classroom at NQF Level 3. The questionnaire will be completed anonymously and all the information will be handled with the utmost confidentiality. Please answer all the questions as honestly as possible. Your time and cooperation are greatly appreciated, thank you.

Me N.Volschenk

SECTION A BIOGRAPHICAL INFORMATION

Complete the following information about yourself by marking with an X in the appropriate block:

1	Gender	Male	Female

2	Age (in years)	21-25	26-30	31-35	36-40	41-50	51+

3	Cultural group	Black	White	Asian	Coloured	Other

4	Qualifications	M + 2	M + 3	M + 4	M + 5	M + 6	M + 7

5	Years of teaching experience	0-5	6-10	11-15	16-20	21+

6	Please specify your qualification in English

SECTION B THE LECTURERS' UNDERSTANDING OF CRITICAL THINKING

Provide answers to the following questions by writing down your own thoughts and opinions:

6. Explain in your own words your understanding of what critical thinking implies.

7. How important do you think it is to enhance critical thinking skills in the English classroom? Please motivate your answer.
8. How do you go about enhancing critical thinking skills every day in your classroom?

SECTION C THE PURPOSE OF QUESTIONING IN THE ENGLISH FIRST ADDITIONAL LANGUAGE CLASSROOM

Read the following statements and indicate the extent to which you agree with the purpose of the use of questioning. Mark your response choice with an X in the applicable block:

	Questioning should.....	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
1	Arouse curiosity among students	1	2	3	4
C2	Promote involvement in the classroom	1	2	3	4
C3	Be used to revise work	1	2	3	4
C4	Be used to check understanding	1	2	3	4
C5	Promote clarification in the communication process between the lecturer and the students	1	2	3	4

Questioning should.....		Strongly agree	Agree	Disagree	Strongly disagree
C6	Promote in-depth thinking about a specific topic being discussed in the classroom	1	2	3	4
C7	Be used to determine students' pre-knowledge	1	2	3	4
C8	Be used to start a discussion in the classroom about a specific topic	1	2	3	4
C9	Provide students with the opportunity to think about cause and effect	1	2	3	4
C10	Create opportunities for students to provide their own opinions	1	2	3	4
C11	Encourage students to look for solutions to problems	1	2	3	4
C12	Allow the lecturer to find out how successful a lesson has been	1	2	3	4
C13	Prompt students to come up with original answers	1	2	3	4

SECTION D QUESTIONINIG TYPES USED IN THE ENGLISH FIRST ADDITIONAL LANGUAGE CLASSROOM

Please see the attached Addendum (A) for detailed explanations of the concepts used in this section.

Please examine the following statements and indicate the frequency with which you utilize the following questioning types in your classroom. Mark your response choice with an X on the numerical scale from 1 – 4.		Almost always	Often	Sometimes	Very seldom
D1	Open questions (divergent)	1	2	3	4
D2	Closed questions (convergent)	1	2	3	4
D3	Overhead questions	1	2	3	4
D4	Directed questions	1	2	3	4
D5	Reverse questions	1	2	3	4
D6	High order questions	1	2	3	4
D7	Low order/memory questions	1	2	3	4
D8	Contextuality explicit questions	1	2	3	4

Please examine the following statements and indicate the frequency with which you utilize the following questioning types in your classroom. Mark your response choice with an X on the numerical scale from 1 – 4.		Almost always	Often	Sometimes	Very seldom
D9	Contextuality implicit questions	1	2	3	4
D10	Search questions	1	2	3	4
D11	Student formulated questions	1	2	3	4

SECTION E APPLICATION OF QUESTIONING STRATEGIES/ TECHNIQUES

Read the following statements and indicate the frequency with which you utilize the following questioning strategies/techniques in your classroom by marking your choice with an X in the appropriate block:

I ask questions which....		Almost always	Often	Sometimes	Very seldom
E1	Give my students an opportunity to explain how they feel about a specific topic	1	2	3	4
E2	Give my students the opportunity to explain what is wrong/incorrect in a specific section of the work	1	2	3	4
E3	Encourage my students to think more creatively about issues	1	2	3	4
E4	Expect of my students to come to conclusions about specific learning content	1	2	3	4
E5	Request my students to provide an overview of what they have learned	1	2	3	4
E6	Focus on the provision of to the point facts/information	1	2	3	4
E7	Request my students to apply newly obtained information	1	2	3	4
E8	Probe my students to analyse work content	1	2	3	4
E9	Request my students to evaluate the solutions to problems they have come up with	1	2	3	4
E10	Allow my students to generate new ways of thinking about things	1	2	3	4
E11	Expect my students to summarise content in their own words	1	2	3	4

SECTION F QUESTIONING TACTICS

Read the following statements and indicate the frequency with which you utilize the following types of questioning tactics in your classroom by marking your choice with an X in the applicable block:		Almost always	Often	Sometimes	Very seldom
F1	I vary the types of questions that I ask in the classroom	1	2	3	4
F2	I provide students with wait time in order to think before they answer the questions I ask	1	2	3	4
F3	I guide my students with hints in order to get to the right answer	1	2	3	4
F4	I expect precise answers from my students	1	2	3	4
F5	I request detailed answers from my students	1	2	3	4
F6	I provide corrective feedback on the answers of my students	1	2	3	4
F7	I allow students to ask questions in the class	1	2	3	4

Thank you!

APPENDIX G

OBSERVATION FORM

OBSERVATION FORM

CAMPUS A

Observed by: _____

Observation number: ____

Date: _____

Topic of lecture: _____

Nr	Items to be observed	Event sampling. Make a tick each time evidence is seen.
1.	The lecturer asks questions, which leave room for the students to air their opinions about the topic they are discussing in class.	
2.	The lecturer asks questions which leave for the students to analyze and think about the topic under discussion by themselves.	
3.	The lecturer asks questions, which leave room for the students to come up with alternative answers or proposals on how to solve difficult work content.	
4.	The lecturer asks questions, which leave room for the students to form their own judgments about the topic under discussion.	
5.	The lecturer asks questions, which leave room for the students to think about reasons why specific ideas will work in order to solve difficult problem content.	
6.	The lecturer asks questions that deal with the recalling of facts and information.	
7.	The lecturer provides enough waiting time to students to think about their answers after a question has been asked.	
8.	The lecturer tends to answer every question he/she asks himself/herself.	

Comments:

_____

_____

_____

_____

_____

_____

_____

OBSERVATION FORM

COMPLETED OBSERVATION FORM

OBSERVATION FORM
KROONSTAD CAMPUS

Observed by: N. Udischenk **Lecturer number:** 1
Observation number: 3 **Group number:** 1
Date: 19/5/2012
Topic of lecture: Theory -> Time Management and Goals

Nr	Items to be observed	Event sampling. Make a tick each time evidence is seen.	
1.	The lecturer asks questions, which leave room for the students to air their opinions about the topic they are discussing in class.	✓✓✓✓✓✓✓	7
2.	The lecturer asks questions which leave for the students to analyze and think about the topic under discussion by themselves.	✓✓✓	3
3.	The lecturer asks questions, which leave room for the students to come up with alternative answers or proposals on how to solve difficult work content.	✓	1
4.	The lecturer asks questions, which leave room for the students to form their own judgments about the topic under discussion.	✓✓	2
5.	The lecturer asks questions, which leave room for the students to think about reasons why specific ideas will work in order to solve difficult problem content.	✓	1
6.	The lecturer asks questions that deal with the recalling of facts and information.	✓✓✓✓✓✓✓	7
7.	The lecturer provides enough waiting time to students to think about their answers after a question has been asked.	✓✓✓✓✓✓✓	7
8.	The lecturer tends to answer every question he/she asks himself/herself.	✓✓✓✓✓	5
			21

Red
Blue
Green
Black
Yellow
White

Comments:
The lecturer allows students to air their own opinions regarding the topic of discussion. The lecturer simplifies the questions she ask because the students dont undebtand the 1st time. The lecturer explains her answer when student dont understand. The lecture allows a student air his opinion in his home language, because he does not know how to express his ideas in English. The lecture ~~dt~~ also corrects pronunciation errors.

APPENDIX H

OBSERVATION CONTEXTS

Context: Lecturer 1 (Campus A)

Context	Observation 1	Observation 2	Observation 3
Date and time	13 March 2012 12:50 – 13:45	16 March 2012 08:25 – 09:05	19 March 2012 13:45 – 14:40
Number of students	18	19	15
Classroom appearance	Very neat and tidy.	Neat and tidy, although the floor was not swept.	Very neat and tidy.
Classroom atmosphere	Some of the students seemed very enthusiastic. Some students arrived late for class, disturbing the learning process. The lecturer was aware of the students who did not want to participate in the classroom activities and tries to involve them. Some students got bored easily, because they knew all the answers and understood the work very well.	The students tend to be very talkative and make a lot of noise. They are very disruptive. Only halfway through the lesson the students calmed down and started to work together with the lecturer.	The students talked a lot, and also communicated in their home language instead of English in the classroom. Some of them even provided answers in their home language.
Seating of students	The students sat 2 – 2 next to each other in four neat rows.	The students sat 2 – 2 next to each other in four neat rows.	The students sat 2 – 2 next to each other in four neat rows.

Positioning of lecturer during teaching	The lecturer moved in the front of the classroom and towards the middle. The lecturer also made use of the white board.	Moved around throughout the classroom. Spent most of the time in the front where the first row of students sat.	Lecturer moved around throughout the classroom, and spent most of the time in the front where the first row of students sat.
Discipline	The lecturer's discipline in the classroom was fairly good. The students were very talkative, but worked together with the lecturer. Some students arrived late for class, and some students were very disruptive.	The lecturer repeatedly had to ask the same student to quit doing other work and to pay attention to the work being discussed in the classroom. The lecturer was also stricter than during the previous observation. She gets the students to work with her and to answer the questions she asked based on the poem that was discussed in the classroom.	The lecturer was clearly disappointed because only 12 out of more or less 36 students showed up for class. When the students got a bit too noisy, she quickly silenced them so that they could continue with the work they were supposed to do in the classroom.
Student participation and involvement	Most of the students actively participated in the classroom activities. They were also very involved with what was happening in the classroom. Some students caused a disruption by being rude towards the lecturer and provided the lecturer with answers that did not make sense.	The lecturer tried to get all the students to participate in the classroom. All the students in the class participated when questions were asked that only required a "yes/no" response of them, but when questions were asked where they were required to provide more in-depth answers, only two to three students were participated. Most students actively participated in the classroom.	The lecturer asked questions that dealt with the learning content covered in the classroom, and allowed the students to answer the questions. The lecturer also made use of examples. The students were actively involved in the classroom and worked enthusiastically together with the lecturer.

Who is talking and who is listening/making the decisions	The lecturer tried to talk to every student and tried to motivate everyone to participate. The lecturer made most of the decisions in the classroom regarding the learning content covered. The lecturer talked most of the time. One of the students who were very disruptive constantly asked the lecturer's opinion about the topic under discussion, in order to stall the learning process.	The lecturer talks most of the time. While the lecturer is teaching, some students are conversing with each other about things, which obviously are not related to the learning content being done in the classroom.	The lecturer did most of the talking. The students added unnecessary comments by making fun and jokes about the learning content.
Topics or issues discussed	The following topics regarding the learning content were discussed: • Poetry. • The elements of communication. • Figures of Speech. • Barriers of communication. • Rhyming and rhyme schemes. • Religion – god vs. God. • Culture. • History and ancestors. • Connotations and symbolism.	The following topics regarding the learning content were discussed: • Onomatopoeia. • Examples of different sounds in poems. • Paragraphs vs. stanzas. • Lines. • Structure/layout. • Shapes of poems. • Typography. • Dictionary work. • Figures of Speech. • The poem was discussed. • Visualisation.	The following topics regarding the learning content were discussed: • Time management. • Motivation. • Planning. • Plural and singular forms.

Expression of feelings	The lecturer wanted the students to express their feelings regarding the poem. The lecturer was very enthusiastic. Some students expressed the same opinions as the lecturer, but some only participated to disrupt the teaching and learning process. They interpret the learning process as a joke by making jokes and do not participate eagerly and seriously together with the rest of the students and the lecturer.	Only three students were actively participating in the learning process, whereas the rest of the students did not participate at all. As the period progressed, some of the other students began to show interest and started to participate.	The students were not enthusiastically participating in the classroom. Some students really enjoyed the learning content and found it interesting, while others just answered the questions the lecturer asked to pass the time.
Type of activities that took place	The following activities took place in the classroom: • Questioning and answering. • Activities from the textbook were done verbally.	The following activities took place in the classroom: • Verbal discussions on poetry and sound devices took place. • The poem was read. • Dictionaries were handed out to students in order to look up difficult words which they do not know the meanings of. • Pair work in order to answer the questions based on the poem.	The following activities took place in the classroom: • Homework was given regarding the Time Management table. • A verbal activity based on Time Management was done.

Relationships in the classroom among peers, as well as with the lecturer	Some students were very disruptive and disrespectful, while others were very motivated to work.	Although, some students participated, many students were very disruptive. The lecturer explained the learning content. There existed a good relationship between the lecturer and the students, but the students felt that because it was Friday, the lecturer should hurry up to finish the work, because they were in a hurry to leave the classroom to attend to their personal matters.	The lecturer was very concerned about the students' well-being in general. Because it was the last period, the students were very lazy and a bit disruptive. They tried to steer the topic of discussion off course by arguing and joking with the lecturer.

Context: Lecturer 2 (Campus A)

Context	Observation 1	Observation 2
Date and time	13 March 2012 13:45 – 14:40	19 March 2012 11:00 – 12:50
Number of students	28	27
Classroom appearance	Very clean, neat and tidy. The windows of the classroom are painted so that students from the outside cannot interfere with what is going on in the inside of the classroom. However, the lecturer's desk was untidy.	Very clean, neat and tidy. The windows of the classroom are painted so that students from the outside cannot interfere with what is going on in the inside of the classroom. However, the lecturer's desk was untidy.
Classroom atmosphere	A very calm and serious atmosphere from the lecturer's side in the classroom. The students were very respectful and well mannered. The students were also very actively involved in the classroom and motivated. This lecturer's students were not as challenging as the previous lecturer's students were. Dictionaries were available on the students' desks at all time to be used.	A very calm and serious atmosphere from the lecturer's side in the classroom. The students were very respectful and well mannered. The students were also very actively involved in the classroom and motivated. This lecturer's students were not as challenging as the previous lecturer's students were. Dictionaries were available on the students' desks at all time to be used. Today, before the lecturer started with the lesson, he first talked with his students about soccer, and then started with the lesson.
Seating of students	The students sat 2 – 2 next to each other in four neat rows.	The students sat 2 – 2 next to each other in four neat rows.

Context	Observation 1	Observation 2
Positioning of lecturer during teaching	The lecturer moved around in the front of the classroom. He made use of the chalkboard a lot.	The lecturer moved around in the front of the classroom. He made use of the chalkboard a lot, in order to explain the learning content.
Discipline	Very good discipline. The students showed a lot of respect towards the lecturer.	Very good discipline. The students showed a lot of respect towards the lecturer. Some students outside the classroom were very noisy – the lecturer asked them to go away from his classroom so that his students could concentrate and do their work in peace. The lecturer made jokes from time to time with his students. He also reprimanded one of the students who was busy copying homework from her friends for another subject.

Context	Observation 1	Observation 2
Student participation and involvement	Students actively participated in the classroom. The students also felt at ease with participating.	Most of the students participated in the lesson and were motivation. However, some students pretended to participate and others did not participate at all. The lecturer also provided his students with time to think about their answers, and the students reacted very well towards his questions. The students are also asked to reflect on what they have already learned, and then to ask questions. One student asked a question then. The lecturer asked the student questions about his own question in order for the student to answer his question himself. The lecturer also referred the students to the section of the learning content covered in the classroom in the textbook. He asked them to reflect on the learning experience in the classroom and to mark “yes/no” in the blocks provided in the textbook on p. 19 to check if they understood the work, and identify what they still did not understand.
Who is talking and who is listening/making the decisions	The lecturer and students talked together however, the lecturer talked the most. The students together with the lecturer made the decisions in the classroom regarding the learning content. The lecturer was extremely enthusiastic about the learning content covered in the classroom. The lecturer also provided his students with opportunities to give examples in the classroom. The lecturer explained the work very well.	The classroom situation was more or less the same as the previous occasion however, the students had a tendency that day to listen very carefully to the lecturer, before they answered any of his questions. The lecturer talked the most that day, and his students listened to him. The students actively participated in the learning activities.

Context	Observation 1	Observation 2
Topics or issues discussed	The following topics were discussed in the classroom while teaching the students: • Poetry. • Elements of poetry. • Rhyme schemes. • Figures of Speech. • Examples of Figures of Speech. • Concord (Grammar). • Dictionary work. • Typography. • Stanzas. • Summaries. • The sonnet. • The poem *A Mother's War*. • Punctuation. • The test work for the following day. • Instructions on tests and examinations were highlighted.	The following topics were discussed in the classroom while teaching the students: • Goals. • Acronyms. • How to achieve goals. • Explanation of the acronym "SMART" was given. • Time management. • Synonyms. • Daily, weekly, monthly and yearly planners. • Time tables. • Communication barriers. • Socialism.

Context	Observation 1	Observation 2
Expression of feelings	The lecturer was very passionate about Figures of Speech and poetry. The students enjoyed the lecturer's way of teaching poetry and actively participated in the classroom.	The lecturer was once again very passionate. He presented the lesson with a lot of enthusiasm. He motivated the students by using different questions in order to get them to participate in the classroom.
Type of activities that took place	The following activities took place in the classroom: • A poem was done verbally in the classroom. • The students were asked to come up with their own examples for Figures of Speech, and they should also explain their examples. No homework was given.	The following activities took place in the classroom: • A verbal discussion on goals, acronyms, time management and business plans took place. • Verbal activities on time management and synonyms were done. • A time management table was completed by the students about a day in their lives. • A specific student was asked to discuss her completed time management table with the rest of the class, as well as the lecturer. • Dictionary activities. Homework was given on time management and barriers, and it was thoroughly explained what should be done.

Context	Observation 1	Observation 2
Relationships in the classroom among peers, as well as with the lecturer	The relationships between the lecturer and his students, as well as between the students themselves, were very respectful. The lecturer was very concerned about his students' well-being academically and therefore explained the learning content in fine detail. He asked questions and allowed his students to answer them. He allowed wait time until his students could provide him with examples he asked for. He asked different students to provide the rest of the class with their examples. Every student was allowed to participate in the classroom situation. The lecturer asked his students to study hard for the upcoming test, and explained to them what was expected from them in the test.	The relationships between the lecturer and his students, as well as between the students themselves, were very respectful.

Context: Lecturer 1 (Campus B)

Context	Observation 1
Date and time	23 March 2012 10:45 – 12:30
Number of students	11
Classroom appearance	Clean, neat and tidy without any learning material against the walls.
Classroom atmosphere	Lively, fun, joyous and relaxing.
Seating of students	The students each sat at an individual desk. The desks were arranged in neat rows with 10 desks in a row. However, only two to four students sat in each row.
Positioning of lecturer during teaching	The lecturer was a lot in the front of the classroom and did not move around. When she moved around, she went to the middle of the classroom.
Discipline	The students were well mannered. Some of the students arrived late for class, but they were not disruptive. The lecturer was also a patient and calm person, and tried to instil this in her students.
Student participation and involvement	All of the students in the class were actively participating. The lecturer and her students had a good relationship. The lecturer also praised each student who provided good and correct answers.

Context	Observation 1
Who is talking and who is listening/making the decisions	The lecturer and students were talking in the classroom however the lecturer did most of the talking. Three male students were very participative and answered almost every question the lecturer asked. The other students participated, but first waited for the three male students or the lecturer to provide the answers. The lecturer discussed the written test with her students, and explained to them how she allocated marks. Revision was done regarding the written test. She asked questions and allowed enough wait time for her students to answer her questions. Pointers on how to get an overview of a reading text were also explained to the students. The lecturer distributed questions to different students in the classroom and asked for their opinions regarding the work. The lecturer also explained difficult concepts in such a manner to make it easier for her students to understand. She also emphasised the importance of following the instructions in a test. The lecturer also asked specific students to read aloud in the classroom. She also helped the students when they pronounced words incorrectly while reading. She also made a few jokes with them to set them at ease.
Topics or issues discussed	The following topics were discussed in the classroom: • Figures of Speech. • Reading strategies. • The different text headings of the comprehension test in the test. • How to look for information in a reading text. • Punctuation. • The importance of using quotation marks when quoting words or sentences were emphasised. • Sentences, subjects and verbs. • How to quote correctly. • Antonyms. • Acronyms. • The correct pronunciation of words.

Context	Observation 1
Expression of feelings	The lecturer got irritated with students who were late. However, the lecturer was very enthusiastic about the learning content she had to cover with the students. The students enjoyed her class presentations.
Type of activities that took place	The following activities took place in the classroom: • A verbal activity on Figures of Speech. • Verbal revision on the written test. • Reading strategies were applied to the comprehension test in the written test. • A discussion of the intention when writing a passage took place.
Relationships in the classroom among peers, as well as with the lecturer	The relationship between the lecturer and her students was very good. The students respected one another and the lecturer. The lecturer and her students got along very well with each other. The lecturer also allowed her students to participate in the classroom activities.

Context: Lecturer 2 (Campus B)

Context	Observation 1	Observation 2	Observation 3
Date and time	20 March 2012 13:30 – 15:00	23 March 2012 07:45 – 09:15	26 March 2012 10:00 – 11:30
Number of students	14	14	14
Classroom appearance	Not very neat, clean and tidy. The students had to fetch desks from other venues in order to have a seat.	Neat and tidy rows. The classroom did not have a door.	Neat and tidy rows. The classroom did not have a door.
Classroom atmosphere	It was very quiet in the classroom. The students were very unresponsive to the lecturer's questions at the beginning of the period. As the period progressed, a more relaxed and comfortable atmosphere was felt. The students were also more eager to participate that at the beginning of the period.	The atmosphere in the classroom was very "stiff". The lecturer tried to work, but only four students had their English files in class. When the lecturer decided to work from the textbook instead, some students had no textbooks with them at class. The lecturer made it very clear to the students that they had to have their English files and textbooks with them at all times when they come to the English classroom.	The students were on time for class. The students worked enthusiastically with the lecturer, and in groups, because all of them brought their English files and textbooks in order to work with the lecturer.

Context	Observation 1	Observation 2	Observation 3
Seating of students	There were 10 single desks in four lines. Some open desks were noticed.	Neat rows with desks in the classroom. Two to four students sat in a row. It seems as if some of the students were not able to see the white board clearly, due to the seating arrangements in the classroom.	Neat rows with desks in the classroom. Two to four students sat in a row.
Positioning of lecturer during teaching	The lecturer was in the front of the classroom, at the white board. The lecturer did all her explanations and taught on the board.	The lecturer was in front of the classroom.	The lecturer was in the front of the classroom. The lecturer was also seated for the first 20 minutes of the period, which made it difficult for some of the students to see her. Afterwards, the lecturer made use of the white board and moved to a different spot in the classroom.

Context	Observation 1	Observation 2	Observation 3
Discipline	The lecturer was very strict with her students. The students had a “don’t care” attitude at the beginning of the period. Nine students arrived late for class. Overall, the students knew what they were allowed and not allowed to do.	The students were very quiet, and the lecturer was clearly upset because of the students who did not bring their English files and textbooks to class. She also tried to enforce discipline because the students did not want to work with her. The students were very reluctant and still had a “don’t care” attitude. At the onset of the lesson, the lecturer asked the students who did not bring their English files and textbooks to class, to leave the classroom.	The discipline today was much better than during the previous observations.
Student participation and involvement	At the beginning of the period, there was no student participation. The students provided the lecturer only with excuses as to why their homework was not done and why their manuals were not in class. As the period progressed, more students participated – mainly the male students. The lecturer motivated the students to work with her. The students were very quiet and seemed uncertain of themselves.	At the onset of the period, no student participated.	The students worked well with the lecturer, because they had their English files, textbooks and manuals with them at class. The students also asked many questions. The lecturer also explained to them the importance of developing their vocabulary. It seemed as if the students enjoyed the group work they were doing.

Context	Observation 1	Observation 2	Observation 3
Who is talking and who is listening/making the decisions	The lecturer talked most of the time. The lecturer was also very factual while she presented the lesson. The students who participated asked questions and provided answers. The students also seemed very cautious of the lecturer when they participated. The lecturer first presented the lesson and then involved the students by doing an activity on the board. The lecturer looked in the direction of one specific student, and it seemed as if she did not know her students' names.	The lecturer tried to motivate the students to bring their English textbooks and files with them to class. The students were very "cheeky". The lecturer started explaining the learning content, and the students were very slow to participate. Later on the students decided to participate more in the activities in the classroom. The lecturer asked the students to practice tenses every day.	The lecturer told the students what she wanted them to do and they did it. They were very cautious of the lecturer. The students were allowed to provide their own ideas and opinions as answers to the lecturer. The lecturer explained the learning content, as well as how to do revision. The students were divided into groups and they enjoyed the group work. The lecturer made the students feel at ease by telling them a few jokes. The lecturer and students' relationship seemed to improve a lot since the first observation.

Context	Observation 1	Observation 2	Observation 3
Topics or issues discussed	All the English tenses were discussed, together with their sub-tenses.	Tenses and reported speech were discussed.	The following topics were discussed in the classroom: • Nouns. • Adjectives. • Different types of Adjectives. • Different types of articles. • Prepositions. • Verbs. • Pronouns. • Conjunctions.
Expression of feelings	The students were not very enthusiastic. Only some participated in the verbal activities done in the classroom. As the period progressed, the lecturer also became more enthusiastic as the students started to participate.	The lecturer was very frustrated because the students did not care to participate in the classroom activities.	The lecturer and students enthusiastically worked together.

Context	Observation 1	Observation 2	Observation 3
Type of activities that took place	The following activities were done in the classroom: • Verbal discussion on tenses. • Examples done on the board on all the tenses. • Exercises on tenses were done on the board. For homework, the students had to copy a table with tenses from the board and study it.	The following activities were done in the classroom: • Activities on tenses in the English textbook. • Activities on tenses were done on the board as well.	The following activities were done in the classroom: • Activities on nouns were done verbally from the English files. • The lecturer provided the students with 15 minutes to come up with answers of their own for the second exercise in the file, which dealt with adjectives. • The lecturer again provided the students with 15 – 20 minutes in order to complete an activity in the classroom. • The lecturer also divided the students into seven groups in order to work together so that they could learn from each other in order to have a better understanding regarding the work done in the classroom.

Context	Observation 1	Observation 2	Observation 3
Relationships in the classroom among peers, as well as with the lecturer	The lecturer was very strict with her students. She did most of the talking and the students listened. The students were very cautious to participate. At the beginning of the period, a lack of enthusiasm was observed form the students' side. The students seemed respectful towards the lecturer. Some of them did not really care to participate in the classroom activities. Half-way through the period, the students and lecturer seemed more at ease with each other, and a more active participation from the students' side in the classroom was noticed.	It seemed as if the lecturer and her students did not have a very good relationship with each other. The lecturer asked the students who did not have their English files and textbooks, to leave her classroom. The students seemed very disrespectful. They did not cooperate at the onset of the lesson. Later on, they worked well with the lecturer and the lecturer allowed them to participate in the classroom activities.	The students were very quiet. They worked together with the lecturer and also provided answers to the lecturer's questions. The relationship between the lecturer and her students was much better than observed in the previous two observations, because the students decided to bring their English textbooks, files and manuals to class, and they showed up on time for class. The students were now working together with the lecturer, and they had their English files, manuals and textbooks with them in class, in order to participate in the activities. The lecturer praised the students who provided her with the correct answers to her questions in the classroom.

APPENDIX I

OBSERVATION CRITERIA AND FREQUENCY COUNTS

Observation data: Lecturer 1 (Campus A)

Criteria	Observation One		Observation Two		Observation Three	
	Observer	Co-observer	Observer	Co-observer	Observer	Co-Observer
The lecturer asks questions, which leave room for the students to air their opinions about the topic they are discussing in class.	11	3	9	1	7	4
The lecturer asks questions, which leave room for the students to analyse and think about the topic under discussion by themselves.	7	3	2	3	3	1
The lecturer asks questions, which leave room for the students to come up with alternative answers or proposals on how to solve difficult work content.	6	4	0	1	1	1
The lecturer asks questions, which leave room for the students to form their own judgements about the topic under discussion.	4	4	2	4	2	1

Criteria	Observation One		Observation Two		Observation Three	
	Observer	Co-observer	Observer	Co-observer	Observer	Co-Observer
The lecturer asks questions, which leave room for the students to think about reasons why specific ideas will work in order to solve difficult problem content.	3	3	0	0	1	0
The lecturer asks questions that deal with the recalling of facts and information.	17	6	8	5	7	5
The lecturer provides enough waiting time to students to think about their answers after a question has been asked.	6	2	9	4	7	5
The lecturer tends to answer every question he/she asks himself/herself.	19	10	7	7	5	4

Observation data: Lecturer 2 (Campus A)

Criteria	Observation One		Observation Two	
	Observer	Co-observer	Observer	Co-observer
The lecturer asks questions, which leave room for the students to air their opinions about the topic they are discussing in class.	4	3	15	4
The lecturer asks questions, which leave room for the students to analyse and think about the topic under discussion by themselves.	5	3	19	11
The lecturer asks questions, which leave room for the students to come up with alternative answers or proposals on how to solve difficult work content.	7	2	13	5
The lecturer asks questions, which leave room for the students to form their own judgements about the topic under discussion.	5	4	15	15
The lecturer asks questions, which leave room for the students to think about reasons why specific ideas will work in order to solve difficult problem content.	5	4	5	2
The lecturer asks questions that deal with the recalling of facts and information.	7	9	27	11

Criteria	Observation One		Observation Two	
	Observer	Co-observer	Observer	Co-observer
The lecturer provides enough waiting time to students to think about their answers after a question has been asked.	12	14	35	20
The lecturer tends to answer every question he/she asks himself/herself.	9	3	14	10

Observation data: Lecturer 1 (Campus B)

Criteria	Observation One	
	Observer	Co-observer
The lecturer asks questions, which leave room for the students to air their opinions about the topic they are discussing in class.	11	7
The lecturer asks questions, which leave room for the students to analyse and think about the topic under discussion by themselves.	12	6
The lecturer asks questions, which leave room for the students to come up with alternative answers or proposals on how to solve difficult work content.	3	2
The lecturer asks questions, which leave room for the students to form their own judgements about the topic under discussion.	11	2
The lecturer asks questions, which leave room for the students to think about reasons why specific ideas will work in order to solve difficult problem content.	6	0
The lecturer asks questions that deal with the recalling of facts and information.	22	7

Criteria	Observation One	
	Observer	Co-observer
The lecturer provides enough waiting time to students to think about their answers after a question has been asked.	25	13
The lecturer tends to answer every question he/she asks himself/herself.	3	8

Observation data: Lecturer 2 (Campus B)

Criteria	Observation One		Observation Two		Observation Three	
	Observer	Co-observer	Observer	Co-observer	Observer	Co-Observer
The lecturer asks questions, which leave room for the students to air their opinions about the topic they are discussing in class.	10	0	2	0	5	1
The lecturer asks questions, which leave room for the students to analyse and think about the topic under discussion by themselves.	8	1	0	1	9	3
The lecturer asks questions, which leave room for the students to come up with alternative answers or proposals on how to solve difficult work content.	1	0	0	0	0	0
The lecturer asks questions, which leave room for the students to form their own judgements about the topic under discussion.	1	0	2	0	1	0

Criteria	Observation One		Observation Two		Observation Three	
	Observer	Co-observer	Observer	Co-observer	Observer	Co-Observer
The lecturer asks questions, which leave room for the students to think about reasons why specific ideas will work in order to solve difficult problem content.	4	0	4	0	0	0
The lecturer asks questions that deal with the recalling of facts and information.	12	6	2	8	8	6
The lecturer provides enough waiting time to students to think about their answers after a question has been asked.	18	7	11	6	15	7
The lecturer tends to answer every question he/she asks himself/herself.	8	6	11	5	4	2

APPENDIX J

RELIABILITY EDUCATOR QUESTIONNAIRE

Feedback: N Volschenk questionnaire to lecturers

11 May 2011

1. First off, my thanks for the trust shown towards asking my opinion on this questionnaire.
2. What are the possibilities of providing the questionnaire with a heading of some kind to place it more carefully with respect to face validity?
3. Please just check the heading of SECTION B again for clarity of meaning: see my suggestion on the document itself.
4. It is clear that SECTION B reflects on Chapter Two of the student's work and the three questions asked definitely addresses a lecturer's personal understanding and developing of critical thinking in the classroom. In the last question of SECTION B, perhaps indicate that they should provide five examples: see the document itself.
5. SECTION C: This section comprises items that link well with one another regarding the construct looked at. These questionnaire items (C1- 13) are successful in allowing lecturers the opportunity to confirm to what degree they agree/disagree with *the purpose of questioning*.
6. SECTION D: While this section (D1-D11) is obviously vital to such a questionnaire on critical thinking, my concern is the following: would the naming of the strategies not perhaps assist the participants to copy one or two of the named strategies in their response to SECTION B, question 3, on how they develop critical thinking skills in their classrooms? On the other hand, my concern may be unfounded – please use your own discretion in this regard.
7. SECTION E: The items (E1-E11) are well linked to applying questioning techniques in the classrooms.
8. SECTION F: This section places the lecturer on the spot in terms of responding to the tactic he/she uses when asking question in the classroom. All seven items are clearly tactics that a lecturer could use when teaching English, thus they are linked to one another in that regard.
9. In sum: this questionnaire addresses what the brief letter on the front page proposes. The sections appear to be well selected and the various questionnaire items link up well with each section heading.

Best of luck with the research process and be assured of my appreciation for having been included in the validation of the questionnaire.

Prof Elda de Waal