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**ENHANCING LEARNERS' ACADEMIC
ACHIEVEMENTS IN RURAL LESOTHO SCHOOLS:
MATCHING TEACHING AND LEARNING STYLES**

MOEKETSI JOSEPH LETELE

Universiteit van die
Vrystaat
BLOEMFONTEIN

27. JAN 2010

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**ENHANCING LEARNERS' ACADEMIC ACHIEVEMENTS IN
RURAL LESOTHO SCHOOLS:
MATCHING TEACHING AND LEARNING STYLES**

By
MOEKETSI JOSEPH LETELE
(BSC.ED, B.ED HONS)

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UNIVERSITY OF THE FREE STATE
BLOEMFONTEIN

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MAY 2009

DECLARATION

I declare that the dissertation hereby submitted by me for M. Ed (Psychology of Education) at the University of the Free State is my own independent work and has not previously been submitted by me at another university/faculty. I further more cede copyright of the dissertation in favour of the University of the Free State.

.....

Moeketsi Joseph Letele

.....

DATE

DEDICATION

I want to dedicate this dissertation to the following people:

- My father, Ntate Moeletsi Letele, in recognition of his empowering efforts that improved my attitude towards studying and for offering support in times of need.
- My mother, 'Me' 'Maletete Letele, in recognition of her endless support throughout my studies from the elementary phase up to this level.
- My beloved wife, 'Mamokoena Letele, for her outstanding emotional, moral support and encouragement.

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LIST OF ACRONYMS

ECOL	Examinations Council of Lesotho
FSLSM	Felder-Silverman Learning Style Model
FSILS	Felder-Solomon Index of Learning Styles
FPE	Free Primary Education
ILS	Index of Learning Styles
IQ	Intelligence Quotient
JC	Junior Certificate
LSP	Learning Styles Program
MBTI	Myers-Briggs Type Indicator
NCDC	National Curriculum Development Centre
SPSS	Statistical Packages of Social Sciences
TSC	Teaching Service Commission
TSD	Teaching Service Department
USA	United States of America
ZPD	Zone of Proximal Development

ABSTRACT

The Lesotho Junior Certificate results between 2003 and 2006 indicate that in the rural secondary schools of Lesotho the pass rate ranged from 51% to 58%. These figures are low compared to those in the urban schools for the same years which ranged from 70% to 72%. The Teaching Service Department shows that there was 40% of unqualified teachers in these schools in 2003 and 35% in 2007. There seems to be a correlation between the high numbers of unqualified teachers and the low pass rate in these schools. This view is underscored by Wheeler and McLeod (2002: 696) who note that teachers are more likely to develop teaching styles which are congruent with their own learning styles rather than those of their learners if they are unaware of the learning and teaching styles literature.

This study aims to establish teaching styles that match the learning styles of learners in the rural secondary schools of Lesotho with the view to improve academic achievement. The objectives are: to determine whether teachers in these schools have adequate knowledge pertaining to teaching and learning styles; to identify the predominant styles; to determine the extent to which matching teaching and learning styles improves academic achievement; and to provide a teacher's guide on teaching and learning styles.

The research comprises of a literature study and empirical investigation. The Solomon Felder Index of Learning Styles (SFILS) and self-designed teaching style questionnaire were used. The learners' end-of-year examination marks were studied. The empirical findings indicate that most teachers in rural secondary schools of Lesotho do not have adequate knowledge on teaching and learning styles, while findings from the literature and empirical study indicate that academic achievement of learners can be enhanced by matching teaching and learning styles. Therefore, these findings can be used to improve the teaching and learning process and ultimately the level of success that learners in rural secondary schools can experience in their respective schools. Finally, the findings of this study were used to develop a teacher's guide on teaching and

learning styles. This would hopefully guide teachers in the rural secondary schools of Lesotho on which styles could work best in their contexts.

Key words: Rural schools, Learning styles, Academic achievement, Teaching styles, Learner -centered

ABSTRAK

Die uitslae van die Lesotho Junior Sertifikaat dui daarop dat die slaagsyfer in landelike sekondêre skole in Lesotho tussen 2003 en 2006 gewissel het van 51% tot 58%. Hierdie syfers is laag in vergelyking met die uitslae van stedelike skole in die ooreenstemmende tydperk waar uitslae gewissel het van 70% tot 72%. Volgens die Departement van Onderwysdienste was 40% van die onderwysers in hierdie skole in 2003 ongekwalifiseerd. In 2007 was 35% van die onderwysers ongekwalifiseerd. Daar skyn 'n korrelasie tussen die groot getal ongekwalifiseerde onderwysers en die lae slaagsyfer in hierdie skole te bestaan. Hierdie siening word deur Wheeler en McLeod (2002: 696) beaam. Hulle voer aan dat onderwysers geneig is om veel eerder onderrigstyle te ontwikkel wat ooreenstem met hulle persoonlike leerstyle as met die leerstyle van hulle leerders - veral as die onderwysers onkundig is oor die leer- en onderrigstyle wat in die literatuur beskikbaar is.

Hierdie studie poog om onderrigstyle daar te stel wat ooreenstem met die leerstyle van die leerders in landelike sekondêre skole in Lesotho met die doel om akademiese prestasie te verbeter. Die doelwitte is: om vas te stel of onderwysers aan hierdie skole oor voldoende kennis van onderrig-en leerstyle beskik; om die oorheersende style te identifiseer; om te bepaal in watter mate 'n korrelasie tussen onderrig- en leerstyle akademiese prestasie verbeter; 'n handleiding vir onderrig-en leerstyle vir onderwysers te ontwikkel.

Die navorsing bestaan uit 'n literêre studie en empiriese ondersoek. Die Solomon Felder Indeks van Leerstyle (SFILS) en 'n self-ontwerpte onderrigstylvraelys is gebruik. Die leerders se uitslae vir die eindeksamen is bestudeer. Die empiriese bevindinge dui daarop dat die meeste onderwysers aan landelike sekondêre skole in Lesotho nie beskik oor voldoende onderrig- en leerstyle nie. Bevindinge in die literatuur en empiriese studies dui daarop dat leerders se akademiese prestasie verbeter kan word deur onderrig- en leerstyle met mekaar te korreleer. Daarbenewens kan hierdie bevindinge ook aangewend word om onderrig- en

leerproses te verbeter en uiteindelik sal leerders in landelike sekondêre skole meer sukses ervaar.

Laastens is die bevindinge van hierdie ondersoek aangewend om 'n onderwyserhandleiding saam te stel wat gebruik kan word ter ontwikkeling van onderrig- en leerstyle. Sodoende sal onderwysers in landelike sekondêre skole in Lesotho leiding ontvang oor die mees geskikte style vir hulle unieke situasies.

Sleutelwoorde: Leerstyle, Akademiese prestasie, Onderrigstyle, Leerdergesentreerd, Landelike skole.

CHAPTER 1

INTRODUCTORY ORIENTATION

1.1 INTRODUCTION

Throughout the world, governments and other education stakeholders advocate quality education and education for all. Among educational issues that are important is knowledge about learning styles' theories. A lot of research has been done to explain and address the learning styles of learners. The vast majority of the literature on learning styles has focused on enhancing learner performance (Kolb & Kolb, 1999; Dasari, 2006). This work has generally found that when learners' learning styles are matched by the design of the curriculum, with the learning styles of their teachers, or with appropriate teaching styles, academic achievement improves (Dunn & Dunn, 1979: 240; Felder, 1993: 286; Ford & Chen, 2001: 5). The focus of the current study is on the latter, that is, on matching appropriate teaching styles with the learning styles of learners in Lesotho's rural schools to improve their academic achievement.

There is empirical support for the rather obvious position that learning in a manner that is consistent with one's learning style produces better academic results than otherwise (Domino, 1979: 3; Dunn & Dunn, 1979: 242; Morrison, Sweeney & Heffernan, 2006: 64). Empirical studies have also confirmed educators' beliefs by showing how learners' styles of learning and thinking make a difference in their academic achievement (Isemonger & Sheppard, 2003: 196; Morrison, Sweeney & Heffernan, 2003: 209; Dasari, 2006: 4).

This research suggests that learners, whose learning styles match up with the given teaching style, tend to show improved academic achievement than those who experience clashes in their teaching/learning styles. Charkins, O'Toole and Wetzel (1985: 113) and Moallem (2007: 217) concur with the idea that where teaching styles are compatible with learners' learning styles, learners retain information much longer,

apply it more effectively and become greater academic achievers. This means that teachers should be aware of the theory which underlies learning styles.

Barbe and Milone (1980: 45), Friedman and Alley (1984: 74), Felder (1993: 288), Wheeler and McLeod (2002: 696) note that teachers are more likely to develop teaching styles which are congruent with their own learning styles, rather than those of their learners if they are unaware of the learning/teaching styles' literature. On the other hand, while teachers are aware that learning styles exist, the application of this knowledge is often inconsequential (Diaz & Cartnal, 1999: 131). Some teachers opt to use a wide variety of teaching activities, hoping that they will cover most of their learners' learning style preferences along the way and this may be the case in the rural schools of Lesotho. This method may not be the most effective or systematic way to address individual learning styles in the classroom. The most important thing is to identify learners' predominant learning styles and to use teaching styles that are more direct to promote the full potential of learners in those learning styles. Some attention can be directed to the use of teaching styles that would help learners to develop abilities in the less preferred learning styles.

Besides all the arguments above, information on learning styles could also be used for learner placement in suitable classes, with teachers or fields of study with matching characteristics (Mokoena, 1997: 14).

The interest of this study is to find ways of matching up the teaching styles of teachers with the learning styles of learners to improve their academic achievement in the rural schools of Lesotho. These schools are situated in the mountainous parts of the country which are not easily accessible. In these schools there is a lack of resources, such as electricity, communication services, roads and school facilities, such as laboratories and libraries.

1.2 PROBLEM STATEMENT

Recognition of students' learning styles is regarded by many educators as a vital part of an effective teaching strategy (Morrison, Sweeney & Heffernan, 2003: 208). As far back as ancient Greece, it was noted that learners have different styles of learning, and these styles can be linked to certain teaching styles to enhance academic achievement (Wratcher, Morrison, Riley & Scheirton, 1997; Diaz & Carnal, 1999). There are various discussions across different countries regarding the same issue of learning and teaching styles. It was noted by Lennon (1988:418) that a discursive style of teaching prevailed in American schools whereby teaching was based almost entirely on the use of verbal formulations which were often made up of nominal or abstract components that omitted utilitarian reference.

Over the past two decades educationists have expressed increasing concern about the number of learners who fail in the secondary and high schools of African countries (Motsau, 1990: 1; Calitz, 2001: 2). Among these countries is Lesotho, which is characterized by comparatively low academic achievement in secondary schools, especially in the rural schools. The above statement is supported by the evidence from the annual reports on Junior Certificate (JC) results by the Examination Council of Lesotho (ECOL) from 2003 to 2006. In rural schools, JC results from 2003 up to 2006 showed the overall pass rate of 51%, 51%, 54% and 58% respectively. These figures are low when compared to the overall pass rate in urban schools for the same years which are 70%, 65%, 69%, and 72% respectively (Lesotho Ministry of Education and Training, 2005: 59, 2008: 19).

Many factors contribute to poor academic achievement in the rural areas of Lesotho. As a way of improving academic achievement in these rural schools, the government, through the ministry of education, is providing resources for schools in rural areas and workshops for teachers. In these workshops knowledge about learning styles' theories has, however, not yet received significant attention. From this point, questions can be asked as to whether the teaching methods used by teachers are able to accommodate and enhance the learning styles of learners, and whether teachers take adequate consideration of learners' learning preferences during lesson planning and presentation.

According to Mulkeen (2005: 10) and Lesotho Ministry of Education and Training (2008: 19), statistics from the Teaching Service Department (TSD) in Lesotho show that there were 40% to 51% of unqualified teachers in rural schools in 2003 and 2004, and 35% in 2007. In consideration of these statistics, one can wonder whether these teachers have enough knowledge and skills required for teaching. In this case, a question can be raised as to whether these untrained teachers receive any in-service training and adequate guidance on the teaching approaches and ways of accommodating all learners in learning instruction. A precise question can further be asked as to whether teachers have enough knowledge about learning styles and learning theories. This research will seek to determine whether teachers (qualified and unqualified) have adequate knowledge about learning styles.

It has also been the researcher's experience as a teacher that learners fail to achieve an acceptable level of academic success at JC level. This fact raised the following question: is it possible that some learners are failing to be academically successful at school because teaching styles do not cater for their learning styles? The research literature on learning styles suggests that boredom, a lack of academic success and the frustration learners experience in learning could be due to incongruence between the teaching styles of teachers and the learners' preferred learning styles (Dasari, 2006: 1). This inherent problem gave rise to the idea of this research topic. It was thus born out of a desire to provide teachers in the rural secondary schools of Lesotho with alternative teaching approaches to improve the academic achievement of their learners.

According to Wynd and Bozman (as cited in Morrison et al. 2003: 209) the rationale for identifying learning styles is that appropriate teaching styles are inherently exclusionary and inhibit efficient and effective learning. Research supports the effectiveness of matching teaching and learning styles on learning, although not all researchers have the same views about the congruence of teaching and learning styles (Charkins et al., 1985: 113; Murray-Harvey, 1994: 374; Morrison et al., 2003: 208). This research is, however, based on the study of matching teaching and learning styles as a way of enhancing learners' academic achievement and involvement in learning. The following questions are therefore raised for this research:

1. Do teachers have adequate knowledge about teaching and learning styles to direct their teaching to the learning styles of their learners?
2. What are the predominant characteristic learning styles of learners and teaching styles of teachers in the rural secondary schools of Lesotho?
3. To what extent does matching teaching and learning styles improve learners' individual academic achievement?
4. What strategies can be deduced from these research findings to help in addressing the learning styles of learners in the rural secondary schools of Lesotho?

1.3 PURPOSE OF THE STUDY

The main purpose of this study is to investigate the teaching styles used by teachers in the rural secondary schools, and how they match up with the learning styles of learners, and whether learners' potential are being activated in the learning process. The findings of this research are intended to enrich more research data on teaching and learning styles. The study also aims to develop a user friendly teacher guide that can be used in secondary schools to identify learners' learning styles and to accommodate different learning styles in the normal classroom. Therefore the objectives of this study are:

- To determine whether teachers have adequate knowledge with regard to teaching and learning styles to direct their teaching to their learners' learning styles.
- To identify the predominant characteristic learning styles of learners and teaching styles of teachers in the rural secondary schools of Lesotho.
- To find the extent to which matching teaching and learning styles improve learners' academic achievement.

- To provide a teacher's guide in assessing and accommodating different learning styles in one class.

1.4 THEORETICAL FRAMEWORK

There are a number of theories and models for educational research and practice that provide base features that address how people learn. These theories and models are based on certain paradigms from which they are developed. For this research, a constructivist orientation is relevant. Constructivism as a paradigm posits that learning is an active and constructive process in which the learner actively constructs or builds new ideas or concepts based upon current and past knowledge (Learning Theories, 2008: 2).

Constructivism is expressed in two forms, which are cognitive constructivism and social constructivism. In cognitive constructivism, learning involves cognitive structures that provide meaning and organization to experiences (Bruner in Patsula, 1999: 4). In this form of constructivism, Antheron (2005b: 6) contends that the learner understands things in terms of developmental stages and learning styles, while social constructivism emphasizes how meaning and understanding grow out of social encounters. It is within this constructivist paradigm that the cognitive load and information processing are related to the learning environment that actualizes one's potential (Learning Theories, 2008: 3).

The cognitive load and information processing theory is therefore basic to the focus of this research. From this theory some learning style models, such as Kolb's Learning Styles model, 1984; Dunn & Dunn Learning Styles, 1979; and the Felder-Silverman Learning Style Model (FSLSM) were developed.

For this research, the Felder-Silverman Learning Style Model has been chosen because it describes the learning styles of learners in more detail, elaborating and distinguishing between preferences in these learning styles (Graf, Viola, Kinshuk & Leo, 2007: 81). The model combines several dimensions presented in the Myers-Briggs model

(sensing/intuitive) with Kolb's information processing dimension (Active/Reflective). The core idea of the Felder and Silverman model is that teachers should teach learners according to their preferences while on the other hand should strive for a balance of instructional methods (Moallem, 2007: 219).

According to Dasari (2006: 18) Felder and Silverman classify learners' learning styles according to five questions which bring about the learning style dimensions. These questions are:

- 1) What type of information does a learner preferentially perceive?
- 2) Through which sensory channel is external information most effectively perceived?
- 3) With which organization of information is a learner most comfortable?
- 4) How does the learner prefer to process information?
- 5) How does the learner progress towards understanding?

In answer to these questions, the learners are classified as sensing or intuitive, visual or verbal, inductive or deductive, active or reflective and sequential or global. The first dimension distinguishes sensing and intuitive. The second dimension covers visual and verbal learners. The third dimension covers inductive and deductive learners. In the fourth, active and reflective learners are considered. In the fifth dimension, learners are characterized according to their understanding. Sequential learners learn in small incremental steps and follow some logical stepwise paths in finding solutions. In contrast, global learners use a holistic thinking process and learn in large heaps.

Felder-Silverman (1988), and later Felder and Solomon, developed the Index of Learning Style (ILS). The ILS is a 44 question, self-scoring instrument, which assesses preferences on the four dimensions of learning styles. To integrate the learning style model into the design and development of instruction, the Felder-Solomon's Index of Learning Style will be used to identify specifications for matching teaching and learning styles to promote academic achievement.

Given the model, the main characteristics are defined for identifying teaching styles that are tailored to learners' individual learning styles. Firstly, teaching styles should increase self-awareness and meta-cognition of learners about their strengths and challenges. Research on learning styles and academic achievement has shown that teaching learners how to learn, monitor and manage their own learning styles is crucial to their academic achievement (Dasari, 1998). Secondly, teaching styles should balance learning tasks and activities so that they would accommodate all learners by taking into account four dimensions of the model (Barbe & Milone, 1980: 45; McKeache, 1996: 1; Dasari, 2006: 59). Thirdly, while learners should be able to choose to learn in a manner they prefer, they should also be challenged to learn in a less preferred manner which provides practice and feedback in ways which they may not initially be comfortable with.

1.5 LITERATURE REVIEW

According to Kaniki (2006: 19) literature review involves the identification and analysis of information resources and literature related to one's project. A lot of research has been undertaken that describes the relationship between learning styles and academic achievement and that describes the benefits of matching teaching and learning styles. Among other benefits, student motivation, understanding and academic success are emphasized (Charkins et al., 1985: 113; Ford & Chen, 2001: 5).

The theoretical framework above provides a basis for the relevant literature and sources on the issue of learning styles. More theories on learning and learning styles are considered in the next chapters to provide an overall knowledge on learning styles.

While there are many theories that describe the learning styles, there are also some theories on teaching styles. Grasha (1996: 26) describes five teaching styles in his book 'Teaching with Style'. These are: the expert; the formal authority; the personal model; the facilitator; and the delegator. Benzie (1998: 18) classifies teaching styles as assertive, suggestive, collaborative and facilitative. These are only a few of the theories

on teaching styles. A lot more will be discussed in the literature review chapter of this research project.

The literature on learning and teaching styles is important for teachers at all levels of education. As Barbe and Milone (1980: 45) said, teachers are more likely to develop teaching styles which are congruent with their own learning styles rather than those of their learners if they are unaware of the literature on learning/teaching styles. Therefore teachers need to have an obligation to broaden their teaching styles to support opportunities for learners to broaden their learning styles.

Can a teacher's teaching style then be modified? Heimlich and Norland (2002: 18) believe that there is an important pre-condition before teachers can attempt to modify their style. That is, their beliefs and values regarding their roles and their learners' roles in learning should first be changed. This point implies that teachers can modify their teaching styles in an attempt to be more flexible and accommodative to their learners' preferences.

A comprehensive literature study of selected and relevant sources, such as books, journal articles, dissertations and other academic research projects was undertaken. It was used to determine how other researchers used their instruments to identify learning styles, teaching styles and their relationship; and how their findings and arguments relate to this research.

1.6 METHOD OF STUDY

The research comprises two parts which are the literature study and empirical investigation. The literature study focused on issues regarding learning styles, teaching styles and academic achievement. More attention was given to the literature on matching teaching styles and learning styles.

Quantitative Research

In order to achieve the stated objectives, the empirical investigation that was used is quantitative in nature. Quantitative research is a numerical method describing observations of materials or characteristics (Burns, 2000: 43). In this approach, methods of data-collection are rigid, strict and regimented. This empirical investigation unfolded with a pilot study which covered two secondary schools in rural areas whereby 5 teachers and 5 learners per school completed questionnaires that were directed at teaching styles and learning styles respectively.

For the proposed research, a questionnaire method was used to gather data that is relevant to the research questions. In this case, the Felder-Solomon Index of Learning Styles (FSILS), which consists of 44 questions designed to identify learning styles of learners, was used. A self-designed questionnaire based on Felder and Silverman's theory of teaching styles was also used to identify teachers' teaching styles. This questionnaire was designed in a way that includes items that seek teachers' knowledge about teaching styles and learning styles. Each teacher's dominant style was then linked to each learner's predominant learning style to see if they match or mismatch. To find the influence of matching teaching and learning styles on academic achievement, end-of-year examination marks of learners were considered. For each learner, the choice of examination marks to be used was entirely based on the subjects taught by the teachers that participated in the research.

Reliability of findings

Reliability of findings is very important for this research, therefore the various measurement instruments that were used by other researchers in attempting to categorize how learners learn were consulted for review. In this research, the Felder-Solomon index of learning styles seemed to be appropriate because it is relatively short and conveys more dimensions of learning than others. It is often used and a well-investigated instrument to identify learning styles. Felder and Spurlin (as cited in Graf et al., 2007: 83) provided an overview of studies dealing with analyzing the response data

of ILS regarding the distribution of preferences for each dimension as well as with verifying the reliability and validity of the instrument. From these studies, it is obvious that the ILS is reliable and suitable. The self-designed questionnaire was designed according to the existing theory of Felder and Silverman on teaching styles, and was tested in a pilot study, and thus confirming its reliability.

Research Sample Composition

The research involves sampling which is part of the internal logic of the study. The stratified sampling design was used for this research. The sample included the districts, schools, teachers and learners. Two secondary schools per district were randomly selected from the rural areas of the 10 districts of Lesotho. A sample of 300 participants was selected randomly. The participants were divided into 2 subgroups: learners and teachers. These participants were 10 learners in the form C class (equivalent to grade 10 in South Africa) and 5 teachers in each school. There was a total of 30 participants per district.

1.7 DEMARCATION OF THE STUDY AREA

The research was conducted in all 10 districts of Lesotho. In all these districts, there are schools situated in the rural areas, which consist of the following ecological regions, namely the foothills and mountainous zones. The study focused on the secondary schools in these rural areas, limiting it to 2 schools per district. The choice of the rural secondary schools as the research area followed the concern of low academic achievements in such schools. It is believed that the selection of two schools per district which makes a total of 20 schools created an ideal representation of the whole lot of rural secondary schools in Lesotho.

1.8 DEFINITION OF CONCEPTS

The following definitions relating to this research will be outlined:

- 1.8.1 A learning style is the consistent pattern of behaviour and performance by which an individual approaches a learning experience. It is therefore the composite of characteristic cognitive, affective and physiological behaviours that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment (Ellis, 2001: 149).
- 1.8.2 Teaching styles refer to the behaviours that teachers exhibit in their interactions with their learners (Heimlich & Norland, 2002: 20; Dasari, 2006: 9). A definition proposed by Hoyt and Lee (2002: 3) is that a teaching style refers to the way various teaching approaches are combined to produce an optimal outcome in learning.
- 1.8.3 Kennedy (as cited in Mekgwe, 1998: 14) defines academic achievement in terms of achievement test scores and teacher-given grades and percentages in academic subjects. It involves striving for excellence. In other words, individuals perceive performance or competence in terms of standards of excellence. According to Calitz (2001:7) academic achievement can be viewed as the degree to which learners are able to attain a standardized academic goal or, in other words, the degree to which learners master those tasks which they are expected to master for the respective academic year.
- 1.8.4 Secondary schools in Lesotho are schools that offer three-year curriculum of the junior secondary education, whereby external examinations are conducted and certificates are issued at the end of the final year. These schools comprise of Form A to Form C classes (Lesotho Ministry of Education and training, 2008: 5).
- 1.8.5 High schools in Lesotho are schools that offer five-year curriculum of both the junior and senior secondary education. In these schools, external examinations

are conducted in the final years of both junior and senior secondary education levels. These schools comprise of Form A to Form C (junior classes) and Form D to Form E (senior classes) (Lesotho Ministry of education and Training, 2008: 5).

1.9 RESEARCH OUTLAY

Chapter 1: it provides an overview of the background to the research questions, research problem and purpose of the study.

Chapter 2: it focuses in some detail on theory, models and educational implications of learning styles.

Chapter 3: deals with important aspects on teaching styles and the literature on matching/mismatching of teaching and learning styles.

Chapter 4: considers theory on academic achievement and important aspects of academic achievement in Lesotho.

Chapter 5: the research methodology, including sample composition, data collection and data analysis are discussed.

Chapter 6: research findings are presented and interpreted after data collection is complete.

Chapter 7: covers the discussion of findings, recommendations and the conclusion.

Chapter 8: comprises of the user-friendly teacher guide that can be used to help teachers in identifying and accommodating different learning styles in the secondary schools of Lesotho

1.10 CONCLUSION

This research aims to help teachers become aware of the different learning styles of learners and to suggest ways that can be used to direct appropriate teaching styles to

those learning styles. Teachers need to be aware of the pitfalls of subscribing too much to the notion of learners having one dominant style that is fixed. As stated by McKeache (1996: 1), the most serious undesirable side effect from the use of learning style concepts is that styles are often considered to be fixed by the teacher. This can limit learners' ability to learn in ways that do not fit their style. This means, sometimes it may also be worthwhile to attempt to expand a learner's thinking by deliberately setting work outside of his preferred learning style.

The findings from this research enabled the development of ideas that can be used to promote knowledge about learning styles, especially to help untrained teachers. The findings of this research could also help teachers to make informed decisions about which teaching styles match up with their students' learning styles.

CHAPTER 2

THEORY, MODELS AND EDUCATIONAL IMPLICATIONS OF LEARNING STYLES

2.1. INTRODUCTION

Experienced educators have long supported the idea that individual differences play an important role in learning. They agree that learners absorb instruction and develop knowledge through a set of individual strategies (Moallem, 2007: 217). In this chapter, some literature on learning styles will be reviewed, and this includes the consideration of learning as a process in which concepts and theories that relate to learning are discussed. A section on the description of learning style models will follow, while more attention will be directed to the Felder-Silverman Learning Styles Model (FSLSM). Factors that affect and influence the learning styles of learners will form part of the discussion in this chapter. The researcher will also review the educational implications of learning styles, and lastly, research findings on learning styles will be presented and discussed.

2.2. DEFINITIONS AND RELATED CONCEPTS

There is a variety of concepts relating to learning, how it is perceived and how it takes place in the mind of a human being. In this section, an outline of definitions of concepts pertaining to learning will be presented.

2.2.1 Learning

Learning is an incredibly complex process involving a great number of decisions by both learners and teachers in a relatively short period of time (Giles, 1995:2). According to Motah (2007:484) learning is defined as actions under the guidance of the teacher with

the aim of bringing about some relatively permanent change in the way learners perceive, think, feel and act.

Grosser (2007:38) concurs with the above and adds by indicating that learning is connected to teaching in that the effectiveness of teaching will directly or indirectly influence learning, and there are certain assumptions pertaining to learning. These assumptions are outlined as follows:

- 1) Learning is goal oriented.
- 2) Learning is linking new information to prior knowledge.
- 3) Learning is organizing information.
- 4) Learning is acquiring a repertoire of cognitive and meta-cognitive learning functions and strategies.
- 5) Learning is influenced by development.
- 6) Learning occurs in phases, yet is non-linear.

On the other hand, Rogers (2003: 18) is of the opinion that learning could be thought of as a process by which behaviour changes as a result of experience. Rogers has formulated two contrasting approaches that explain the learning process, and these are task-conscious or acquisition learning, and learning-conscious or formalized learning. Acquisition learning is seen as an ongoing process that takes place all the time. It is concrete, immediate and confined to a specific activity; and it is not concerned with general principles. This kind of learning is sometimes referred to as unconscious or implicit. Formalized learning on the other hand, arises from the process of facilitating learning. It is educative learning rather than the accumulation of experience. In this case, learners are aware that the task they are engaged in entails learning.

Motah (2007:45) adds to the latter, that there are some guiding principles for learning. These are:

1. Learning should be relevant to existing knowledge and any future tasks. Learners understand and remember better if they can fit their learning into a framework.

2. Learning should comprise of appropriate sequencing of instruction. Learners' understanding is enhanced if teaching is sequenced in a rational order which enables the content to be developed in a sequential framework.
3. Learning should have active learner's involvement. This implies that learning requires the opportunity to practice and apply new knowledge to promote understanding.
4. Learning is incomplete without feedback on performance. Learning is a process of acquiring new habits, knowledge and skills which together enable learners to do things they could not do before. It is therefore important for learners to receive feedback on their performance.

When looking at learners in rural areas of Lesotho, Mulkeen (2005:2) states that such learners may be considered more difficult to educate, because they are likely to have less parental support to go to school, to have more demands on their time, such as herding, and may find the curriculum less relevant to their lives. These learners may also find less support for their learning from the home and school environment for reasons such as unqualified teachers and illiterate parents.

Considering the definitions, assumptions and guidelines for learning, it is important for both learners and teachers to understand their roles in the learning process. This understanding should be enforced in all schools and educational institutes, among which are the rural secondary schools of Lesotho, to improve the academic achievement of learners.

2.2.2 Cognitive styles

Many definitions exist for cognitive styles among different authors. According to Halpern, 1986 (as cited in Calitz, 2001:13) the term cognitive style refers to the individual differences in modes of perceiving, remembering and thinking. This implies that for individuals to develop cognitively, they need to make use of all the aspects of

their perception effectively, which in turn will lead to the development of cognitive abilities that are necessary for more specific tasks.

In 1937, Allport introduced the concept of cognitive style as a style of living and adapting, and influenced by a distinctive personality type (Rosa, 2004:28). Saracho (1997:19) on the other hand, explains cognitive style as broad systematic characteristics that influence the person's responses in different situations. According to him, cognitive style identifies people's stylistic behavioural attributes that they inhibit in their perceptual, social and intellectual activities.

Jones (1998:116) notes that although some authors describe cognitive styles as static and relatively built-in features of an individual, others see them rather as developing through conditioning or reciprocal interaction of several external and internal factors.

The above researchers have suggested several elements which make up the cognitive processes. These include personality, behavioural attributes and adaptation to the environment, which determine and influence the cognitive styles of individuals. These cognitive styles have been shown to be stable over a period of time. This does not, however, imply that they are unchangeable. They are also not necessarily of genetic origin (Jones, 1998:116). Importantly, learners need to use their perception, intellectual and social skills effectively to have adequate cognitive development that will enable maximum performance in carrying out specific tasks such as learning.

The latter may apply to learners in the rural secondary schools of Lesotho. Therefore, it can be helpful if teachers can employ teaching activities and styles that enhance the cognitive development of their learners to compensate for other factors, such as the physical environment, which may inhibit such development.

2.2.3 Learning styles

According to Ellis (2001:149) a learning style is the consistent pattern of behaviour and performance by which an individual approaches learning. It is regarded as the composite of characteristic cognitive, affective and physiological behaviours that serve

as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. Jones (1998:116) further describes learning styles as non-fixed personality traits and as possibility-processing structures resulting from unique individual programming of the basic, but flexible structure of human learning.

From many definitions that exist, it seems that some educationists view cognitive and learning styles as one and the same thing, while others refer to learning and cognitive styles as two separate concepts when discussing cognitive processing (Rosa, 2004: 28). Nevertheless, the terms are often used interchangeably. More recently, the term learning style has emerged as a more common term or as a replacement term for cognitive style. Jones (1998:116), however, states that one main difference between the two concepts is that cognitive style is bipolar, while learning styles are multidimensional and encompass a range of variables including many of a non-cognitive nature, thus taking account of the more complex nature of the learning process.

Learning style is largely determined by inherited characteristics, and also influenced by the person's socialization at home, community and school. The past life experiences, the hereditary equipment and the demands of the present environment, develop learning abilities above others (Dasari, 2006:2). Again, Diaz and Carnal (1999:132) contend that ideally one would have a balance of all the learning styles, but most people have one or two dominant learning styles. This means that a person may possess different characteristics of learning styles, but only one or two dimensions of learning styles may be dominant. Moreover, the development of learning abilities differs from person to person, thus accounting for individual learning preferences and styles.

Learners learn best in classroom environments which are compatible with their own learning styles (Dasari, 2006:1). It is then with this in mind, that when learning style differences are understood and accepted, the classroom changes to a place where individual differences among learners become an incentive for teachers to provide a rich variety of lessons, teaching methods, learning activities, and testing challenges.

Teachers in the rural schools of Lesotho can make use of this learning style knowledge to modify their classrooms and teach to address the individual learning needs of

learners with the motive of improving learners' academic achievement which was recorded as low in the past four years.

2.2.4. Learning theories

The learning theories describe learning as a process and also guide models which are developed to explain how human beings learn. In other words, learning theories are attempts to describe how people learn, thereby helping us understand the inherently complex process of learning.

To summarise, in this section the concepts that relate to learning styles have been discussed to provide an orientation to the issue being researched. The next section will look further at various learning theories as to obtain the background knowledge on which the learning styles are based.

2.3 THEORIES UNPACKING THE LEARNING PROCESS

Many authors have used different theories to describe learning, but for this research an adapted approach developed by Merriam and Caffarella (1991) will be used. Merriam and Caffarella (1991: 138) identified four paradigms which are used to describe the learning process. These are Behaviourist, Cognitive, Humanistic, and Social/Situational orientations to learning. The constructivist orientation will also be included in the discussion to follow, because it also plays an important role in the development of the learning styles theories (Antherton, 2005b: 5).

The following discussion will consider how different theorists describe learning and how learning is viewed under each paradigm. The educational implications of these theories will also be covered.

2.3.1 Behaviourist Orientation

Behaviourists are interested in describing behaviour and observable changes (Muijs & Reynolds, 2005: 13). According to Merriam and Caffarella (1991: 137) behaviourists assume that learners are essentially passive recipients of information, responding to environmental stimuli. In this case, the learner starts off as a 'clean slate' and behaviour is shaped through positive reinforcement or negative reinforcement. Thorndike (as cited in Catania, 1999: 425) extended the concept of behaviourism further. He came to view learning in humans as the formation of connections, or "bonds" between stimuli and responses. When strong connections were built, a learner would automatically produce a desired response as soon as the appropriate stimulus was presented.

Pavlov (1927: 13), Skinner (1971: 15) and later, Willis (2005: 1) coincide with the idea of the connections above and indicate that this dominant form of learning could be labelled as associative learning. Associative learning emphasizes new association between events in the environment. This type of learning has two forms that are classical conditioning and operant conditioning. In his theory, Pavlov describes classical conditioning as a reflective or automatic type of learning in which a stimulus acquires the capacity to evoke a response that was originally evoked by another stimulus. Operant conditioning, on the other hand, is particularly interested in measurable changes in behaviour, consistent with the basic premise of the scientific method.

Skinner (1971:15) and Huitt (2001: 35) identified some principles for learning in their research. These principles are outlined as follows:

- Pleasant experience (such as rewards or praise) are positive reinforcers. They cause learners to make desired connections between stimuli and responses.
- Unpleasant experiences (such as punishment) are negative reinforcers. They cause learners to avoid undesirable responses to stimuli.
- Continuous reinforcement increases the rate of learning.
- Intermittent reinforcement contributes to longer retention of what is learned.

- Both positive and negative reinforcement can shape behavior.
- A lack of any reinforcement can also shape behavior. If people receive no acknowledgement for their behavior, they will likely change that behavior until they receive some kind of reinforcement.

Behaviourist learning has been influential in developing and addressing issues pertaining to education. Educational approaches such as applied behavior analysis, curriculum based measurement, and direct instruction, have emerged from the Behaviourist learning theories (Jacobs, Vakalisa, & Gawe, 2004: 42).

The main idea of a change in behaviour as postulated by behaviourists implies that teachers should arrange the environment to elicit the desired responses from learners. This idea can be contextualized to the rural secondary schools of Lesotho in that teachers need to use reinforcement that could motivate learners to actively participate in learning experiences. In this regard, teachers could use rewards and praise to encourage learners to exercise their weak learning styles.

2.3.2 Cognitive Orientation

Cognitivism views thought processes as critical aspects in behaviour. Furthermore it stresses the acquisition of cognitive structures and also emphasizes the need to explore during the learning process, mental processes such as thinking, memorizing, knowing and problem-solving. Within cognitive orientation, knowledge is seen as a schema or symbolic mental construction. This implies that learning can be defined as a change in a learner's schemata (Learning Theories, 2008: 1).

In fact, Ausubel (1963b: 25) and Stanley (1998: 2) note that learning occurs as potentially meaningful material enters the cognitive field, interacts with and is appropriately subsumed under a relevant and more inclusive conceptual system. According to Ausubel, this cognitive field is determined by the cognitive structure which is an individual's organization, stability and clarity of knowledge in a particular subject matter field, and is the principal factor influencing the learning and retention of

meaningful new material. In his learning theory, Ausubel proposed four processes by which learning can occur- these are derivative subsumption, correlative subsumption, superordinate learning and combinatorial learning.

In order to promote learning, Ausubel (1963b: 214) emphasizes the use of organizers. These are abstract ideas that are considered and planned by teachers in advance of every lesson to assist learners in assimilating new information. He also postulates that knowledge is hierarchically organized and that new information is meaningful to the extent that it can be related to what is already known.

Gagne (as cited in Patsula, 1999: 2) also contends that learning tasks for intellectual skills can be organized in a hierarchy according to complexity. This hierarchy also provides a basis for sequencing instruction. In this case, Gagne outlines nine instructional events and corresponding cognitive processes to be considered in the teaching-learning situation (Patsula, 1999: 2).

- Gaining attention (reception)
- Informing learners of the objective (expectancy)
- Stimulating recall of prior learning (retrieval)
- Presenting the stimulus (selective perception)
- Providing learning guidance (semantic encoding)
- Eliciting performance (responding)
- Providing feedback (reinforcement)
- Assessing performance (retrieval)
- Enhancing retention and transfer (generalization)

Gagne's theory and Ausubel's theory have at least one thing in common in that they both suggest how teachers or instructional designers can best arrange the conditions that facilitate learning for learners. These conditions include the organization of learning tasks, the presentation of subject content and the choice of teaching styles and teaching aids that correspond to the way learners build knowledge.

Among the theorists that contribute to the cognitive theory is Jean Piaget. Piaget's approach is regarded as central to the school of cognitive theory (Learning Theories, 2008). According to Antherton (2005a: 2), Piaget's view of how children's minds work and develop has been enormously influential, particularly in educational theory. This implies that Piaget coincides with the idea that learning is influenced by the cognitive structures of the human being as postulated by Gagne and Ausubel. Piaget (as cited in Antherton, 2005a:2), however, further indicates that there are certain stages through which the cognitive development of children go, and these are stages of cognitive development. These stages are:

- **Sensorimotor stage** (Birth to 2 years old). The infant builds an understanding of himself or herself and reality through interactions with the environment. Learning takes place via assimilation (the organization of information and absorbing it into existing schema) and accommodation (modifying the schemata to include the object that cannot be assimilated)
- **Preoperational stage** (ages 2 to 4). The child is not yet able to conceptualize abstractly and needs concrete physical situations. Objects are classified in simple ways, especially by important features.
- **Concrete operations** (ages 7 to 11). As physical experience accumulates, accommodation is increased. The child begins to think abstractly and can conceptualize, creating logical structures that explain his or her physical experiences.
- **Formal operations** (beginning at ages 11 to 15). Cognition reaches its final form. By this stage, the person no longer requires concrete objects to make rational judgments. He or she is capable of deductive and hypothetical reasoning.

Considering Piaget's stages of cognitive development, it may be important for teachers in the rural secondary schools of Lesotho to consider the average age of their learners and use that information in the choice of teaching methods and development of instructional materials under each teaching style they decide to use.

Cognitive theories look beyond behaviour to explain brain-based learning. Cognitivists consider how human memory works to promote learning. For example, how the natural physiological processes of encoding information into short term memory and long term memory become important to educators. In this framework of thinking, cognitive loading and information processing theory are considered. These theories of learning are very useful in guiding instructional design and explaining the learning styles of individual learners. Teachers in rural schools of Lesotho may also find them useful in guiding them to choose teaching styles that are appropriate to the learning needs and developmental levels of their learners. Moreover, the cognitive theories may enable teachers to have a clear understanding of the individual differences among their learners and thus teach each learner accordingly.

2.3.3 Humanism orientation

Humanism is a paradigm in which human beings are perceived as being different from other species and possess capacities not found in animals. Humanists give primacy to the study of human needs and interests, portrays learning as a personal act to fulfill one's potential, and seem to value the world of the learner from his/her perspective on learning (Liikala, 2007).

In relation to the above said, Huitt (2001: 1) identifies five basic humanistic views of education, namely:

1. It promotes positive self-direction and independence
2. It develops the ability to take responsibility for what is learned.
3. It develops creativity
4. It develops curiosity
5. It develops human affection

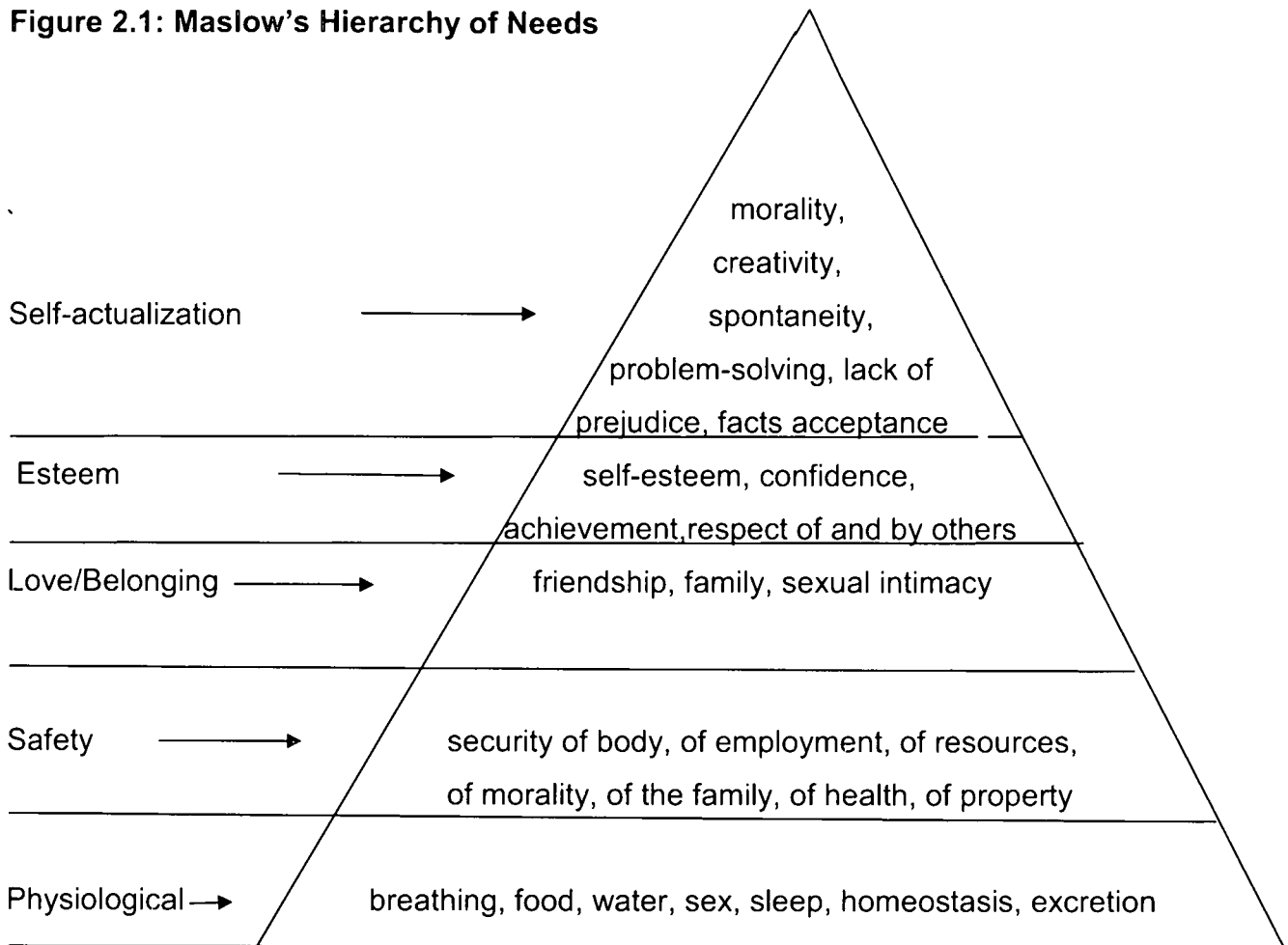
Huitt is of the opinion that these humanistic views of education emphasize the importance of education in the development of a human being, actualization of human potential and the fulfillment of human needs. Maslow (1943: 370) further notes that the

integrated wholeness of the organism must be one of the foundation stones of motivation theory. In his theory of the Hierarchy of Needs, Maslow notes the importance of motivation and self-actualization to learning and personal fulfillment.

According to Huitt (2004: 1) Maslow's hierarchy of needs is often depicted as a pyramid consisting of five levels: the first four lower levels are grouped together as being associated with physiological needs, while the top level is termed as growth needs associated with psychological needs. Deficiency needs must be met first. Once these are met, seeking to satisfy growth needs drives personal growth. The higher needs in this hierarchy only come into focus when the lower needs in the pyramid are satisfied. Once an individual has moved upwards to the next level, needs in the lower level will no longer be prioritized. If a lower set of needs is no longer being met, the individual will temporarily re-prioritize those needs by focusing attention on the unfulfilled needs, but will not permanently regress to the lower level. Figure 2.1 in the next page illustrates the categories and order of needs as postulated by Maslow.

The learning implications of Maslow's theory mean that the learning environment should be conducive so that the needs of learners are attended to. Learning should be learner-centered and personalized, and the teacher should be the facilitator with the goal of developing self-actualized learners in a co-operative, supportive environment (Maslow, 1943 as cited in Huitt, 2004: 1).

Figure 2.1: Maslow's Hierarchy of Needs



Source: Huitt (2004: 1)

From the above notion, it may be important for teachers in the rural secondary schools of Lesotho to adopt more learner-centered teaching approaches to improve learners' acquisition of knowledge in their classes. These learner-centered approaches may enable learners to display their strengths and challenges in learning, to activate their learning styles, and engage fully in the learning process. Knowing learners' strengths and challenges can therefore enable teachers in the rural schools of Lesotho to direct appropriate teaching styles to the learning needs of their learners.

2.3.4 Social/Situational orientation

This paradigm posits that people learn from observing other people, and such observations take place in a social setting (Merriam & Caffarella, 1991: 134). Ormond (1999: 2) notes that social learning theory focuses on the learning that occurs within a social context. It considers that people learn from one another, including such concepts as observational learning, imitation, and modeling.

Similarly, Bandura's social learning theory puts emphasis on observational learning, and suggests that people can learn by watching other people (Richmond, 2007: 6). This observational learning has four components, and these are:

- Attentional processes- our abilities to pay attention to a model.
- Retention processes- our abilities to retain actions and symbolic forms.
- Motor reproduction processes- the skills that allow us to reproduce behaviour accurately.
- Reinforcement and motivational processes- which engage us to acquire behaviour.

Among other theorists, Albert Bandura is considered as the leading proponent of this theory. Bandura (as cited in Patsula, 1999: 1) indeed state

"Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action".

Additionally, Vygotsky's theory of social cognitive development is complementary to Bandura's social learning theory. Vygotsky believed that human interaction with the physical world and social experiences are the key determinants of cognitive development (Richmond, 2007: 4). According to Vygotsky (as cited in Patsula, 1999: 1) social interaction plays a fundamental role in the development of cognition and the

potential for cognitive development is limited to a certain time span which has four learning stages. These stages can be presented as follows:

- Stage 1- assistance provided by more capable others (teachers, coaches)
- Stage 2- assistance by self
- Stage 3- internalization automatization, and
- Stage 4- de-automatization: recursiveness through prior stages.

The above may imply that learners require an adequate support from teachers in their learning in order to have a good foundation and steady development of skills and attitudes necessary for learning. It can be through the appropriate teaching styles and methods that learners learn effectively, become motivated and develop necessary skills for learning.

Lave and Wenger (1990: 25) argue that learning as it normally occurs, is a function of the activity, context and culture in which it occurs (i.e., it is situated). This contrasts with most classroom learning activities which involve knowledge which is abstract and out of context. Lave and Wenger further argue that social interaction is a critical component of situated learning -- learners become involved in a "community of practice" which embodies certain beliefs and behaviours to be acquired. As the beginner or newcomer moves from the periphery of this community to its centre, he/she becomes more active and engaged within the culture and hence assumes the role of expert or old-timer. In the same way learners may develop certain learning styles depending on the context and culture in which they live. It therefore becomes important for teachers to identify these learning styles and direct their teaching to the learning styles of their learners.

Ormond (1999: 5) presents the educational implications of social learning theory. These implications can be adapted by teachers in the rural secondary schools of Lesotho to modify the instruction and the learning environment that addresses individual learning styles and individual preferences. These implications are outlined as follows:

- a) Learners often learn a great deal simply by observing other people.

- b) Describing the consequences of behaviours can effectively increase appropriate behaviours and decrease inappropriate ones.
- c) Modeling provides an alternative to shaping for teaching new behaviours.
- d) Teachers and parents must model appropriate behaviours and take care that they do not model inappropriate ones.
- e) Teachers should expose learners to a variety of other models.
- f) Learners must believe that they are capable of accomplishing school tasks.
- g) Teachers should help learners set realistic expectations for their academic accomplishments.
- h) Self-regulation techniques provide effective methods for improving behaviour.

All in all, it should be noted by teachers and curriculum planners that the social environment can affect the way learners perceive learning, the way they learn and the learning styles they prefer. Paying attention to the educational needs of learners will therefore include an adoption of teaching styles that can address the learning styles of individual learners.

2.3.5 Constructivist orientation

Constructivism as a paradigm posits that learning is an active, constructive process. Constructivists view learning as a process in which the learner actively constructs or builds new ideas or concepts based upon current and past knowledge (Learning Theories, 2008: 2). Bruner (as cited in Patsula, 1999: 4) further emphasizes that learning involves cognitive structures that provide meaning and organization to experiences and allows the individual to go beyond the information given. According to Bruner, the teacher should try and encourage learners to construct hypotheses, make decisions, and to discover principles by themselves.

In relation to Bruner, Antherton (2005b: 5) views constructivism as the label given to a set of theories about learning which fall somewhere between cognitive and humanistic views. He defines constructivist learning as a very personal endeavor, whereby internalized concepts, rules and general principles may consequently be applied in a

practical real-world context. Constructivism itself has many variations, such as active learning, discovery learning and knowledge building, which all promote a learner's free exploration within a given framework. Furthermore, Constructivism is expressed in two forms: cognitive constructivism and social constructivism. According to Antherton (2005b: 6) cognitive constructivism is about how the learner understands things in terms of developmental stages and learning styles, while social constructivism emphasizes how meaning and understanding grow out of social encounters.

As far as constructivism is concerned, it seems important for teachers in the rural secondary schools of Lesotho to understand how learners construct meaning in learning and how learning styles can be activated to improve the academic achievement of said learners. In this regard, it may be of great benefit to expose learners in the rural secondary schools of Lesotho to the learner-centered learning environment that can promote independent learning and also use teaching styles that can enable learners to construct knowledge with ease.

2.3.6. Summary of orientations to learning.

The five orientations to learning that have been discussed above are summed up in Figure 2.2 on the next page, to provide an overview of how they differ:

Figure 2.2 Five orientations to learning theories

	Behaviourist	Cognitivist	Humanist	Social/Situated Learning	Constructivist
Theorists	Thorndike, Pavlov, Watson, Guthrie, Hull, Tolman, and Skinner.	Koffka, Kohler, Wertheimer, Lewin, Piaget, Ausubel, Bruner, Reigeluth, and Gagné	Maslow, and Rogers	Bandura; Vigotsky; Argyris; Lave & Wenger;	Bruner, Dewey, Vico, Vygotsky
View of the Learning Process	Change in behaviour	Defined by internal mental processes (including insight, information processing, memory, and perception)	A personal act to fulfill potential	Interaction with and observation of others in a social context	Construction of meaning from experience
Locus of Learning	Stimuli in the external environment	Internal cognitive structuring	Affective and cognitive needs	Interaction of person, behaviour, and environment	Internal construction of reality by individual
Purpose of Instruction	Produces behavioural change in desired direction	Develops capacity and skills to learn better	Becomes self-actualized, autonomous	Models new roles and behaviour	Constructs knowledge
Role of the Designer	Designs stimuli to elicit desired response	Structures content of learning activity	Facilitates development of the whole person	Presents models of new roles and behaviours	Facilitates and negotiates meaning with learner

Adapted from Merriam and Caffarella (1991:138)

2.4 LEARNING STYLE MODELS

Different approaches have been used to model and label learners' learning styles, from those based on social interaction, instructional and environmental preferences to information processing and personality levels (Kovacic, 2003: 794). The discussion below includes the classification of leaning style models and the characteristics of each of the models.

2.4.1. Classification of Learning Styles Models

- The most common framework used for the classification and explanation of the learning style's model is Curry's Onion Model (Curry, as cited in Kovacic, 2003: 794).

According to Brown, Cristea, Steward and Brailsford (2005: 80) Curry's Onion Model is a good basis for demonstrating the different ways in which learning styles can be categorized by assigning them to a particular layer in a radial system. This meta- model attempts to define and illustrate the relationship between the learner's personality, cognitive style, learning styles and learning strategies.

In this model, learning differences amongst humans are categorized into layers of an onion. There are four layers in this model, where the first or outermost layer comprises the models emphasizing observable traits, such as instructional and environmental preferences. The second layer comprises social interaction models, and the third, encompassing information processing models. The innermost layer of the onion contains those models described as personality models and are considered to be more stable psychological constructs and less susceptible to change; these are, however, much less easily measured (Brown et al., 2005: 80).

- Ellis (2001: 150) provides another interpretation of how learning style models may be characterized. Table 2.1 on the next page, illustrates an adaptation of his categorization.

Table 2.1: Classifying learning style models

Category	Characteristics	Researchers
Cognition - perceiving, finding out, obtaining information	Sensing/intuition	Jung, Myers-Brigg, Mok, Keirsey and Bates
	Field Dependent/ field-independent, abstract/concrete	Witkin, Gregorc, Kolb and McCarthy
	Visual, Auditory, Kinesthetic, Tactile	Barbe and Swassing, Dunn and Dunn
Conceptualization- thinking, forming ideas, processing, memory.	Extrovert/introvert	Jung, Myers-Briggs, Keirsey and Bates
	Reflective observation/ active experimentation	Kolb and McCarthy
	Random/sequential	Gregorc
Affect- feelings, emotional response, motivation, values, judgement	Feeler/Thinker	Jung, Myers-Brigg, Mok, Keirsey and Bates
	Effect of temperature, light, food, time of day, sound, design	Dunn and Dunn

Adapted from Ellis (2001: 150)

Within the scope of this review, learning style models designed by Dunn and Dunn, Kolb, Myers-Brigg, will be described as they have some similarities in the formulation of style dimensions as stipulated by the Felder-Silverman learning style model. This is supported by Moallem (2007: 219) that the Felder-Silverman learning style model combines several dimensions presented in the Myers-Briggs model (sensing/intuitive) with Kolb's information processing dimension (active/reflective) and Dunn & Dunn's visual dimension.

In summary, there are various ways of classifying learning style models by different authors as have been discussed. This classification makes it easier for researchers to understand and locate the model that is suitable to their studies. For this research it is therefore important to review the characteristics of learning style models designed by Kolb, Dunn and Dunn, Myers-Briggs and Felder and Silverman.

2.4.2 Characteristics of learning style models

Following the classification of learning style models, it is important to describe each model according to its characteristics.

2.4.2.1 Dunn and Dunn Learning Style Model

Rita Dunn and Kenneth Dunn (in Dasari, 2006: 13) describe three styles of learning as follows:

- Auditory- people who learn by listening
- Visual- people who learn by seeing textual and pictorial representations
- Tactile/ Kinesthetic – those who learn by touching and using body movements

This model is commonly referred to as the Visual, Auditory and Kinesthetic (VAK) model of learning styles. According to Clark (as cited in Dasari, 2006: 13) this model falls within the perceptual modality as it is primarily concerned with how we take in information; in other words, it can be based on biologically based reactions to the physical environment. Auditory learners are logical, analytical and sequential thinkers. This type of learner may be most successful in traditional classrooms, since their style is

accommodated in most school tasks (Winebrenner, 1996: 43). Visual learners process information most effectively when it is seen. These learners think in pictures and have vivid imaginations. Tactile/Kinesthetic learners process information actively through physical means. Kinesthetic learning refers to whole body movement while tactile learning refers only to the sense of touch. Winebrenner (1996:43) also noted that most learners that do not perform well in school are Kinesthetic/Tactile learners.

Dunn and Dunn (1979: 240) believe that more than three fifths of a person's learning style is biologically imposed. The model therefore notes five factors that influence a learning style, and these are **environmental preferences**, such as class design, sound, lighting, temperature; **emotional preferences**, such as motivation, persistence, responsibility; **sociological preferences**, such as learning relations; **psychological preferences** related to perception, time, mobility; and **physiological processes**, such as perceptual strengths and intake.

From the fact that this model notes the factors that influence people's learning styles, among which the environment is included, it can be a challenge to teachers in the rural schools of Lesotho to identify which learning styles seem to be dominant in the rural areas. It can also help teachers who have been working in urban areas and are moving to rural schools.

2.4.2.2. Kolb's Experiential Learning Style Model

Kolb's learning style model builds on Carl Jung's claim that learning styles result from people's preferred ways of adapting to the world (Chapman, 1995: 5). According to Wheeler and McLeod (2002: 697), Kolb conceptualized learning as the fundamental human process of adapting to changing circumstances. He proposed two basic learning processes- the process of grasping information through the mode of either concrete experience or abstract conceptualization and the process of transforming information through the mode of either active experimentation or reflective observation.

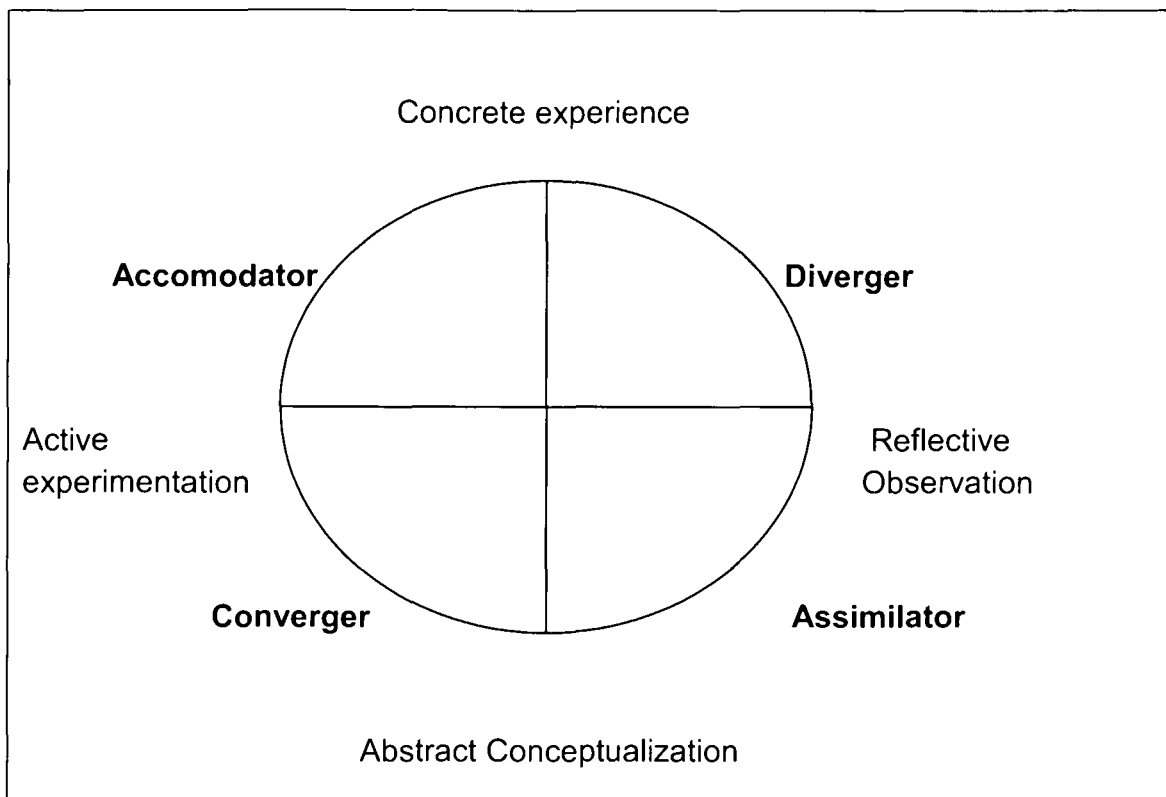
Kolb further indicates that learning requires engagement of all four of these behaviour modes. In this case, the entire learning process can be modeled as a cycle moving from a concrete experience, to reflective observation about the experience, then to development of abstract conceptualizations about the experience, and lastly to active experimentation around the experience.

Kolb (cited in Wheeler & McLeod, 2002: 698)) described the characteristics of learners in each of the different learning modes. Concrete experience promotes the act of learning through experience. Learners, who prefer to learn through concrete experience value relationships with other people, make decisions based on intuition and tend to be more concerned with feeling as opposed to thinking. Reflective observation promotes the act of learning through reflection. Learners with this learning mode have the ability to consider and appreciate a variety of different viewpoints and perspectives, and use observations when making judgments. Abstract conceptualization promotes the act of learning the logic and systematic planning when analyzing ideas and solving problems. Active experimentation promotes learning by doing.

This theory maintains that each of us develops a preferred mode of carrying out each of the two basic learning processes and that individual differences exist in the characteristics of our own learning cycles. This gives rise to the concept of learning styles.

There are four learning styles in Kolb's learning styles model, and these are the Diverger, Assimilator, Converger, and Accommodator. These learning styles are illustrated in Figure 2.3 on the next page.

Figure 2.3 Kolb's Learning Style Model



Adapted from Rawaf and Rassool (2007:35)

Kolb (cited in Rawaf & Rassool, 2007: 35) asserted that it is important for individuals to understand their learning styles so that they can improve their effectiveness as learners. In the model (Figure 2.3) **divergers** excel in concrete experience and reflective observation; **assimilators** are best in reflective observation and abstract conceptualization; **convergers** use abstract conceptualization and active experimentation; and lastly **accommodators** learn through active experimentation and concrete experience. The learning styles are described in details below:

- a) Divergers are described as sensitive, imaginative and people-orientated and often enter professions such as human resources development, counseling or nursing. They are good in brainstorming sessions. A learner operating within this

style is concerned with why and how course material relates to their experiences (Rawaf & Rassool, 2007: 36).

- b) Assimilators are less focused on people and more interested in ideas and abstract concepts. They are good at organizing and presenting information in a clear, logical format. In formal learning situations, individuals with this style prefer reading, lectures, exploring analytical models and having time to think things through (Chapman, 1995: 5 and Rawaf & Rassool, 2007: 36).
- c) Convergers, according to Rawaf and Rassool, can solve problems and prefer technical tasks, and are less concerned with people and interpersonal aspects. Individuals with a converging style are less people-oriented and often choose careers in technology. Dasari (2006: 15) coincides with the above and further notes that learners with this style respond well to opportunities that actively involve them in a task, and to learn by trial and error.
- d) Accommodators learn best in concrete experience and active experimentation, and prefer to take a practical or experimental approach. These learners are attracted to new challenges and experiences and to carry out plans. They are people-oriented and active learners (Chapman, 1995: 2).

Kolb further indicates that these styles of learning are dynamic, but most individuals exhibit strong preferences for a given learning style. It should, however, be noted that each individual's learning style is not necessarily fixed and that in using them there is a need to avoid the danger of being stereotyped (Dasari, 2006: 16).

Kolb (as quoted in Chapman, 1995: 2) identifies three developmental stages that play a role in influencing a person's learning style, namely:

- Acquisition- from birth to adolescence.

- Specialization- schooling, early work and personal experiences of early adulthood which lead to the development of a specialized style that is affected by a person's social, educational and organizational socialization.
- Integration- from mid-career to later life.

Kolb's model of learning styles gives valuable information on learning style dimensions and the developmental stages that may influence learning styles. This information can offer guidance to teachers who teach in the rural secondary schools of Lesotho to choose teaching styles which are appropriate for individual learners.

2.4.2.3 Myers-Briggs Type Indicator (MBTI)

The Myers-Briggs concept of psychological type, as well as use of the MBTI as a diagnostic tool, has grown in popularity over the recent decade (Lawrence & Martin, as cited in Burris, Kitchel, Molina, Vincent & Warner, 2008: 46). While this concept of psychological type encompasses much more than learning style, the implications of type in the educational setting have been well documented (Burris, Kitchel, Molina, Vincent & Warner, 2008: 46). The implications of psychological type as criterion in the teaching-learning situation, necessitate us to explore the four dimensions thereof.

- The first dimension consists of two kinds of attitudes which are **extraversion** and **introversion**. Extraversion is characterized by an outward focus of energy centered on people or action. On the other hand, introversion is characterized by an inward focus of energy centered on ideas and reflection.
- The second dimension considers the contrast between **sensing** and **intuition**. This dimension represents a preference for perceiving information. People with sensing preference tend to be more concerned with actual, present, current and real things. In contrast, people with preference for intuition tend to be more concerned with what is possible and new, and have an orientation to the future.
- The third dimension describes a person's preference for making judgments, and contrasts between **thinking** and **feeling**. The thinking judgment is concerned with logical consistency and analysis of cause and effect, while the feeling

judgment is concerned with establishing or maintaining relationships (Dasari, 2006: 17).

- The fourth dimension describes orientation by contrasting **judging** and **perceiving** as mental processes. According to Burris et al. (2008: 47) people who prefer judging, study and learn in a steadier and orderly way, while perceiving preference involves a flexible and informal way of approaching things with an orientation to discovery.

If teachers could be aware of the existence of these learning styles, plan their lessons and teach according to the individual styles, the academic achievement which is seemingly low in the rural schools of Lesotho could be improved. For instance, the teachers can decide on the teaching aids, questions, illustrations and logic of presentation as steps, to use in addressing the specific learning styles of their learners in lesson planning and presentation.

2.4.2.4. Felder-Silverman Learning Style Model (FSLSM)

This model was designed by Dr. Felder in collaboration with Dr. Silverman. Initially the model was used by college instructors and students in engineering education, but has subsequently been applied to many other disciplines (Felder 2006, as quoted in Dasari, 2006: 18). Felder and Silverman (1988: 675) state that learners learn in different ways and their learning style can be determined by asking the following questions:

- 1) What type of information does a learner preferentially perceive?
- 2) Through which sensory channel is external information most effectively perceived?
- 3) With which organization of information is a learner most comfortable?
- 4) How does the learner prefer to process information?
- 5) How does the learner progress towards understanding?

In answer to the above questions, Felder and Silverman (1988: 675) classified learners' learning styles into the following dimensions:

1) Sensory or Intuitive

This dimension involves perception. Sensory learners are practical, orientated towards facts and procedures while intuitive learners are innovative, conceptual and oriented towards theories and meanings.

2) Visual or Verbal

This dimension considers an input of information. Visual learners prefer pictures, diagrams and graphs as models of material presentation, while verbal learners learn best with written and spoken explanations.

3) Inductive or Deductive

Organization of information contrasts between inductive and deductive learners. Inductive learners prefer representations that proceed from the specific to the general while learning, while deductive learners prefer to work from the general to the specific.

4) Active or Reflective

Information processing differs among learners. Active learners learn by trying things out, working with others. Reflective learners learn by thinking things through, working alone.

5) Sequential or Global

Sequential learners learn best through a linear and orderly approach and prefer small incremental steps. On the other hand, global learners are holistic and systematic thinkers and learn in large heaps.

From the above dimensions, a learner can have one or two predominant learning styles from the ten individual styles that are found across all the five learning style dimensions. The above model was used to select the learning style's instrument for this research, which will be discussed in chapter 5. It should, however, be noted that initially the Felder-Silverman Learning Style Model was developed as a five dimensional model as

described above. Felder and Silverman later omitted the organization dimension, because they believed that the best approach to teaching undergraduates is always inductive, and therefore their learning style's instrument does not differentiate between inductive and deductive learners (Kovacic, 2003: 795).

Given this model, the main characteristics are defined for identifying teaching styles that can be tailored to learners' individual learning styles. This means that teachers should employ teaching styles that balance learning tasks and activities so that they would accommodate all learners' learning styles by taking into account the four dimensions of the model. As has been mentioned earlier, most teachers are unqualified in the rural secondary schools of Lesotho and the simplicity of this model would hopefully make it easier for teachers to identify which teaching styles and methods can appropriately address specific learning styles of learners.

2.5. FACTORS INFLUENCING LEARNING STYLES

Every human being differs from others in his/her own way of thinking, physical appearance, and behaving. This is accounted for by the individual differences that are influenced by both extrinsic and intrinsic factors of human beings. In learning as well, individuals are influenced by certain factors to use different styles in order to achieve their learning goals. To understand learning styles and teach according to them, teachers in rural schools need to know the factors that influence these learning styles. Therefore, the biographical and other related factors influencing learning styles of people are discussed in this section.

2.5.1 Biographical Factors

This section covers a discussion on the influences of gender differences, age differences, parental influence and the influence of school attended and heredity, on learning styles.

2.5.1.1 Gender Differences

According to Sizemore and Schultz (2005: 347) there are relationships among learning styles and gender. Nqadala (1994: 17) contends that males have a higher tolerance for the contentious style while females have a stronger preference for friendliness, attentiveness, impression-leaving and the dramatic. The learning styles that males and females use also differ. Females are more likely to be independent, compared to males. Ndaqala also noted that women often take more notes than men, but may not perform significantly better as far as course achievement measures are concerned. This confirms that women and men behave differently in note-taking, suggesting that they may respond differently to learning styles.

Slater, Lujan and Di Carlo (2007: 339) further indicate that males identify with a small subset of learning styles, whereas females distribute more broadly across the learning style spectrum. Female adolescents tend to show a preference for variety in the social context of their learning, including opportunities to work in pairs, in large groups and with teachers, while males do not express this preference. Additionally, male learners primarily prefer to use tactile resources in learning, unlike most females.

Nqadala (1994: 17) notes that in a learning style's program conducted by Dorsey and Pierson (1983), the learning style inventory indicated that the more dominant learning style for males was abstract conceptualization and for females active experimentation. On the other hand, Kolb (1984: 18) and Schaler, Borun, Allison-Bunnell and Chambers (2007: 6) have indicated that women tend to show more of a concrete orientation than men.

Despite the differences in findings that relate to how gender influences learning styles, it is evident that there is a relationship between the two issues. Therefore it can be of importance for teachers in the rural secondary schools of Lesotho to identify which learning styles are portrayed by their female and male learners in order to direct appropriate teaching styles to each learner in both groups. This idea may be important in balancing the improvement of academic achievement for both female and male

learners in the above-mentioned schools, to maximize the academic achievement of all learners.

2.5.1.2 Age Differences

Dasari (2006: 12) is of the opinion that learning style preferences may change over time as they are developmental and alter with maturity. To understand the relationship between learning styles and age, Dorsey and Pierson (1984: 10) conducted a study on learning styles and their results suggest that age influences learning style types. Their data indicated that the accommodator style becomes predominant at about the age of thirty-three. At this point, a learner learns actively through trial and error and experience and will profit more from learner-involved experience than from pure lecturing (Nqadala, 1994: 17).

Dorsey and Pierson (1984: 11), and later, Joy and Kolb (2007: 23) also noted that the tendency towards abstractness increased from age 18 to 33, and the tendency towards concreteness increased from age 34 to 49. The active/reflective dimension indicated that from age 18 to 49, respondents preferred an active role and then moved to a more reflective role at a later stage in life.

Kovacic, Green and Eves (2004: 6) concur with the idea above, and maintain that children prefer to work with peers instead of alone. These authors further indicate that for many people, auditory and visual perceptual elements strengthen with age.

It should be noted that learners in the secondary schools of Lesotho are at the average range of 13 to 15 years old. According to Piaget's theory of cognitive development, this is the stage of formal operations whereby cognition reaches its final form. At this stage, the person no longer requires concrete objects to make judgments and is also capable of deductive and hypothetical reasoning (Learning Theories, 2008: 1). This idea implies that learners are expected to use the abstract conceptualization learning mode, from Kolb's model. Learners in the rural secondary schools of Lesotho may, however, be older than the expected age due to domestic factors, such as herding. The

implementation of Free Primary Education (FPE) in Lesotho from the year 2000 might also influence the range of learners' ages. With this idea in mind, it is more possible to have more variety of learning styles in the rural schools that need to be addressed by appropriate teaching styles to improve learners' academic achievement.

2.5.1.3 Parental Influence

Mekgwe (1998: 23) states that parents are effectively responsive in the sense of being loving, supportive, committed and cognitively responsive in the sense of providing a stimulating and challenging environment. Parental responsiveness correlates strongly with cognitive and language development, learning styles and school performance, because extensive contact affords children many models of adult functioning to copy, opportunities, to practice new skills and greater reinforcement for self-initiated efforts.

Parenting styles can also influence the learning styles of learners. According to Tiller, Garrison, Block, Cramer and Tiller (2005: 5) three parenting styles of authoritarian, permissive, and authoritative are often used in studies investigating parenting styles in relation to diverse child outcome variables, such as academic achievement, self-confidence and learning styles. Higher levels of authoritative parenting practices are related to higher levels of cognitive abilities and activated learning styles, and higher levels of authoritarian and permissive parenting practices are related to lower levels of cognitive abilities. Bojeva (1998: 115) also found out that adolescents who perceived their parents to be authoritative engaged in more effective learning.

There was no statistical data found or used for this research on the types of parenting in the rural area of Lesotho. It may, however, be assumed that many parents in those rural areas possess an authoritarian parenting style as a result of the rigid Basotho tradition and customs that may be prevailing in such areas. Nevertheless, it may be important for teachers to become aware that parents can play a role in influencing learners' learning styles.

2.5.1.4 Influence of School Attended

The learners' background experiences and characteristics influence how they learn. The previously attended school may significantly influence the learning styles in the new school. Matthews (1991: 253) indicates that learners with certain styles of learning do better than those with other styles. This difference in academic achievement means that instruction and counseling match the style of learning used by learners who find success. Moreover, learners have more positive attitudes toward school and achieve more knowledge and skills when taught and advised through their natural or primary styles, rather than through a secondary or underdeveloped style (Sizemore & Schultz, 2005: 344; Hai, 2005: 4).

The learning experience from the school attended plays an important role in the learning styles of learners. The individual learning experiences allow the building of a more coherent and sophisticated consciousness about learning. This learning experience may shape a way in which a learner prefers to learn. In the case of the rural secondary schools of Lesotho, the above idea implies that the education learners experience in the rural primary schools may be influencing the learning styles of learners in secondary level. This would suggest more research on learning styles at the rural primary schools of Lesotho.

2.5.1.5 Heredity and Learning Styles

According to Dzakiria and Razak (2004: 1) the differences in heredity affect the choice of activity and the likelihood of reinforcement. Size, gender and co-ordination, for example influence the choice of sport and the role in that sport. In the same manner, learners may prefer certain learning styles over others depending on personal characteristics they have inherited.

2.5.2 Other Factors

Learning styles can be influenced by other factors which are the environment, physical, social, emotional, and cognitive influences. These factors are discussed below.

2.5.2.1 Environmental influences

Environmental influences can be the elements of sound, light, temperature and design (formal versus informal) (Dunn, 2003: 12). Lemmer and Squelch (1993: 58) maintain that learning styles are influenced by the environment in which learning takes place, and the selection of appropriate styles depend upon the individual's perception of the environment. Dorsey and Pierson (1984: 11) are of the opinion that the awareness of career obsolescence created by rapid changes in the environment causes a negative impact in the adult's self-esteem. This loss of self-worth forces a person to alter his learning style.

Dunn (2003: 15) states that selected elements of style are imposed by genetic make up and that others are developed by experiences throughout life. It therefore seems that both biological and environmental factors influence the development of learning styles. This notion calls for more research on to what extent these factors influence such development.

The environmental influences on learning styles may imply that learning styles of learners in rural areas will be different to those of learners living in urban areas. In the same way, the learning styles of learners may also be different from region to region in the rural areas, depending on the environmental factors that exist in those regions. Hence it may be possible to have a wide variety of learning styles of learners in the rural secondary schools of Lesotho. Consequently, it may be important for teachers to use ways of identifying their learners' learning styles whilst also teaching to those styles as to improve upon academic achievement.

2.5.2.2 Physical Influences

These influences refer to the perceptual modality which relates to the means in which information is extracted from the environment by the senses (Nqadala, 1994: 20). The physical dimension of learning style includes preference for learning in verbal or visual modes (Felder & Silverman, 1988: 675).

The physical influences may also affect learning styles of learners in the rural secondary schools of Lesotho as learners interact with the physical surroundings they live in. For instance, learners who are surrounded by books and posters may develop a visual learning style.

2.5.2.3 Social Influences

James and Galbraith (1995: 20) confirm that a person's learning style is composed of a series of different modalities that together make up each person's unique style. The social modality is one of such modalities and it reflects social sets which could inhibit or enhance the learning style and process for each individual.

In addition to the above, Lemmer and Squelch (1993: 59) state that learning style is influenced by the way a learner is socialized in the home, community and school. This implies that the nature of social tasks imposed by the society and school tasks play a part in determining the learning styles used by learners. Moreover, the specific sociological factors that influence the social environment make a child's learning more or less conducive. Some learners, for example learn best when alone, others when with peers and some with adults.

The social activity in the rural settlement of Lesotho may be little due to the unstructured and haphazard housing arrangement. This could affect the social aspects of learning styles in growing children and influence the development of such learning styles at school. This influence may also lead to inhibited learning and poor academic achievement.

2.5.2.4 Emotional Influences

The emotional influences include personal feelings, attitudes, and personality traits which influence information gathering, knowledge building and the application of knowledge (Nqadala, 1994: 19; Oakland & Joyce, 2004: 61). Factors such as motivation, persistence at tasks and a sense of responsibility are responses to emotions which may influence the learning process and learning styles (Dunn, 2003: 12).

Motivated and persistent learners are eager to learn and use all resources available to them, and thus their learning styles may cover a wide range of learning styles. On the other hand unmotivated learners learn in a fairly conventional setting and may become extremely interested in achieving in an individualized instruction (Dunn & Dunn, 1979: 239).

In the rural areas of Lesotho, the domestic practices, such as herding and factors such as parents' low level of education and poverty may act as constraints to participation of children in schooling. These factors may inhibit the emotional aspects in learners that could result in undeveloped learning styles and poor academic achievement.

2.5.2.5 Cognitive Influences

Cognitive modality refers to the mental processing of information (James & Galbraith 1985, as cited in Nqadala, 1994: 20). Ballinger and Ballinger (1982: 35) noted that through the 1970s more and more research appeared confirming that the cognitive development influenced learning style preferences. It was found that both the left and the right brain make significant contributions to learning. For adolescents, especially the gifted, the talented and even the mentally handicapped, right hemisphere functioning may dominate their overall learning styles in reading and writing.

To conclude, it may be important that while teachers in rural schools match their teaching styles to learning styles, they also activate the less preferred learning styles which may have been affected by the factors mentioned above. This idea also makes it equally important that teachers become aware of the possible factors of their learners' learning styles.

2.6 EDUCATIONAL IMPLICATIONS FOR LEARNING STYLES

Since individuals have significantly different learning styles, it would be professional, responsible and moral to identify their unique strengths and then provide responsive instruction. According to Dixon (1985: 16) and Dunn (2003: 11) there are five ways that can be used to implement information about learning styles significantly:

- Learners can be helped to understand themselves as learners better
- Learners can be encouraged to expand their learning styles
- A number of teaching methods can be used to accommodate different learning styles
- An environment which has the possibility for diversity should be created
- A climate with a spirit of cooperation should be created.

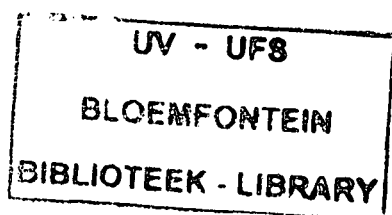
2.6.1 Learning style knowledge brings awareness to the Learners

The individual's preferred ways of grasping and transforming information does not imply that these ways are the only or perhaps even the best way for the individual to learn. Dixon (1985: 17) notes that learners may or may not be consciously aware of the learning styles they are using. When this awareness is lacking, the learning preference can become the only way an individual learns, not because of an inability to learn through other ways, but because the individual is not aware that other ways exist.

In the learning process, learning style knowledge may also assist learners in recognizing why some past learning activities were more important than others and what learning activities were less meaningful to them. This information also serves as a guide to future learning endeavors (Nqadala, 1994: 20; James & Galbraith, 1995: 21).

Similarly, when learners have knowledge about themselves and their learning styles, they become capable of making informed decisions about the methods and resources they need to satisfy their learning needs. This knowledge is, however, only useful in an environment that offers the opportunity to exercise those options (Dixon, 1985: 18).

The latter implies that a learner-centered learning environment is essential for exercising individual learning styles in the rural secondary schools of Lesotho. Learners can be given an opportunity to monitor their learning through group-work activities,



individual experiments and guided projects. In this case, the teacher takes the role of a facilitator rather than the only source of information, and may give challenging exercises that would help learners to activate their learning styles. Then, learners may be able to realize their learning ways, challenges and strengths.

2.6.2 Teachers need to be knowledgeable about learning styles

The placement of individuals in particular learning activities that address the dominant style of the learner can facilitate learning. Moreover, within the instructional process, learning style information can provide teachers with a basis for the selection of diversified teaching/learning materials and methods, procedures for grouping, and ways to individualize instruction (James & Galbraith, as cited in Nqadala, 1994: 21; Mokoena, 1997: 14).

Dasari (2006: 19) coincides with the above and further notes that consideration of the learning style diagnosis as part of the planning process of the material to be learnt should be an included priority. This will ensure that teachers provide enough opportunities for learners to use their individual learning styles. Teachers can also be able to challenge learners to develop skills in other areas by providing assignments that utilize all learning styles.

According to Barbe and Milone (1980: 45), Friedman and Alley (1984: 79), Felder (1993: 288), and Wheeler and McLeod (2002: 696) teachers need to be knowledgeable about learning styles, because they are more likely to develop teaching styles which are congruent with their own learning styles if they are unaware of the learning/teaching styles theory. Heimlich and Norland (2002: 18) support the notion and believe that it is important for teachers to change their beliefs and values regarding their roles and learners' roles in learning and teach according to learners' learning styles.

From this note, it is very important for teachers in the rural secondary schools of Lesotho (qualified or unqualified) to be given guidance in dealing with the learning styles of their learners. The idea could be implemented in the form of in-service training

program, workshops or teacher manuals that clearly describe the learning styles of learners and how they can be addressed in teaching.

2.6.3 Learning style information can be used to increase learning.

The understanding and acceptance of learning style information may serve as an impetus to move from teacher-centered learning to learner-centered learning (Dixon, 1985: 16). Furthermore, the implementation of learning style information not only requires learners to understand and use their own learning strengths, but also to acknowledge the limitations of their preferred styles so as to expand their learning skills in a more directed way (Cilliers & Sternberg, 2001: 25).

In relation to the above notion, Isemonger and Sheppard (2003: 196) add on to suggest that knowing a learners' learning style is a first step to a personalized approach to him or her, and also a starting point in helping the learner to target the styles for which there is little facility.

Following the above discussion, the importance of knowledge about learning styles for teachers in the rural secondary schools of Lesotho is that they can be able to identify which teaching methods and styles enhance learners' learning styles or which styles yield more understanding among learners. Researchers such as Domino (1979: 3), Charkins et al. (1985: 113), and Dasari (2006: 1) do confirm that matching teachers' teaching styles with their learners' learning styles increases the retention of information, its application and also academic achievement.

2.6.4 Individual learners can utilize learning style information to their best advantage

Knowledge of learning style information allows individual learners to pursue their personal learning projects in a more effective and efficient manner. By concentrating on

the dominant learning styles, learners can increase their skills in utilizing appropriate methods for self-directed learning (Nqadala, 1994: 22).

Bodi (1990: 115), however, argues that awareness of learning styles does not guarantee effectiveness or excellence in teaching if combined with a weak grasp of the subject.

Despite the arguments above, it seems important for learners to have understanding about their own individual learning styles to engage actively in learning. Considering a high percentage of unqualified teachers in the rural secondary schools of Lesotho, one can assume that teachers are not aware of which learning styles their learners possess and are also not able to help learners identify their own learning styles. Thus, it becomes of importance for teachers to become aware of their learners' learning styles and to help learners to be aware of their own learning styles.

2.6.5 Learning style information may improve the quality of instruction

According to Dixon (1985: 16) information on learning styles is a promising way to improve teaching effectiveness. Nqadala (1994: 23), and Cilliers and Sternberg (2001: 14) maintain that learning styles provide a means for potentially reaching every learner and for making the quality of the instruction more effective and efficient. Moreover, Lemmer and Squelch (1993: 62) add to say more is needed than knowledge of a learner's learning style in order to improve the quality of teaching and learning.

Therefore teachers in rural schools need to find ways of using the resources available in their environment and modifying the instruction to reach every learner in their classes.

2.6.6 Learning styles can be identified using appropriate instruments

The first step in implementing learning-style based instruction is to diagnose the individual learning styles of each learner. There are many instruments that have been developed to identify the learning styles of individuals. Ballinger and Ballinger (1982:

35), however caution that many psychological instruments have low reliabilities, and some are normed on highly specific populations, making them inappropriate for other groups. Therefore it is important to use the right instrument for the right population.

Dixon (1985:17), Isemonger and Sheppard (2003:196) conclude that learning style instruments are best used as tools to create awareness that learners differ and as a starting point for each individual's continued investigation of the self as a learner.

From the above discussion, it becomes very important to provide teachers in the rural secondary schools of Lesotho with manuals that can aid them in identifying and reaching out to the learning styles of their learners.

2.7 CONCLUSION

From the literature discussed in this chapter, it is evident that learners exhibit different styles of learning, and these styles may be assessed using a questionnaire. It also seems that alternative theories of learning styles use a common root word "style" and cover roughly similar attributes, but with a different label. Again, by relating the research on learning styles to the design of the environment, it seems possible to study how learners approach their learning. Furthermore, the literature suggests that it is possible and desirable to adapt the instruction to accommodate differences in learning style preferences. The next chapter will review the literature on teaching style theories and how they can be implemented to reach all learners' different learning styles.

CHAPTER 3

TEACHING STYLES AND MATCHING/MISMATCHING REVISITED

3.1 INTRODUCTION

Grosser (2007: 37) indicates that the effectiveness of teacher instruction is normally not regarded as influential in ineffective learning. In the professional system of teaching it is commonly believed that if something is taught, it is automatically learned. If something is not learned, the problem then is presumed to lie with the inadequacy of the learners' individual ability, motivation or persistence. It therefore becomes so important to be aware of learners' individual learning strengths and challenges. Equally important, is to know learners' learning styles, and to direct teaching to those styles to promote learning (Burris, Kitchel, Molina, Vincent, & Warner, 2008: 44). This idea makes it important to discuss teaching styles and how they can be employed to incorporate learning style directed instruction.

In this chapter, some literature on teaching styles is reviewed. The review comprises of the discussion of concepts that relate to teaching, followed by a section on the philosophies of teaching. A further discussion will entail consideration of teaching style theories in another section. Effective teaching and implications for teaching to learning styles will be covered intensively, followed by the review of research literature on matching/mismatching teaching and learning styles.

3.2 DEFINITIONS AND RELATED CONCEPTS

In this section, teaching as a concept, teaching strategies, teaching methods and teaching styles are defined and described briefly to know their meaning. These are outlined as follows.

3.2.1 Teaching

Teaching is about the relationships between teacher and learner that are both ubiquitous and uniquely personal. When teaching takes place a special human connection evolves that engage the teacher and learner to share information, to deliver and receive accumulated knowledge, to acquire and discover information and to construct meaningful knowledge (Mosston & Ashworth, 1990: 1). Teaching invites both the teacher and the learner to participate in a unique social context, with its special hierarchies, rules, and network of responsibilities.

Jacobs et al. (2004: 229) coincides with the above and further indicates that teaching requires a medium that teachers need to use or which is given to the learners as a mechanism to achieve specific teaching and learning outcomes. With this idea in mind, relating teaching to learning styles means teachers in rural schools of Lesotho should have the ability to be aware of and utilize the possible connections with the learner in all domains of learning styles.

3.2.2 Teaching strategy

Jacobs et al. (2004: 175) state that a teaching strategy is a broad plan of action that is used for teaching and learning activities with an aim of achieving learning outcomes. This strategy enables the teacher to use an appropriate approach when facilitating teaching and learning activities. Within a strategy, there are teaching methods, media, learning content and learner activities that need to be specified in order to successfully carry out that strategy.

Knowing and understanding a variety of teaching strategies, may be important for teachers in rural schools of Lesotho to select which strategies characterize a teaching style that match the specific learning style of a learner. However it should be noted that one learner may possess a style that cuts across more than one learning style dimensions. In this situation, the teacher will need to use different teaching strategies,

not only to attend to that learner, but to address a variety of all learners' learning styles that may prevail in the classroom.

3.2.3 Teaching method

A teaching method according to Jacobs et al. (2004: 175) is a particular technique or procedure a teacher uses to help learners gain the knowledge that is required to achieve a certain objective or objectives. The success of the method is determined by the teacher's motivation, the efforts of the teacher, motivation of learners and the ability of the teacher to create exciting opportunities for the learners. Normally these teaching methods can be formal or informal depending on the unit or content to be learned.

Borich (1996: 125) states that a teaching method is concerned with how the teacher uses resources around him or her to make learners experience learning. Teaching methods tend to be reduced to a cut and dried routine and follow a certain prescribed steps aimed at facilitating teaching and learning process.

The rural areas of Lesotho may have both environmental and educational resources that differ from the urban areas. This implies that teachers in rural schools may need to consider teaching aids and resources they have, utilize them and also use them when making examples that foster understanding. It is also of importance for these teachers to direct techniques or ways of presenting instruction with an aim of promoting the learning experiences of learners and improving their academic achievement. This aim may be achieved by considering the predominant learning styles of learners, and using these styles when selecting teaching methods.

3.2.4 Teaching styles

Grasha (1996: 3) describes a teaching style as a set of certain characteristics that play an important role in several aspects of our teaching. He further indicates that teaching style represents those enduring personal qualities and behaviours that appear in how

teachers conduct their classes. Thus, teaching styles define teachers, guides and directs their instructional processes, and also influences learners' ability to learn. Nqadala (1994: 23) contends that a teaching style is a label associated with various identifiable sets of classroom behaviours by the teachers which are consistent even though the content presented may change.

Hoyt and Lee (2002: 3) argue that a teaching style refers to the way various teaching approaches are combined to produce an optimal outcome in learning. This idea implies that teaching strategies, approaches and methods are the elements of teaching styles and are used differently across the teaching styles.

Therefore it is important to know which teaching styles an individual teacher uses, with the aim of identifying whether those styles are appropriate to the type of learners as determined by the individual learning styles. For this research, teaching styles of teachers in rural secondary schools of Lesotho will be identified as to determine whether they do match with the learning styles of learners. Moreover, the examination results of learners will be used to identify the pattern of academic achievement in both matches and mismatches of these teaching and learning styles.

In the end, knowledge about teaching styles and awareness of teaching styles each teacher possess might help teachers in rural secondary schools of Lesotho to guard against permanent use of their own predominant styles. With this knowledge, teachers may also be able to move from one teaching style dimension to another. This could be viewed as an attempt by teachers to reach every learner's style.

Heimlich and Norland (quoted in Brown, 2003: 3) argue that there is an important pre-condition before teachers can attempt to modify their style. That is, their beliefs and values regarding their roles and that of their learners with respect to learning should first be changed. From this note, the philosophy of teaching, that describes how teachers view teaching, is discussed in the following chapter.

3.3 PHILOSOPHIES OF TEACHING

In education, concern for learners is the foundation of all teaching (Gunter, Estes & Schwab, 2003: 3). An important factor which influences the link between teaching practice and the needs of learners is the philosophy of teaching that characterizes the way the teacher views knowledge, his/her role in the classroom, the role of the learner, the choice of teaching methods and assessment strategies to meet the needs of various learning styles in the classroom (Grosser & De Waal, n.d: 17).

Many researchers such as Endres (1997: 1), Barners (2002: 5), and McFarlane (2006: 3) emphasize the importance of the philosophies of teaching in education. There are many philosophies that explain how people view knowledge and the environment around them. Endres (1997: 2), Colliver (2002: 49), and McFarlane (2006: 3) distinguish between three philosophies to teaching, which are positivism, intepretivism and critical theory, while on the other hand, Schraw and Olafson (2003: 186) speak of realist, contextualist, and relativist views.

This research focuses on determining teaching styles of teachers in rural secondary schools of Lesotho and their learners' learning styles with the aim of determining to what extent teachers are linking their teaching to the learning style needs of learners and thus improving academic achievement. For this research, teaching philosophies described by Schraw and Olafson (2003: 186) will be distinguished and briefly discussed. Positivism, intepretivism and critical theory as philosophies of teaching will also be integrated in the discussion to follow.

3.3.1 The Realist view

A realist view asserts that the world-as-experienced actually exists independently of humanity, being composed of entities of a fixed nature (Christofilis & Kousathana, 2005: 1). Colliver (2002: 49) argues that realism is a metaphysical position-metaphysical in the sense that realism entails the assumptions that there is something out there, not directly

accessible to us, hidden from us and that our knowledge claims can accurately depict this shadowy realm, which is reality.

According to Barnes (2002: 4) realism generally assumes that reality is objectively given and can be described by measurable properties which are independent of the observer (researcher) and his or her instruments. This theory overlaps with positivist theory in that it emphasizes objectivity. In this theory, the object is considered to be passive such that it can not react or think and does not have feelings (Endres, 1997: 2). Realists therefore consider learners to be recipients of information and knowledge that can not be interpreted, but can be stored and reproduced (Schraw & Olafson, 2003: 186).

From the educational perspective, Grosser and De Waal (n.d: 18) coincide with the idea that the realist view assumes knowledge to be objective, unchanging and best acquired through transmission. The focus is on the transmission of knowledge and teacher-centered instruction, with the learner being the passive recipient of knowledge. In this case, learning becomes a process of replicating existing knowledge, not as constructing knowledge. In assessing learners, realist teachers use summative assessments and therefore focus mainly on end-of-unit tests or exams (Schraw & Olafson, 2003: 186). This teaching philosophy may be appropriate in teaching learners in Lesotho with certain styles such as the reflective learning style. However, teachers may need to move from this philosophy to other philosophies so as to reach every learner's needs.

3.3.2 The Contextualist view

The contextualist view assumes that learners construct understanding in collaborative contexts in which teachers play the role of a facilitator. Learners share their understanding and help one another (Schraw & Olafson, 2003: 186; Grosser & De Waal, n.d: 18).

As learners help one another, teachers perceive themselves as collaborators in the learning process, assume that knowledge will change over time and also believe that learners need skills to acquire knowledge independently (McCaslin & Hickey, 2001:

135). Teachers are not only concerned with the type of knowledge a learner constructs, but also with how this construction occurs and the degree to which that knowledge has valid application.

This theory coincides with the interpretivist theory to learning in that Interpretive researchers start out with the assumption that access to reality (given or socially constructed) is only through social constructions such as language, consciousness and shared meanings (McFarlane, 2006: 5). This means learners can interpret and analyze facts to obtain meanings and knowledge and that, learners learn well by interacting with the teacher and other learners. Cooperative learning is given much emphasis in this philosophy and teachers use authentic assessment that relates to cooperative learning activities. Therefore teachers in Lesotho may need to adapt their teaching to cooperative learning, and also use teaching styles that could enable learners to construct knowledge.

3.3.3 The Relativist view

Philosophers, tended to adopt a position of epistemic and moral relativism. Epistemic relativism is the view that there is no objective standard for evaluating some lines of reasoning as better than others. Instead, the epistemic relativist holds that what counts as a good reason for holding a view is relative to one's situation and interests. Analogously, moral relativism is the view that there are no objective standards of right action but instead various standards that are only legitimate relative to this or that person or group of people (Russ, 2004: 1).

The relativist view of teaching sees knowledge as subjective and highly changeable. In this case, each learner constructs a unique knowledge base that is different from others depending on his/her views and understanding. However, that knowledge base should be equal to that of other learners. Odgers (n.d: 4) emphasizes that the relativist view coincides with the constructivist theory to learning that suggests knowledge is developed by the construction of knowledge and that this knowledge is tentative and

subject to change. Beyond this idea, teachers are responsible to ensure that knowledge is constructed and not transmitted to the learners (Schraw & Olafson, 2003: 186).

In evaluation of learners' knowledge and skills, Barnes (2002: 6) argues that naturally, relativistic teaching philosophies also influence the methods by which teachers evaluate individual learners. That is, teachers tend to emphasize whether the learner approached the task in a creative and thoughtful way rather than simply recalling. This philosophy may be relevant in the transformation of using traditional teaching methods that are teacher-centered to learner-centered approaches that improves on the critical thinking of learners. Critical theory also views that teaching should be learner-centered in which learners are given opportunities to discover things themselves. The development of critical thinking and problem-solving skills is of major importance in this philosophy (Higgs, 1995: 35). Understanding the characteristics of this philosophy may make it simpler for teachers also to reach their learners' learning styles and to improve on their academic achievement.

The above discussion makes it evident that a specific view to teaching favors a specific way a teacher organizes his/her teaching, thus favoring a particular learning style. In a normal classroom a variety or a combination of learning styles is used to address individual learners. Therefore teachers in rural secondary schools of Lesotho could consider the variety of learning styles and adapt their teaching to match the learning style needs of all learners in their classrooms as a measure of improving academic achievement. The next section will review effectiveness of teaching as a condition required for improving academic achievement.

3.4 EFFECTIVE TEACHING

The quest for effective teaching remains a demanding, complex and daunting task. The effectiveness of teaching is normally considered and investigated by probing the special characteristics of the teacher, which include cognitive dimensions, personality dimensions, perceptions of the self and others and teaching styles (Grosser, 2007: 37). In accordance with Grosser, an important aspect emanating from the latter is the fact that teachers are the ones who contribute most to the educational enterprise and

therefore need to ensure that the learner is engaged appropriately with the instructional material. This idea makes it important for teachers in rural schools of Lesotho to link teaching styles to learning styles of learners in order to facilitate the optimal acquisition of knowledge in learning and improvement of academic achievement.

In this section, teaching effectiveness will be discussed with special consideration to the characteristics of effective teachers, the effective teaching methods, and teaching styles.

3.4.1 Teacher Effectiveness

According to Borich (1996: 2) many people believe that effective teaching is impossible to define in any general way, however, it can be associated with good teaching as viewed by learners, other teachers and administrators. Schonwetter, Clifton and Perry (2002: 626) argue that effective teaching is basically the behavior of teachers that is perpetuated inside and outside a classroom, which affect learner achievement in a positive manner.

On the other hand, Slavin (1987: 89) contends that effective teaching is not just good teaching. If it were, the best teachers could make videos of their lessons, and these videos be used to teach learners other than their own. The argument here is that these videos would be ineffective due to the following. First, the teacher captured in the video would have no idea what learners already knew. That is, a particular lesson might be too advanced for a particular group of learners or it may be that some learners already know the material being taught. The teacher captured in the video would in no way know who needed additional help and would also not be able to individualize instruction. Second, motivation of learners to pay attention to the instruction would not be possible with this teacher in the video. If learners were not paying attention or misbehaving, this teacher would not be able to know about it. Finally, he/she would not be able to know at the end of the lesson whether or not the learners have acquired the necessary knowledge and skills intended by the lesson.

The case of the teacher captured in the video illustrates the point that for teaching to be effective, teachers must be concerned with many elements of instruction in addition to the lesson itself. Therefore, effective teaching entails certain characteristics that need to be known by teachers in rural schools of Lesotho as they attempt to match teaching and learning styles.

Slavin (1987: 92), Siedentop (cited in Winnick, 1990: 131), Rosenshine and Furst (1971: 372), Brookfield (1995: 34), and Schonwetter et al. (2002: 626) identified the characteristics of effective teaching in their studies:

- **Quality of instruction**

This category characterizes the degree to which information or skills are presented so that learners can easily learn them. It is largely a product of the quality of the curriculum and of the lesson presentation itself. First, teachers with characteristics of good quality of instruction are able to begin the class promptly and present information in an organized, orderly way, note transitions to new topics, use many vivid images and examples, and frequently restate essential principles (Slavin, 1987: 93; Brookfield, 1995: 34; Schonwetter et al., 2002: 627).

Second, good instructional quality is characterized by clear specification of lesson objectives to learners (Muijs & Reynolds, 2005: 3). In this case, teachers are able to focus on the topic and provide clear explanations and directions of how to carry out activities. They also indicate clearly their expectations from their learners. Third, effective teaching is characterized by lessons that relate learning to the learners' background knowledge (Slavin, 1987: 93). To take account of learners' background knowledge, teachers can remind learners of previously learned material at the relevant points in the lesson or can use examples that relate to learners' daily experiences. Fourth, good teacher enthusiasm promotes effective teaching (Rosenshine & Furst, 1971: 131; Borich, 1996: 11). On this note, Schonwetter et al. (2002: 628) further indicates that teacher enthusiasm motivates learners to study during and outside instruction time. Last, teachers with effective teaching interact well with learners by providing immediate answers

to questions or comments and use non-verbal behavior such as gestures, walking around and eye contact, to reinforce their comments.

- **Appropriate levels of instruction**

This category characterizes the degree to which the teacher makes sure that learners are ready to learn new material. First, to provide an appropriate level of instruction, teachers should ensure that learners have the necessary skills and knowledge for the next level of instruction. In other words, the level of instruction is appropriate when a lesson is neither too difficult nor too easy for learners.

Second, teachers with effective teaching should use a variety of instructional strategies and activities that could address the diversity of learners' needs (Brookfield, 1995: 34; Rosenshine & Furst, 1971: 131; Borich, 1996: 11)). To reach every learner's needs, ability-grouped classes, group-based mastery learning or individualized instruction could be used. Third, effective teachers use humor that keeps up with learners' individual styles. Schonwetter et al. (2002: 628) emphasize that relevant humor reduces learner anxiety, maintains learner interest, improves comprehension, and increases academic achievement. Last, effective teaching is promoted by teachers who set a pace of instruction that is appropriate to their learners' rate of learning (Slavin, 1987: 95).

- **Incentive**

Incentive describes the degree to which the teacher makes sure that learners are motivated to work on instructional tasks and to learn the material being presented (Slavin, 1987: 96). To promote effective teaching, teachers can create intrinsic interest in material to be taught by arousing learners' curiosity, for example, by using surprising demonstrations, by allowing learners to discover information for themselves, or by relating the subject content to the learners' personal lives. Again, strategies that provide praise, tokens, or other rewards, can be instructionally effective (Muijs & Reynolds, 2005: 3). Questioning strategies that communicate high expectations for learners, such as waiting for them to respond

or following up their responses, may also have a positive effect on teaching and academic achievement.

- **Time and classroom management**

The degree to which learners are given time to learn the material being taught is important in teaching. The amount of time available for learning depends on allocated time and engaged time. Allocated time is the time scheduled by the teacher for a particular lesson or subject, and is mostly under the control of the teacher. On the other hand, engaged time is time learners actually engage in learning tasks, and is largely a product of quality of instruction, learner motivation, and allocated time (Slavin, 1987: 97).

Siedentop (cited in Winnick, 1990: 131) and Borich (1996: 11) state that effective teachers keep learners appropriately engaged in relevant activities for a high percentage of the learning time, match classroom activities and teaching styles to learner abilities, and establish a warm, positive learning climate. A practice of good classroom management techniques such as holding attention and encouraging respect of the whole group of learners, and providing a warm classroom climate by allowing learners to speak freely characterizes effective teachers (Muijs & Reynolds, 2005: 3)

From above, different authors provide various characteristics of effective teachers. It is therefore evident that teachers are supposed to use and possess certain personal characteristics and teaching skills that will enable individual learners to be actively involved in the process. Winnick (1990: 131) supports the idea by indicating that effective teaching depends on a unique combination of factors that underlie successful interaction especially within diverse learner groupings. These qualities include personal attributes and specialized knowledge and skills that help teachers to maximize learners' engagement on tasks, thus promoting effective learning.

Research on effective teaching and learning (Opdenakker & Van Damme, 2006: 2) also stresses the importance of a good and vital relationship between the teacher and

his/her learners. However, possessing the above-mentioned characteristics of effective might not be enough for teachers, especially if teachers do not devote themselves to teaching by directing their full attention to all learning needs of their learners.

On effective teaching, Borich (1996: 6) cautions that not only personal attributes and skills improve teaching and learning, but teachers must work very hard at their teaching and try to improve. In the same way, it may be important that teachers in rural secondary schools of Lesotho apply more effort in preparing and delivering instructional material to their learners to enhance effective learning. This idea could be implemented by drawing effective lesson plans and simplified subject content that is appropriate to the level of understanding and learning styles of individual learners.

3.4.2 Effective teaching methods

Effective teaching involves careful planning, selection of appropriate teaching strategies and methods to acquire the desired objectives and evaluation of learners' progress (Winnick, 1990: 131). In this case, effective teaching methods are required to engage learners fully in the learning process.

According to Borich (1996: 108) effective teaching methods are reflected by key and helping behaviours such as lesson clarity, instructional variety, task-orientation, learner engagement in learning, pacing, mode of presentation, and classroom management, and also by improved academic achievement. Rosenshine and Furst (1971: 132) contends that effective teaching methods should incorporate teacher behaviours such as clearness of presentation, teacher enthusiasm, activity diversity, task-orientation, and coverage of high proportion of relevant content. All in all, effective teaching methods should cut across characteristics of effective teaching and should yield improved academic achievement.

While considering the use of effective teaching methods, it should be noted that just as learners learn in many ways, by seeing and hearing; reflecting and acting; memorizing and visualizing; reasoning logically and intuitively; building models and drawing

analogies, teaching methods also vary (Felder & Silverman, 1988: 674; Jacobs et al., 2004:175). Teachers may decide to use lecturing, class discussion, questioning, problem solving, role play or demonstration in their classrooms; some teachers focus on principles and others on applications; some emphasize understanding and others memory.

Lecturing is a teacher-centered teaching method whereby teachers pass facts, rules, or action consequences on to learners in the most direct way possible. It is also a presentation that requires large amounts of verbal explanations and teacher-learner interactions involving questions and answers, and the correction of learners' errors (Borich, 1996: 244). Small group or class discussion entails learner-to-learner-to-teacher exchanges into long interactions among a large number of learners. In this case, the teacher may intervene occasionally to review and summarize main points, or to evaluate group's progress and to redirect if necessary.

Questioning is used to test understanding of the learners on specific material, to involve learners in the learning process, and also to encourage different mental processes such as problem solving, creativity, or to arouse interest. Teachers can also use demonstrations or role play to illustrate and reinforce certain behaviours. Demonstrations include visuals or actions that are used to reinforce understanding and acquisition of certain skills such as creativity.

For these teaching methods to be effective, the teachers in rural schools of Lesotho need a well-planned procedure to guide learners and need the ability to create exciting opportunities for learners. The teacher also needs to use different teaching methods from time to time so as to reach out to all learners (Jacobs et al., 2004: 17). Again, it could be important for teachers in rural secondary schools of Lesotho to be aware that the effectiveness of teaching and how much a learner learns in class may be determined by that learner's ability, previous knowledge, teaching methods employed, and also the compatibility of his or her learning style and the teacher's teaching style. The latter brings us to the discussion of the teaching styles.

3.4.3 Effective teaching and teaching styles

The selection of appropriate teaching styles is another way crucial to improving the effectiveness of teaching and instructional experiences (Winnick, 1990: 133). It has been discovered (Ndaqala, 1994: 24) that learners who are taught in a manner incompatible with the way they learn, learn less and express less satisfaction with the effectiveness of the teacher, while learners experience success in learning when teaching styles are compatible with their learning styles (Jones, 1998: 117; Ford & Chen, 2001:5; Isemonger & Sheppard, 2003: 196; Dasari, 2006: 4).

To promote the effectiveness of teaching and learning, researchers have suggested ways in which teaching styles can be used to address learning styles of learners. For instance, Felder (1993: 290), Diaz and Cartnal (1999: 132), Cilliers and Sternberg (2001: 14), and Morrison et al. (2003: 209) suggest that learners should be exposed to a wide variety of alternative teaching styles in an attempt to find teaching styles that fit each individual learner's learning style. In this case, no learner would necessarily benefit from all the teaching styles used, but all learners would benefit from many of the teaching styles used to optimize learning in the classroom.

In addition to the above, Friedman and Alley (1984: 78), and Jones (1998: 117) contends that when using a variety of teaching styles, teachers do not have time to juggle classes of 30 or more learners while giving attention to many style preference factors for each individual learner. Through the experience of the researcher as a teacher, there are large classes of about 40 or more learners in many rural schools of Lesotho due to lack of classrooms. This implies that teachers in rural secondary schools of Lesotho can focus upon selected basic learning style preferences of their learners and utilize learning activities in support of those styles. Some attention may be directed to those learning styles that are weak, but at certain time intervals. Therefore it is important to review teaching style theories that can help in determining ways of matching teaching and learning styles of learners in Lesotho.

3.5 TEACHING STYLE THEORIES

As much as learners possess a variety of learning styles, there are differences in teaching styles used by teachers (Felder & Silverman, 1988: 674; Grasha, 1996: 5; Dasari, 2006: 4). One of the biggest challenges that teachers face is to find ways to succeed with all of their learners, not just those with whom they have a natural affinity. In this case, teachers may need to be aware of which teaching styles work for their classes and which ones are less effective. In this section, teaching style theories developed by Felder and Silverman, Grasha, Benzie, and Pratt, are discussed.

3.5.1 Felder-Silverman Teaching Styles Theory

According to Felder and Silverman (1988: 675) just as there are five questions that can help determine a learner's learning style, teaching styles may also be defined in terms of the answers to five essential questions. These questions are:

- What type of information is emphasized by the instructor?
- What mode of presentation is stressed?
- How is the presentation organized?
- What mode of learner participation is facilitated by the presentation?
- What type of perspective is provided on the information presented?

From the above questions, Felder and Silverman came up with five dimensions of teaching styles, and these are:

1. Concrete or abstract

In this teaching style dimension, teachers may emphasize concrete, factual information or abstract, conceptual and theoretical information. This teaching style dimension corresponds with the sensory/intuitive learning style of learners. Therefore, sensing learners may benefit more from the concrete presentation of information, and the intuitive learner, from the abstract presentation. In the case of rural schools in Lesotho, teachers who rely heavily on this teaching style dimension may limit effective teaching to a small number of learners with corresponding styles, thus leaving the rest of the class adequately unattended.

2. Visual or Verbal

Teachers with this teaching style may use presentations that either stress visual modalities through pictures, diagrams, demonstrations; or may be verbal through lecturing, reading and discussions. This dimension corresponds with the visual/auditory learning style dimension. It may happen that some teachers in rural schools of Lesotho use both visual and verbal presentations in their teaching, thus accommodating all learners within the corresponding learning style. However, not all learners in a class may fall in this style dimension in rural schools. Therefore, for matching to be done and for improvement of academic achievement, all learners in this style dimension and other dimensions should be accommodated.

3. Inductive or deductive

With regard to organization of lessons, inductive teaching involves observation that lead to generalized principles. Deductive teaching, on the other hand, entails the use of generalized rules that lead to observations. According to Felder and Silverman, an element of inductive teaching is necessary for teachers to be able to increase learners' realistic perceptions of problem solving. Identifying learners with inductive and deductive learning styles and matching teaching styles in this dimension with those learning styles may yield improved academic achievement of such learners in rural schools of Lesotho.

4. Active or passive

Teachers could either use a teaching style that emphasizes active learner participation through discussions, role playing, and other activities, or they could prefer a teaching style that promote passive learner participation through demonstrations or lecturing. This teaching style dimension corresponds with the active reflective learning style dimension. To enhance academic achievement, teachers in Lesotho may need to use all the teaching methods and resources required in this teaching style dimension to maximize learning for learners with corresponding learning styles.

5. Sequential or global

In this dimension, teachers may prefer a sequential mode of presenting material to learners. That is, information is presented in a step by step manner. Teachers may also prefer to present a concept or information in a global picture first and then proceed to break it down into simpler forms while presenting the steps. In a global teaching style, learners in rural secondary schools of Lesotho may be given the freedom to devise their own methods of solving problems. Matching sequential/global teaching and learning styles may therefore be an effective way of improving learners' acquisition of knowledge and enhancing academic achievement in rural schools of Lesotho.

As it was stated earlier in the previous chapter, Felder and Silverman later omitted the inductive/deductive dimension from their Learning Style Model, thus affecting the teaching style dimensions as well. This idea leads to the existence of only four learning style dimensions and four corresponding teaching styles.

Teachers may possess one or more of the teaching styles, while those teachers who are aware of the existence of various learning styles, may use a variety of teaching styles to address most of their learners' learning styles. Felder and Silverman (1988: 680) and later, Dasari (2006: 22) suggest that teachers should understand how learners learn under each learning style dimension and use teaching styles and techniques that enhance these learning styles. To address this issue, Moallem (2007: 222) have designed a guideline for developing teaching materials and styles, considering different learning styles as described in FSLSM to accommodate all learners. Table 3.1 provides the information on this guideline.

Table 3.1: A guideline for Developing teaching materials and styles

Questions	Student Learning	Type of flexibility & adaptivity	Instructional styles and strategies
1.What type of information does the student preferentially perceive?	Sensing learners- concrete, practical, oriented toward facts and procedures	-Flexible and adaptive content -Flexible and adaptive curriculum sequence	-Provide concrete and real world examples for new concepts and principles presented in the unit. -Demonstrate procedures by using examples. -provide real-world learning tasks that allow learners to have concrete learning experiences.
	Intuitive learners- conceptual, innovative, oriented toward theories and meanings		-incorporate enough flexibility in assignments and tasks to allow creativity for the concepts learned. -provide extra resources through the use of textual reading materials, summaries, diagrams.
2.Through what sensory modality is sensory information most effectively perceived?	Visual learners- prefer visual representations of material.	-Flexible and adaptive presentation -Flexible and adaptive selection	-Provide content in a form of charts, images, maps
	Verbal learners- prefer written and spoken explanations		-Provide elaborated written and /or auditory notes with explanations with examples. -provide presentations and discussions

3.How does the learner prefer to process information?	Active learners-learn by working things out and working with others	-flexible and adaptive meta-cognitive approach and problem solving support	-provide problem solving and real-life tasks. -provide guidelines for effective teamwork. -Provide opportunity for large group discussion.
	Reflective learners-learn by thinking things through, working alone		-provide individual tasks and assignments to allow each learner to work alone -provide self-assessment tools for learners to evaluate themselves
4.How does the learner progress towards understanding?	Sequential learners-linear, orderly and learn in small incremental steps	-Flexible and adaptive meta-cognitive approach and problem solving support	-provide a detailed and step by step procedure for completing task, both in text and visual form. -provide specific feedback for each step of a task.
	Global learners-holistic, system thinkers and learn in large leaps		-provide a conceptual sequence for lessons and completion of tasks. -provide an overview of the material and assignment in each unit.

Adapted from Moallem (2007: 223)

The guidelines described in Table 3.1 can be of importance for teachers in rural schools of Lesotho in their efforts to accommodate different learning styles of their learners in one class. This accommodation can be done by selecting instructional styles and

strategies that address the identified learning styles and using those in lesson plans, lesson presentations, making examples, developing teaching aids and in assessment of learners. These guidelines may also help teachers in grouping of learners in class when assigning tasks.

Although the diverse styles with which learners learn are numerous, the inclusion of a relatively small number of techniques in a teacher's repertoire may be sufficient to meet the needs of most or all of the learners in a class. Felder and Silverman (1988: 680) and Dasari (2006: 22) outline a summary of several techniques that could be used to address all learners in a classroom. These are as follows:

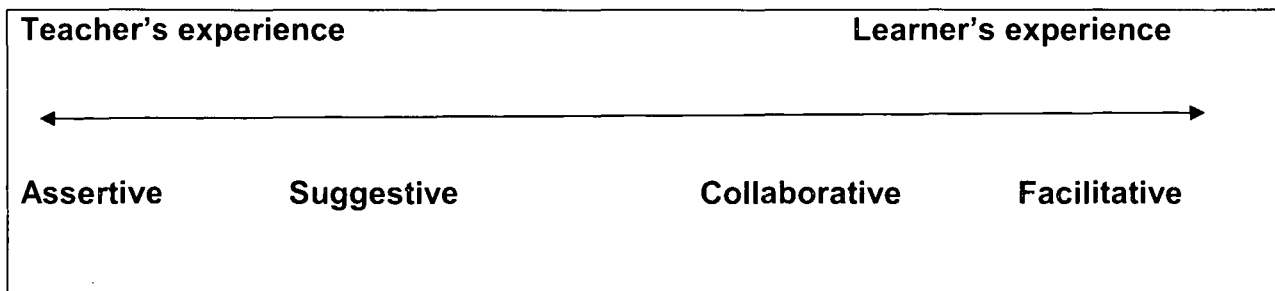
- Motivate learning by relating it as much as possible to what was done previously and what is still to come, and to the real life experiences.
- Balance concrete information and abstract concepts.
- Balance material that emphasizes practical problem-solving methods with material that emphasizes fundamental understanding.
- Use pictures, schematics, graphs, and simple sketches before, during, and after the presentation of verbal material. Use films whenever it is possible.
- Provide brief intervals for learners to think about what they have learned during class time.
- Ensure that there are ample opportunities for learners to do something active besides note-taking.
- Assign some drill exercises to provide practice in the basic methods being taught, and also provide open-ended problems at times.
- Give learners the option of cooperating on homework assignments to the greatest possible extent.
- Applaud creative solutions, even incorrect ones.
- Talk to learners about learning styles so that they may be better informed of some factors that influence their learning. Use an appropriate learning style instrument to identify which learning styles exist in your class.

Considering the large number of these techniques, teachers in rural secondary schools of Lesotho may feel that it is impossible to do all the latter said within their respective subjects and still cover the syllabus. The idea, however is not to use all the techniques in every class but rather to pick several that look feasible and try them; keep the ones that work; drop the others; and try a few in the next subject or class. In this way teaching styles that are both effective for learners and comfortable for the teacher may evolve naturally, and thus possibly increasing the academic achievement. With an attempt of improving teaching to enhance academic achievement, more literature on teaching style theories is revised in the next section.

3.5.2 Quirk's Teaching Styles Theory

The teaching styles developed by Quirk described teaching styles used by professors in tutoring medical learners. According to Dasari (2006: 23) these teaching styles were later used by Dr. Dan Benzie to describe teaching in medical classes. This theory was used by Dasari (2006: 23) to describe teaching styles of teachers at high school level, and may be used to describe teaching styles in rural schools of Lesotho. Quirk (1994: 2) and Benzie (1998: 1) describes four basic styles that operate on a continuum, where the characteristics of each style range from being teacher-centered to learner-centered. These teaching styles are Assertive, Suggestive, Collaborative, and Facilitative. The diagram below illustrates this spectrum.

Figure 3.1: Quirk's Teaching Style Continuum



Adapted from Dasari (2006: 23)

These teaching styles can be further described as follows:

- **The Assertive Approach**

This approach is characterized by direct questions and answers, which relay information. It is driven by a lecture mode with the teacher being active and learners being passive. In this case, the teacher provides information, direction and asks all the questions. Therefore, this approach lies on the far left of the teaching style spectrum. Teachers in Lesotho that use this teaching style predominantly may not be able to address some learning styles of learners which are more learner-centered. This implies that as much as this style may be important for certain content and specific learning styles, but it should be varied to accommodate other learning styles.

- **The Suggestive Approach**

This approach is closely related to the above in that the teacher directs learning. Here, the teacher offers opinion, practical experience and also suggests alternatives often by relating personal experience. Alternatives are suggested in an attempt to allow learners to reflect, but with some direction. This teaching style may accommodate more learning styles than the previous, but it still needs to be varied to address those learning styles that are learner-centered in rural schools of Lesotho.

- **The Collaborative Approach**

This method moves towards being learner-centered with acceptance and exploration of the learner's ideas and empathetic sharing of experiences. Learners' ideas are solicited through asking open and exploratory questions, in this approach. This implies that, there is a greater emphasis on learner involvement. With the researcher's experience as a teacher, most of learning in rural schools of Lesotho may be dominantly teacher-centered and textbook-centered such that learners do not experience active participation in learning. It would therefore be of great importance if teachers could adopt learner-centered approaches to teaching and learning.

- **The Facilitative Approach**

This way of teaching is most learner-centered, where the exchange extends beyond the clinical content to the feelings of the learner and preceptor. In this case, the teacher asks open and reflective questions. Learners are, therefore, in control of much of the learning process with the teacher playing a facilitative or guiding role.

Jacobs et al. (2004: 3) contend that in order to promote effective learning, teachers need to give learners a set of classroom activities that form a participative engagement in learning and must also allow learners to take charge of their own learning. In this case, a shift from traditional teaching to learner-centered teaching may be a good attempt to promote facilitative teaching and full turning towards individual learning styles of learners in Lesotho.

Table 3.2 gives a summary of Quirk's teaching styles theory. In fact, this theory may also be important and relevant in the context of rural secondary schools in Lesotho. It could be used to identify teaching styles and may be also applied to address the diversity of learning styles. Nevertheless, more teaching style theories are discussed below to enrich more literature on teaching styles.

Table 3.2 Quirk's Teaching Styles

Assertive	Suggestive	Collaborative	Facilitative
Gives directions	Suggests alternatives	Elicits/ accepts learner ideas	Elicits/ accepts learner feelings
Asks direct questions	Offers opinion	Explores learner ideas	Offers feelings
Gives information	Relates personal experience	Relates personal experience	Encourages
			Uses silence

Adapted from Quirk (1994: 11)

3.5.3 Pratt's ideas on teaching styles

Before teachers can attempt to develop more flexible teaching styles, they must be receptive to the idea of change, beginning with a change in their beliefs about the learners' role in the learning environment (Brown, 2003: 1).

Pratt, Arseneau and Collins (2001: 2) and later, Pratt (2002: 7) present five perspectives on teaching and urge teachers to use these perspectives to identify, articulate, and justify their teaching approaches rather than simply adopting one practice or another.

- 1. Transmission:** In this perspective, good teaching is directly associated with content or subject matter expertise. An educator's primary responsibility is to present the content accurately and efficiently. It is the learners' responsibility to learn that content in its authorized forms. Good teachers take learners systematically through a set of tasks that lead to mastery of the content. In rural schools of Lesotho, teachers need to be clear and enthusiastic about the content being transmitted and giving feedback to learners. In order to present the content in a clear mode, learners' individual styles should be considered as a way of reaching to every learner in the classroom.
- 2. Developmental:** The constructivist orientation to learning mentioned earlier is the foundation for this perspective on teaching. From the Developmental Perspective, good teaching must be planned and conducted from the learner's point of view (Pratt, Arseneau & Collins, 2001: 3). Effective teachers therefore understand how their learners think and reason about the content. Teachers in Lesotho should value learners' prior knowledge and direct learning to the development of increasingly complex ways of reasoning and problem solving. In an effort to match teaching and learning styles, using learners' background knowledge may make the acquisition of new knowledge easier.
- 3. Apprenticeship:** This view starts with the assumption that learning is facilitated when learners work on authentic tasks in real settings of application or practice.

Teachers provide learners with authentic tasks in real work settings and relate their teaching exercises to real-life situations. Learners with styles that include active, concrete, and visual learning experiences, may experience effective learning and perform well academically when taught by teachers with this teaching style perspective. In order to promote academic achievement, teachers in rural schools of Lesotho should be aware of the learners' experiences both at home and school, and use those to reinforce understanding.

4. **Nurturing:** Teachers tend to focus on the interpersonal elements of learners' learning, namely: listening, getting to know learners, and responding to their emotional and intellectual needs. Teachers with this perspective provide encouragement and support, along with clear expectations and reasonable goals for all learners. Teaching to learners' individual learning styles may be a good way of responding to learners' intellectual needs in rural schools of Lesotho, while at the same time teachers should provide emotional support to learners as a way of enhancing academic achievement.
5. **Social Reform:** From this point of view it is the collective, rather than the individual, that is the object of teaching. Teachers tend to relate ideas explicitly to the lives of learners. Therefore presentation of content and the design of assignments and projects are related to concrete and real-life experiences. This teaching perspective implies that teacher in rural schools of Lesotho may need to match teaching approaches, examples and assessment with the experiences of learners in such a manner as to promote the acquisition of new skills and knowledge.

Most teachers have only one or two perspectives as their dominant view of teaching. However similar teaching actions, methods, and even beliefs can be found in more than one perspective (Pratt, 2002: 10). Proficient learner-centered teachers are able to use a variety of styles so that their ultimate style is integrated. This idea means that teachers in rural secondary of schools may need to adopt a learner-centered approach to teaching in order to address a variety of learning styles that learners possess.

More literature on teaching style theories may provide other ways of classifying teaching styles and techniques required to address learners' individual learning styles. In the section that follows, Grasha's theory on teaching styles is outlined.

3.5.4 Grasha Teaching Styles Theory

Grasha (1996: 150) developed a more elaborate and more value-laden model of teaching style which he referred to as an integrated model of teaching styles. As described in Table 3.3 below, Grasha identified five teaching styles (Expert, Formal authority, Personal model, Facilitator, Delegator) as representing the typical used orientations by teachers. These teaching styles interact with the learning styles of learners which are described as Competitive, Collaborative, Independent, Dependent, Participatory, and Avoidant. The teaching-learning process involves the interplay of these two sets of styles in the classroom (Grasha, 1996: 152).

Table 3.3: Grasha's Teaching Styles

STYLE	DESCRIPTION	ADVANTAGE	DISADVANTAGE
Expert	Possesses knowledge and expertise; oversees, guides, and directs learners; gains status through knowledge; focuses on facts	Knowledge and information which preceptor possesses	Knowledge and information can be overused and intimidating; may not always show underlying thought processes
Formal Authority	Possesses status among learners because of knowledge and authority/ position; follows "traditions" and standards of medical	Focus on clear expectations and acceptable ways of doing things	Potentially rigid and less flexible ways of managing learners and their concerns

	practice; focuses on rules and expectations for learners; supervises learners closely with critical eye toward standard practices and procedures		
Personal Model	Leads by personal example; suggests prototypes for appropriate behavior in office; shows learners how to do things; wants learners to observe and emulate approach	"Hand-on"; emphasis on direct observation; emphasis in following a role model (mentor relationship)	May want to "clone" learners in own image; learners may feel inadequate cannot live up to; stuck in practice may believe approach is best way to practice medicine
Facilitator	Emphasizes personal nature of teaching-learning relationship; asks questions, explores options with learners; focuses on learner responsibility, independence, and initiative	Personal flexibility; Focus on learner needs and goals; openness to alternatives and options	Time consuming; sometimes more direct approach is needed; can make learner uncomfortable
Delegator	Encourages learner responsibility and initiative when	Contribute to learners professional	Learners may not have capability to function in an

	appropriate; goal is to have learner function autonomously; a "resource person"; answers questions and periodically reviews learner progress	development and confidence; two-way trust	autonomous manner; some learners are anxious when not closely supervised
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Adapted from Grasha (1996: 154)

From the description of teaching styles in Table 3.3, teachers in the rural schools of Lesotho may be able to use the information as outlined to select teaching styles that appropriately match with the learning styles of learners in their classes. Information from the table also guides teachers on the use of styles they select while pointing to the advantages that can be maximized and disadvantages that can be minimized.

Grasha claims that these styles tend to cluster into four different patterns that influence teachers' use of various instructional methods. He also suggests that these clusters differ with respect to which student learning styles they best support. Other factors which might influence the appropriateness of a given style cluster include learners' capabilities to handle course demands; learners' need for the teacher to directly control classroom tasks, and the teacher's and learners' willingness to build or maintain relationships. These clusters are briefly discussed in Table 3.4 below.

Table 3.4: Grasha's Teaching Style Clusters

TEACHING CLUSTER	STYLE	PREFERRED TEACHING METHODS	PRIMARY LEARNING STYLE
Expert/ Formal Authority		Didactic lectures, technology-based presentations, teacher-centered questioning, and	Dependent, Participant, Competitive

	discussions	
Personal Model/ Expert/ Formal Authority	Role modeling, coaching/guiding students	Participant, Dependent, Collaborative
Facilitator/ Personal Model/ Expert	Case-based discussions, concept mapping, critical thinking, fishbowl discussions, guided reading, problem- based learning, role plays, student teacher of the day	Collaborative, Participant, Independent
Delegator/ Facilitative/ Expert	Contract teaching, class symposium, debate formats, small group discussions, independent study/research, modular instruction, panel discussions, learning pairs, student journals	Independent, Collaborative, Participant

Adapted from Grasha (1996: 179)

Indeed, it may be important that teachers give attention to their teaching styles and learners' learning to enhance the teaching-learning process. Therefore teachers in rural schools of Lesotho need to select teaching styles that are appropriate to the way in which learners learn. In carrying out this selection, Grasha (1996: 90) cautions that it should not be based on personal whim or how the subject was previously taught, but should be based on a consistent philosophy of teaching that helps in informing teachers about which teaching styles to adopt. Additionally, the selection of teaching styles should be applied regarding the course content, number and maturity levels of learners, physical environment, while also considering the learning styles that are predominant in the class. Grasha (1996: 156) adds more factors that should be considered when selecting teaching styles, namely: class size, time allocation, and the subject matter.

Following the above notion, it may be important for teachers in rural schools of Lesotho to consider which factors are likely to influence their learners' learning styles, how these styles are influenced and find out which teaching styles could address the existing learning styles in their classrooms. Also important, is to make learners aware of their learning styles in order to help them learn better. From this note, implications of teaching styles in the teaching-learning process are discussed to enrich teachers with understanding of the role teaching styles have and how they can be used in a classroom.

3.6 IMPLICATIONS FOR TEACHING STYLES

Mosston and Ashworth (1990: 2) indicate that the teaching-learning process is guided by decision patterns that influence interaction and behaviour of the teacher and that of the learner. In this case, these decision patterns are called teaching styles. Knowing various teaching styles and an ability to move deliberately from style to style as the objectives change from one teaching episode to another is important for effective teaching (Mosston & Ashworth, 1990: 3; Winnick, 1990: 133; Grosser, 2007: 40). The selection of an appropriate teaching style could therefore be crucial to successful instructional experiences in rural schools of Lesotho that are showing low examination results.

Various authors such as Grasha and others that have been mentioned earlier in this chapter have described and classified teaching styles on the basis of teacher-centeredness and learner-centeredness. Mosston and Ashworth (1990: 3) and Winnick (1990: 133) distinguish between the direct teacher-centered and indirect learner-centered teaching styles. The emphasis lies on the different amount of decision making responsibility allocated to the teacher and to the learner. Knowledge and understanding of teaching styles would enable teachers to decide on the teaching activities and methods that might address individual learning styles.

Teaching styles knowledge can be important in guiding teachers in rural schools of Lesotho to move from the traditional teaching approaches that were only teacher-centered to learner-centered teaching approaches. According to Conti and Welborn

(1986: 20) more learning takes place when learner-centered methods are followed. These methods include activities that make learners take responsibility for their own learning, to link learning experiences with personal experiences, to involve the learner actively in the teaching process and to promote adaptability in the classroom. However, regardless of whether teachers use more teacher-centered or learner-centered methods, focus must be directed to addressing learners' learning styles and achieving objectives of the curriculum (Dasari, 2006: 32).

To direct teaching to learning styles and curriculum objectives, Shindler (2006: 3) speaks of the five principles of using teaching styles. According to Shindler, five principles seem to be critical to using teaching styles to individual learners.

Principle 1. Know yourself and your teaching style tendencies

The teacher needs to have an awareness of who they are, what they value and also their natural teaching preference. In this case, they should be aware of the values they learned, values that could be considered as cognitive preferences and also be aware of their teaching actions and choices. When teachers in rural schools are aware of their own teaching styles, then they may be able to realize their challenges related to the use of such styles, and may also realize that the styles they tend to use might not address the learning styles of all learners in the class. This idea can also influence teachers to shift from their natural styles to those that match with the learning styles of their learners.

Principle 2. Gain an understanding of each of your learners' learning styles and needs, and promote a community of learners respectful of one another's strengths and differences.

Teachers in rural schools of Lesotho need a systematic means to understand the learning needs and cognitive style preference of each of the learners in the class, as well as helping learners to function collectively. It can be helpful to have one's whole class as well as each individual learning style. Having information related to trends in the class is helpful in understanding why certain classes are different from others.

However, Grosser and De Waal (n.d: 19), and Shindler (2006: 6) caution that knowing a learner's learning style should be within the prescriptions of supporting and promoting learning and should not be a tool for stereotyping and stigmatizing learners. In an attempt to match teaching and learning styles, teachers need also to expose learners to certain challenges outside their learning styles in order to strengthen skills that are required in all learning situations and for academic success.

Principle 3. Use teaching methodology and strategies that promote the maximum degree of success for learners of all styles.

In this case, the teacher must have well established pedagogical tools that are effective across learning styles. The simplest way to ensure a group of learners with diverse learning styles succeed is to incorporate teaching practices that promote cross-style success, and avoid practices that are ineffective regardless of learning style (Shindler, 2006: 7). The following practices are believed to lead to high levels of academic achievement, addressing most learning styles of learners (Felder, 1993: 288; Shindler, 2006: 7)

- Provide and communicate clear outcomes, objectives and assessment criteria to learners.
- Engage learners in activities that require them to work as teams.
- Provide clear directions on tasks and develop a culture of listening among learners.
- Use formal concept building activities that can promote the concept acquisition skills of all learners.
- Design a sound social contract and clear logical consequences to minimize disciplinary problems.
- Provide concrete specific feedback and healthy praise

It might not be an easy task for teachers to incorporate all teaching styles that match with learners' styles in all classes. With the use of above practices and attempts of matching the styles, academic achievement of learners in rural schools of Lesotho might increase.

Principle 4. Be mindful and respectful of the needs of learners on the other side of each learning style dimension.

As teachers become knowledgeable of their own styles, it is common to discover that it has been easier to teach in ways that has worked better for the learners with the same styles, thus ignoring other learners with different styles. Felder (1993: 289) suggests that teachers should incorporate practices that meet a wide range of needs, and more importantly to create an environment that supports learners on both sides of each learning style dimension. Therefore, teachers in the rural schools of Lesotho may need to come out of their comfort zones of using their preferred styles, and include those styles of learners that do not receive enough attention.

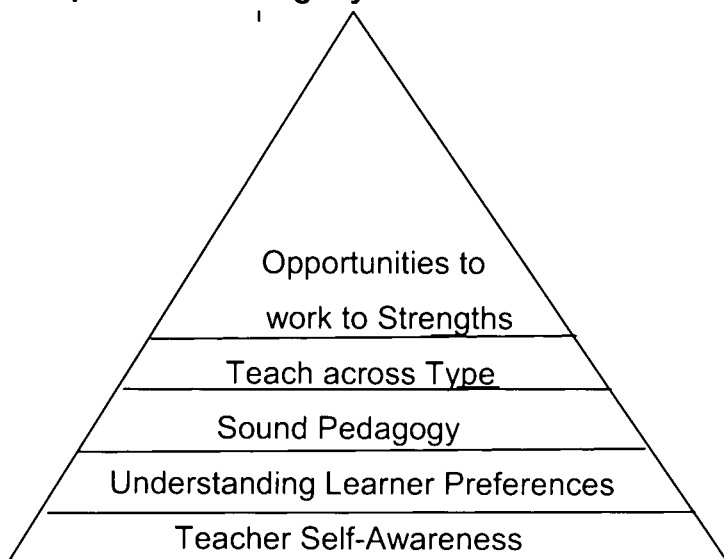
Principle 5. Provide opportunities for learners to work in their strengths areas for some part of the overall learning experience.

This principle suggests that teachers should illuminate the conditions in which different types of learners work best so that they can create opportunities for each learner to work to their particular strengths. While it is not reasonable to individualize a program for each learner, it is useful to consider each type when planning a lesson or unit and ensure that all learners have opportunities to work on their strengths (Shindler, 2006: 9). On the other hand, Kovacic (2003: 801) contends that to some extent learners should also be exposed to the teaching style which is different from their preferences to prepare them for the real world. All in all, in the rural schools of Lesotho, teachers may need to focus on improving learners' academic potentials by matching teaching with the styles that learners already prefer. In relation to this, some techniques need to be established that could address learners' challenges as well.

Teachers in rural schools of Lesotho could use these principles to guide them in selection of teaching styles, lesson planning and presentation of lessons to address their learners' learning styles. According to Shindler (2006: 2) these principles could be

considered to be hierarchical in nature, each element building upon the last, as illustrated in Table 3.5 below.

Table 3.5: Principles of teaching styles.



Adapted from Shindler (2006: 2)

As much as these principles could be considered hierarchical, the manner in which they are used can follow any order (Shindler, 2006: 2). Teachers in rural schools of Lesotho can use them in any way that enables them to promote learning in their classrooms, as long as the principles are implemented positively. However, the issue of matching and mismatching teaching and learning styles still requires further consideration. Therefore the next section is on matching/mismatching teaching and learning styles.

3.7 MATCHING/ MISMATCHING REVISITED

Moallem (2007: 220) notes that research on learning styles and academic achievement has shown that teaching learners how to learn and how to manage their own learning styles is crucial to their academic success. On the same note, Isemonger and Sheppard (2003: 196) state that knowing a learner's learning style is a first step to a personalized approach to him or her, and also a starting point in helping the learner to improve on the weak styles and making use of his/her strong styles. Even though knowing learners'

learning styles may be that important, there are debates among researchers as to whether matching or mismatching teaching and learning styles improves academic achievement.

Isemonger and Sheppard (2003: 196) indicate that there is empirical support for the claim that learning in a manner consistent with one's learning style produces better results than otherwise. Dunn (2003: 12) also notes that from research conducted by Farr (1971); Domino (1970); Cafferty (1980); Copenhaver (1979); Lynch (1981); Pizzo (1981); Krimsky (1982); and Shea (1983), learners were administered a self-report instrument in which they were asked to identify the ways in which they would achieve best. Experimental investigations from these studies revealed that when taught as they indicated, learners achieved better than when taught in ways that were different from their preferences. Table 3.6 includes evidence from these investigations.

Additionally, Graf et al., (2007: 79) point out that learners with a strong preference for a certain learning style may have difficulties if the teaching style does not match their preferred learning styles. To be more precise, Felder (1993: 288), Jones (1998: 117), Morrison et al. (2003: 208) and Moallem (2007: 217) suggest that learners whose learning styles match with the given teaching style tend to retain information longer, apply it more effectively, and retain more positive attitudes toward the subject than those who experience mismatches. Secondly, Jones (1998: 117) contends that a mismatch condition leads to a grossly inferior performance while a matching condition promotes a greater interpersonal attraction that could motivate learners to achieve.

From the above, matching of teaching and learning styles therefore seems to have a positive impact on academic achievement. However, as there are many research findings to support the benefits of matching teaching styles to learning styles, teachers in rural schools of Lesotho should be aware that there are also those studies that are opposed to matching as a good solution to poor academic achievement.

Table 3.6: Matching teaching and learning styles

Researcher and date	Population	Findings
Cafferty, 1980	1,689 teacher-student pairs	<ol style="list-style-type: none"> 1. The greater the match between the learner's and the teacher's style, the student's grade point average. 2. The greater the mismatch between the learner's and the teacher's style, the lower the student's point average.
Copenhaver, 1979	76 high school students	<ol style="list-style-type: none"> 1. Learners' learning styles remained consistent regardless of the subject being studied. 2. Significantly more positive attitudes resulted when students' styles were similar to their teachers'.
Domino, 1979	100 college students	<ol style="list-style-type: none"> 1. Learners taught in preferred styles scored higher on tests, fact knowledge, attitude, and efficiency than those taught in a manner dissonant from their orientations.
Farr, 1971	72 college students	<ol style="list-style-type: none"> 1. Individuals accurately predicted the modality in which they would achieve superior academic performance. 2. It was advantageous to learn and be tested in the preferred modality. 3. The above advantage was reduced when learning and testing were both in the non-preferred modality.
Krimsky, 1982	32 fourth graders	<ol style="list-style-type: none"> 1. Learners who preferred bright light performed statistically better when tested in brightly lit areas; those who preferred reading in dim light did equally as well in a low-light setting. 2. Both groups performed statistically less well when tested in mismatched situations.
Lynch, 1981	136 high school students	<ol style="list-style-type: none"> 1. When matched with their time-of-day preference and mismatched for teacher assignment, chronic truants attended school more frequently. 2. A significant interaction (at the .01 level) occurred among degree of truancy, learning style preference, and English teacher assignment, suggesting that time preference was a crucial factor in the reversal of truancy patterns.
Pizzo, 1981	64 sixth graders	<ol style="list-style-type: none"> 1. When learners were matched with their learning style preferences, statistically higher reading and attitude scores resulted at the .01 level 2. Learners who were mismatched achieved significantly below the matched students.
Shea, 1983	32 ninth graders	<ol style="list-style-type: none"> 1. When learners were matched with their learning style preferences for design, statistically higher reading scores resulted at the .01 level. 2. Learners who were mismatched for informal design achieved significantly lower than when matched.

Dreyer, 1999	200 university students	1. Greater congruence between teaching and learning styles increases the probability of learners' ability to master content, acquire critical thinking skills, and understanding of complex issues.
Dasari, 2006	87 sixth graders	1. Matching learners' learning styles with their teachers' teaching styles, learners' attitude and motivation to study increases. 2. Matching teaching and learning styles have a positive impact on the academic achievement of sixth grade science learners.

Adapted from Dunn (2003: 13)

Some researchers assert that there is a lack of evidence to support the view that matching teaching and learning styles is educationally significant. Ellis (2001: 156) states some criticisms based on matching teaching and learning styles. These are:

- The experimental designs employed in classroom based learning styles research appear to be weak and do not have adequate controls.
- There could be some element of bias on the part of the researchers as each one stands to gain financially from propagating their own theory and accompanying instrument that measures learning styles.
- Some researches base their findings on unpublished studies, journals and doctoral studies.
- There have been no published accounts of any large scale program evaluation conducted to determine whether an in-service program on learning styles has contributed much to learners' academic achievement.

Again, other theorists are uncertain about whether it is of great importance to teach to an individual's strengths or to try to help learners overcome their apparent challenges. Kolb (1984: 32) argues that learners need to be helped to overcome challenges in their cognitive styles and to develop a more integrated approach to learning by mismatching teaching with their learning styles. Jones (1998: 117) further indicates that learners need to develop the compensation techniques needed for situations in which style

conflicts exist. However, learners still need to exercise their strengths to gain more confidence and learn effectively.

Another argument forwarded against matching is that it is hard to imagine teachers changing their teaching style to accommodate up to thirty different learning styles in one classroom. This sentiment is echoed by Doyle and Rutherford (2003), who believe that teachers will be faced with formidable problems because of the diversity of work teaching to learning styles entails. Doyle and Rutherford further argues that of twenty two studies on the effects of matching reviewed, only two showed significant effects on academic achievement.

To the above argument, Felder (1993: 287) suggests that the point should not be to teach to each of the identified learning styles in class, but it should be to address each side of each learning style dimension at least some of the time. However, he also contends that to some extent learners should be exposed to the teaching style which is different from their preferences to prepare them for real life.

Finally, the debates on matching and mismatching teaching and learning styles have been discussed. Suggestions have been made on how to match teaching and learning styles, and the related criticisms also discussed. On the other hand, suggestions have also been made on how to use mismatching to help learners, and the criticisms interrogating this view have also been outlined. In the end, this research proposes that teachers in rural secondary schools of Lesotho should find ways of matching their teaching styles to their learners' learning styles to improve academic achievement. This can be done by identifying the existing learning styles in class, with a focus on teaching to these styles at different times of the lessons or in different lessons, and also using a variety of teaching styles that cut across all learning styles dimensions at certain times, to help learners overcome their challenges.

3.8. CONCLUSION

On the whole, teachers need to be aware of the teaching style theories and should equip themselves with knowledge that can help them address learning styles of their learners. Teachers also need to realize the pitfalls of subscribing too much to the notion of learners having one dominant style that is fixed. Dasari (2006: 35) cautions that the most serious undesirable side effect in using learning styles is that they are often considered to be fixed by the teacher, and in this way it could limit the learners' ability to learn in ways that do not fit their teaching style. Again, while focusing on matching teaching and learning styles, it may also be worthwhile to attempt to expand a learner's thinking by deliberately setting work outside his or her preferred learning style, to improve academic achievement. The next chapter reviews the concept of academic achievement and all that it entails with respect to learning.

CHAPTER 4

ACADEMIC ACHIEVEMENT AND ITS RELATION TO THE RURAL SCHOOLS OF LESOTHO

4.1 INTRODUCTION

Achieving well academically is a very important aspect for any learner, especially for learners in secondary schools and high schools, as decisions regarding their futures are often based on their academic achievement (Calitz, 2001: 1). This idea applies in countries like Lesotho where learners have to perform well in secondary and high schools in order to be selected for entrance to higher learning institutions. In the previous chapters, teaching and learning styles and matching the two to improve academic achievement, were discussed. In this chapter, therefore, academic achievement will be described and discussed with the focus on the context of rural schools in Lesotho.

4.2 UNDERSTANDING ACADEMIC ACHIEVEMENT

In the following section, academic achievement will be described in terms of its nature and research issues related to its measurement. Factors that impact significantly on academic achievement will also be highlighted later in this chapter.

4.2.1 Nature of academic achievement

A general theory of work performance articulated by Campbell and colleagues (Campbell, 1990: 689) and the application of this general theory to the academic performance domain (Kuncel, Hezlett, & Ones, 2001: 167; 2004: 152) will be considered to describe academic achievement. This theory proposes that academic achievement is a function of three direct proximal determinants: declarative knowledge (knowledge of

facts and procedures), procedural knowledge (the skill to do what is required in a situation), and motivation (the willingness to engage in and sustain a high level of effort in completing the task). The theory is also characterized by a series of indirect and more distal determinants, such as cognitive ability, interests, personality; and education, training and experience. The effects of these distal determinants on achievement are fully mediated by the three direct determinants. In other words, effective performance on a dimension of a learner's achievement is directly a function of task-relevant knowledge and skill and the immediate willingness to engage in a high level of effort that is sustained over time.

Secondly, the theory describes academic achievement in terms of two stages of performance that can lead to achievement. The first stage includes the behaviours involving studying, time management and avoidance of behaviours that could inhibit classroom success. Successful performance at this stage involves effectively engaging in behaviours related to knowledge and skill acquisition, such as studying, communicating with peers, choosing to read at the library to avoid distractions and so on. On this note, Kuncel and Crede (2008: 15) contend that learners must act to acquire knowledge (study, practice, integrate, retain) before it can be translated into performance on a test or exam. Therefore, this stage of performance determines the amount of knowledge and skill acquired.

In the second stage, the accumulated knowledge and skills are assessed in exams, during presentations and in written papers. Performance at this stage involves the actual evaluation (taking the exams, giving the presentation, etc). Performance at the second stage determines grades and is the most observable aspect of learners' performance in learning, which could be regarded as their academic achievement.

Moving away from the theory above, Calitz (2001: 7) asserts that academic achievement can be viewed as the degree to which learners are able to attain a standardized academic goal or, in other words, the degree to which learners master those tasks which they are expected to master for the respective academic year. This definition implies that individuals perceive achievement or performance in terms of standards of excellence. Kennedy (as cited in Mekgwe, 1998: 14) relates it to

achievement test scores and teacher-given grades and percentages in academic subjects. In the same way, the academic achievement of learners in this research is represented by the end-of-year examination marks of Form C learners in their respective schools selected for the study.

Numerous methodological problems exist that relate to the determination of the predictive relationship between academic achievement and other variables (Mokoena, 1997: 27). The biggest problem area is, however, related to the operational definition and measurement of academic achievement with a consistent standard of judgement. Stott (1950: 107) and Schaefer (1996: 28) used five operational elements in an attempt to confront this challenge. These elements are:

- Satisfactory academic progress: Performance that leads to the completion of a given course or career.
- Academic competence: Satisfactory quantitative and qualitative performance in studies.
- Academic satisfaction: verbalizing sufficient satisfaction with academic competence, work or progress.
- Fitness
- Satisfactory adjustment to learning content/ activities or environment.

According to Stott, academic achievement is defined in terms of good interrelatedness and harmonious integration of all the above-mentioned elements. He also cautions that it is common practice to determine academic achievement with reference to the first two elements that involve objectivity only. This objectivity is achieved in terms of using standardized tests and examinations to measure academic achievement. In this case subjectivity, which is viewed in terms of the learners' perceptions about the academic activities, environment and self-image, is compromised.

Entwistle and Ramsden (1983: 25); Biggs, Kember and Leung (2001: 142) concur with the notion above, and indicate that better learning and satisfactory academic achievement is determined according to the following criteria:

- The quality of understanding
- Satisfaction
- Self-rated performance
- Long-term memory of factual material
- Degree results
- Course marks
- Examinations

High scores with reference to all of the above criteria imply high academic achievement as evidenced by research in America, Australia, Britain and Sweden (Mokoena, 1997: 29). Furthermore, measures such as a test, end of quarter, semester, year or final examination results, still remain the primary indicators of academic achievement as evidenced in a significant majority of related studies (Kreitler, Ziegler, Kagan, Olsen, Weissler, & Kreitler, 1995: 299; Tinajero & P'aramo, 1997: 206). This is the case despite the criticisms that prevail on theoretical grounds of this issue.

In criticizing the use of exam results as indicators of academic achievement, Cox (as cited in Mokoena, 1997: 29) emphasizes their lack of reliability and validity, which may at times lead to the inconsistent assessment of the same learner on different occasions. Supporting reasons are given for this criticism, and these are:

- The marking of essay-type questions often does not have enough checks and balances against subjectivity by the markers.
- Different markers tend to use different criteria for marking essays. In extreme cases, some allocate marks at random.
- Safeguards against variability in the quality or standard of questions overtime is often lacking.
- The content covered and quantity of questions may not be an adequate sample of the learners' full body of knowledge.

Mokoena (1997: 30) further indicates that other variables are claimed to undermine the validity and reliability of exam marks. These variables include the combination of marks from different subjects, such as mathematics and philosophy or combining marks

obtained by different assessment methods, such as essays or objective tests which result in contrasting interpretations and meanings.

Despite the criticisms that exist, examination results can still be the appropriate indicator of academic achievement, especially when they are properly used. Entwistle and Wilson (1977: 34), and later, Farrington and Small (2006: 6) maintain that rescaling the marks, i.e. making the numerical scales equivalent, can render exam marks more valid and reliable than otherwise. This rescaling involves recalculating the scaled marks on the assumption that the various marked subjects have an equal standard deviation (mean and distribution of marks). Teachers would, however, need skills to rescale the marks of their learners, and thus training would be required.

Lastly, Mokoena (1997: 27) contends that academic achievement is an index, not only of the learners' ability and learning effectiveness, but also of the impact teaching has on the respective learners being taught. Therefore it may be of importance that teachers in the rural schools of Lesotho review their teaching styles and methods to address academic achievement that was recorded to be low over the past years. On the other hand, it is also important to review the factors and challenges of academic achievement in Lesotho.

4.3 FACTORS AND CHALLENGES OF ACADEMIC ACHIEVEMENT IN LESOTHO

There are a number of factors within the learner and within the learning context that affect the academic achievement of individual learners. Researchers relate academic achievement to psychological, physiological, socio-economic and educational system factors (Motsau, 1990: 8); internal and external factors (Brimer & Pauli, 1971: 63); cognitive, biographical, affective and social factors (Calitz, 2001: 4); and school-related, learner-related and parent-related factors (Lecroy & Krysik, 2008: 197). There seems to be some overlapping among the above-mentioned factors. Therefore, for this research, learner-related, parent-related and school-related factors will be considered.

4.3.1 Learner-related factors

In schools, not every learner achieves a standard of excellence academically due to many variables. Some learners may never develop true formal operational thinking because of either limited mental, physical or learning abilities; or environmental and cultural limitations (Mekgwe, 1998: 14). In this section, some of the factors that influence academic achievement are reviewed. These factors include certain cognitive processes and structures, motivation and interest, self concept of ability and other factors, such as gender and discipline. Learners in the rural secondary schools of Lesotho may achieve high or low as a result of the characteristics they possess with regard to the factors mentioned above. Therefore, reviewing the factors influencing academic achievement would assist teachers in knowing which aspects to consider, when matching teaching and learning styles to improve academic achievement.

4.3.1.1 Cognitive Factors

Cognitive theorists, with regard to academic achievement, link cognition with the ability of an individual to think and reason logically with understanding (Tsepa, 2008: 30). Cognitive factors include information processing, concept formation and intellectual development, cognitive styles and the learning styles.

a) Information processing

Information processing involves different types of data coding (Das, Kirby & Jarman, 1979: 12) and levels of data coding processes (Biggs, 1993: 4) that underlie different styles of thinking that influence learning styles and approaches. Mokoena (1997: 34) indicates that information processing accounts for the internal factors of an individual learner that affect the learning process and learning styles of each individual. This idea implicates that it cannot be assumed that all learners in the rural schools of Lesotho will process information presented to them in the same way.

b) Concept formation

Concepts are non-personal and non-evaluative devices whereby objects or events are classified. The basic universal characteristic features of objects or events, which may either be concrete or abstract, serve to classify concepts into concrete and abstract correspondingly. But the abstract idea of a concept can apparently be established only after the formation of a concrete one (Mokoena, 1997:43). In this case, conceptualization might be significant in learning in general as well as learning styles and academic achievement in that people may develop or construct networks of interrelated concepts that enable them to render their experiences meaningfully, store information and communicate ideas.

c) Intellectual development

Intellectual development in learners occurs simultaneously during the construction of concepts. When developing intellectually, learners acquire mental operations that facilitate the manipulation and formation of interrelationships between the contents of the long-term memory (Mokoena, 1997: 44). Piaget in (Piaget & Inhelder, 1969: 34; Antherton, 2005a: 2) perceives cognitive development in terms of periods and stages that are related to distinctive progressive and qualitative changes in intellectual functioning. These changes result from both associations and, most importantly, from the internal organization and adaptation of conceptual structures. Consequently, these changes may also influence learners' level of understanding and acquisition of new knowledge and skills, thus affecting academic achievement. Furthermore, Tsepa (2008:30) is of the opinion that intellectual development refers to the changes that occur in children's mental skills and abilities over time, that enable learners to perform well in learning.

d) Cognitive styles

Cognitive styles refer to the preferred way in which an individual processes information, which is different from how other individuals process information (Calitz, 2001: 13). This implies that cognitive styles determine how learning

material will be manipulated by each individual learner, and that for each individual to develop cognitively, all aspects of their perception should be used effectively.

Both Gardner's Theory of Multiple Intelligences and Vygotsky's theory of Zone of Proximal Development (ZPD) provide significant insight into the development of cognitive styles. According to these theorists, cognitive styles are more concerned with process differences in thinking, rather than with differences in intellectual abilities. According to De Villiers (1996:136), Vygotsky's theory of cognitive development centres around the idea that higher levels of thinking are dependant on social transactions and a social relationship with a mediator, while the internalizing of regulative processes is necessary for effective individual learning. In other words, there is a difference between what a child is capable of achieving individually and what a child is capable of achieving with the guidance of the mediator. Vygotsky (as cited De Villiers, 1996:137) called this relationship the zone of proximal development which he defined as the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. This implies that social relationship and interactions might be vital determinants for the development of cognitive styles. In the rural secondary schools of Lesotho, teachers might need to use classroom and learning activities that reinforce social relationships and interaction as a way of enhancing the cognition of their learners.

On the other hand, Gardner's theory of multiple intelligences focuses on the content of learning that influences the process of thinking and the development of cognitive styles (Silver, Strong & Perini, 1997:24). According to Gardner in Gregg (1997:146), different ways of processing information are presented by different systems. On this note, Gardner postulated that learning should be structured around all eight modes of thinking so that learners could be exposed to a variety

of methods of processing information. These modes of thinking are referred to as multiple intelligences, namely:

- **The spatial intelligence:** It allows learners to perceive the visual-spatial world accurately and represent this world internally in their minds. In the classroom, teachers can accommodate this intelligence by giving learners some opportunities to draw maps, pictures, diagrams and charts; and to make models.
- **The bodily-kinesthetic intelligence:** it tends to encourage learners to use their body parts to solve problems and express ideas. Teachers can incorporate the use of drama, role-play, and hands-on activities in their lessons, to accommodate this intelligence.
- **The musical intelligence:** Learners have the ability to think in and hear music almost continuously, and to remember and transform musical patterns. During lessons, teachers can have learners sing, learn tunes; and play background music.
- **The linguistic intelligence:** This intelligence allows learners to use oral or written language effectively to learn and express ideas. Learners should be provided opportunities to read and write stories, letters, assignments; and debate.
- **The logical-mathematical intelligence:** It fosters logical reasoning and the use of numbers and mathematical operations. Teachers, in addressing this intelligence, could have learners draw and interpret maps; and solve puzzles. Concepts can also be presented to learners in mathematical form so that they understand them better.

- **The interpersonal intelligence:** Encourages sensitivity to other people's moods and feelings, allowing understanding and correct interpretation of verbal and non-verbal behaviours. Learners should have opportunities to lead and participate in discussions, ask and answer questions during and after lessons.
- **The intrapersonal intelligence:** It facilitates self-awareness and allows learners to understand and act in accordance with their own challenges and strengths. In this case, teachers can have learners work in small groups and alone to solve problems.
- **The naturalistic intelligence:** In this intelligence, sensitivity to one's natural surrounding is fostered. To accommodate this intelligence in learning, teachers can have learners work outside their classrooms, ask them to find origins or incorporate excursions to naturally reserved areas.

The above-mentioned multiple intelligences imply that teachers in the rural secondary schools of Lesotho may need to understand and realize the pattern of thinking among their learners, with an aim of improving the learning process and academic achievement. According to Rosa (2004: 34) teachers have neglected to attach the necessary importance of cognitive styles in curriculum development and teaching approaches. Therefore, while teachers attempt to address the learning styles of their learners, it may also be important to gather knowledge on both cognitive styles and learning styles.

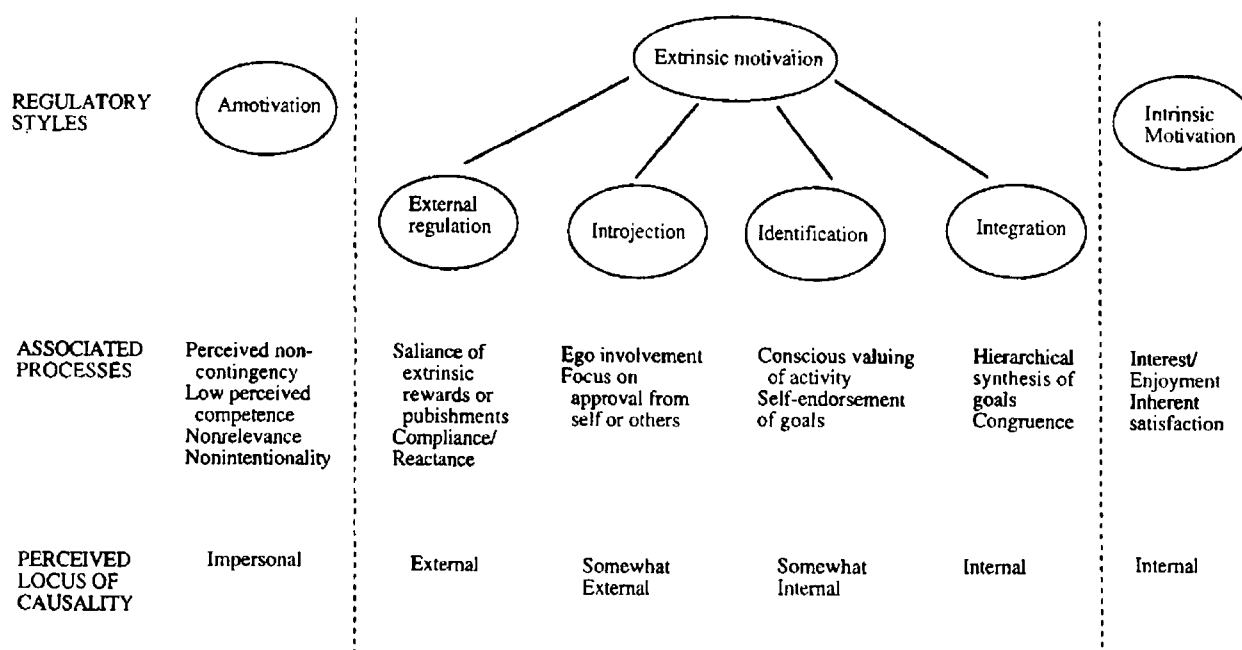
4.3.1.2 Motivation

One of the most popular explanations of learners' failure is that they lack motivation. Much of the chronic failure of learners can be understood as reflecting problems in motivation. According to Motsau (1990: 21) far too many learners perform poorly in school, not due to lack of intellectual abilities, but because they have low expectations, feel hopeless, lack interest or give up in the face of potential failure.

Of course there are a number of researchers who have investigated the relationship between motivation and academic achievement. Motivation could, according to Entwistle (1981: 176) and Springer (2008: 1), refer to anything or a drive that motivates/compels people to act or behave in a certain purposeful way. It is greatly influenced by what people want to achieve in order to satisfy their needs. Zane (1987: 36) and Ahmed (2002: 1) contend that motivation is a primary requirement in any teaching-learning situation. In the school context, it includes variables which influence the learners' active attitude and independent interest in learning. Zane (1987: 45) further indicates that motivation to learn and study relates to the learners' intention to put in some effort to perform a learning task. In fact, Caprara et al. (2000: 305) emphasize that motivational and other self-regulatory factors account for a good share of the variance in academic achievement.

Motivation can also be described in terms of its classification, in which each class or kind of motivation has certain influences on individuals with regard to learning. Ryan and Deci (2000: 61) outline the taxonomy of motivation, and this is illustrated in Figure 4.1 below.

Figure 4.1: A taxonomy of human motivation: Intrinsic and Extrinsic motivation



Adapted from Ryan and Deci (2000:62)

From the above diagram, amotivation refers to the state of not being motivated at all. In motivation, the most basic distinction is between *intrinsic motivation* and *extrinsic motivation*. *Intrinsic motivation* refers to doing something because it is inherently interesting *and* enjoyable whilst *extrinsic motivation* refers to doing something because it leads to a separable outcome (Ryan & Deci, 2000: 62). Other researchers such as Mottau (1990: 22) and Shaffer (1999: 448) distinguish among three kinds of motivation, namely intrinsic, extrinsic and achievement motivation

- **Intrinsic motivation**

Intrinsic motivation depends on seeing the task as relevant and interesting in its own right. It is the desire, interest, intention and attitude to do something which is inspired from within a person (Matiwane, 2001: 28; Department of Education Directorate, 2002: 40). People who are intrinsically motivated work on tasks because they find them enjoyable and because they believe that participation in a task will give desirable results. Entwistle (1981: 178) postulates that in intrinsic motivation, the drive is inherent in the task itself or satisfies an inner need and that the internal need satisfaction in turn leads to increased motivation, interest and self-confidence.

Ministry of Education (as cited in Tsepa, 2008: 36) argues that intrinsic motivation may depend on learners finding activities challenging or on learners' curiosity being stimulated by activities that are surprising or it may also derive from learners' experiencing a sense of control over their learning. This intrinsic motivational tendency is a critical element in cognitive, social and physical development, because it is through acting on one's inherent interests that one grows in knowledge and skills. People are intrinsically motivated for some activities and not others, and not everyone is intrinsically motivated for any particular task (Ryan & Deci, 2000: 56). Intrinsic motivation therefore could be

one of the factors influencing academic achievement in the rural schools of Lesotho.

To support learners with intrinsic motivation in the classroom, teachers may set goals for learning and explain or show why learning a particular content or skill is important. At the same time, teachers can also relate learning to learners' needs to maintain and create curiosity (Ryan & Deci, 2000: 63). Table 4.1 illustrates the type of activities and the environments that teachers may use to support learners with intrinsic motivation in their classes.

Table 4.1: Activities and environments that support intrinsic motivation

Condition	Support for intrinsic motivation
<ul style="list-style-type: none"> ▪ Activities that 	<ul style="list-style-type: none"> - Allow a sense of autonomy - Stimulate a sense of competence - Stimulate curiosity - Present optimal challenges - Are freely chosen - Allow acknowledgement of feeling
<ul style="list-style-type: none"> ▪ Environments that 	<ul style="list-style-type: none"> - Provide competence promoting feedback - Involve supportive personal relationships - Are safe and provide a sense of security - Are free from demeaning evaluations

Adapted from Ryan and Deci (2000:63)

- **Extrinsic motivation**

Extrinsic motivation occurs as a result of the use of external factors, such as some incentive, reward or punishment which lie outside the task itself (Entwistle, 1981: 179; Matiwane, 2001: 11; Tsepa, 2008: 36). The incentive or reward can

be in a form of an award for doing well in an examination or the marks themselves, while punishment can be any action taken by teachers or parents as a way of showing disapproval for learners' poor performance.

In fact, Motsau (1990: 21) and Owen and Taljaard (1989: 58) hold the view that if learners know that they can earn rewards based on what they have accomplished, this instills a sense of self-efficacy for performing well, a sense which is validated as they work and perceive that they are making progress. This implies that rewards are motivational because learners expect that behaving in a given way will be rewarded and that this may lead them to act in ways that will bring about good academic achievement. Teachers in the rural schools could use certain incentive measures to improve their learners' interest in learning.

With an attempt of supporting extrinsic motivation, teachers may need to provide clear expectations of the tasks and content and also provide corrective feedback on tasks and assignments (Ryan & Deci, 2000: 64). Table 4.2 below illustrates the type of activities and environments that may be used to support learners with extrinsic motivation.

Table 4.2 Activities and Environments that support extrinsic motivation

Condition	Support for extrinsic motivation
<ul style="list-style-type: none"> ▪ Activities that 	<ul style="list-style-type: none"> - Involve goals imposed by others - Involve deadlines and pressures - Involve tangible rewards given only on the basis of task performance
<ul style="list-style-type: none"> ▪ Environments that 	<ul style="list-style-type: none"> - Involve extrinsic rewards - Involve pressured evaluations - Involve threats or directives to perform

Adapted from Ryan and Deci (2000: 63)

With regards to intrinsic and extrinsic motivation, Moutsau (1990: 22) suggests that teachers need to use as much of the activities and environments that support both intrinsic and extrinsic motivation as possible to support all learners' motivational needs.

- **Achievement motivation**

The individual plays a very important role in his own motivation in terms of his goals, expectations, self-confidence and interests. When a task is not perceived as important by the learner, a motivation may result. Learners' beliefs about their success on specific tasks, their competence and the desire associated with participation in the tasks all influence their willingness to engage and the amount of effort to put in the tasks (Springer, 2008: 3). Shaffer (1999: 449) contends that achievement motivation is described in terms of three types of goals to achieving, namely: the mastery, performance and social goals. Mastery goals focus on gaining competence or mastering a new set of knowledge of skills. In this case learners feel that they can learn or have the ability to learn, and they desire to become a master in the area. Learners with mastery learning are more motivated to learn and are more likely to work harder in the classroom (Springer, 2008: 3). Performance goals refer to the fact that the main purpose of some learners' learning is not to become a master in the specific learning task, but to perform well in front of others, to impress others, or to do well without a lot of effort. These goals relate closely to social goals, which focus on relationships among people or learners (Shaffer, 1999: 449; Springer, 2008: 3).

Therefore, teachers might need to put less emphasis on performance and social goals which focus on social comparison or competition and lead to avoidance of deep learning and negative effects of achievement motivation. On the contrary, teachers might need to assign learners to appropriately challenging and meaningful academic work, evaluate learners in a manner that emphasizes and rewards improvement and growth within themselves, and provide learners with more choice and autonomy in the classroom. Moreover, teachers can motivate

learners to achieve if the learning experience fulfills the learners' needs for competence, intrinsic interest, extrinsic rewards and social support (Owen & Taljaard, 1989: 40). These perspectives imply that all kinds of motivation are important for learners in the acquisition of good academic achievement.

On the other hand, Brophy and Everton (cited in Motsau, 1990: 21) contend that there is a strong interaction between achievement motivation and the effects of praise and criticism on learners. Those with high achievement and a generally successful record of achievement responded better to criticism than to praise, while those with lower academic achievement motivation and lower actual achievement responded much better to praise than to criticism. According to these researchers, a learner who is accustomed to success expects success and is capable of achieving success with reasonable effort, tends to respond well to criticism for failure that results from lack of effort or persistent application of skills. In contrast, a learner who is accustomed to failure expects failure and has difficulty in mastering tasks even if he persists long and hard. Such a learner is also much more likely to be negatively affected by criticism.

Besides the individual and teacher influences, the home setting and peer relationship also influence the achievement motivation of learners. With regards to home setting, learners who are securely attached to their parents and caregivers are more likely to solve problems successfully, have a strong sense of curiosity and eagerness to learn than otherwise (Shaffer, 1999: 452; Matiwane, 2001: 39-41). Again, learners' tendency to be motivated in exploring, acquiring new skills and solving problems also depends on the type of challenges the home environment provides (Springer, 2008: 5). That is, if learners are given challenging tasks at home and succeed in those tasks, they may develop confidence and willingness to do more, even at school. Moreover, child-rearing practices, such as independence training, setting standards and providing encouragement may have influences on achievement motivation. According to Shaffer (1999: 452) and Springer (2008: 6), when parents provide enough

encouragement and realistic expectations for their children, the children tend to perform better with their school work and the quality of the parent-child and parent-school relationship also influences adolescents' motivation and school success.

Lastly, peer interactions and relationship in school may also affect motivation. According to Shaffer (1999: 453) and Matiwane (2001:17), peer support motivates children to co-operate, be socially responsible and follow classroom rules. Learners' attitudes towards the classroom can vary depending on the attitudes of their friends. Learners also tend to associate with peers who have the same motivational characteristics.

The above notion implies that teachers should provide opportunities for learners to work in co-operative groups in the classroom to fulfill their relatedness and connection needs. Teachers can also allow learners to complete assignments with friends. When teachers focus only on independent work and do not provide opportunities for learners to work together, students' needs for relatedness may not be fulfilled and some learners might feel forced to choose between academic achievement and social needs.

All in all, extrinsic, achievement, and intrinsic types of motivation are associated with poor, good and excellent academic achievement respectively (Mokoena, 1997: 56). This implies that teachers and parents in the rural places of Lesotho may need to provide learners with support that will compensate for other aspects of motivation they may be lacking. Glasser (cited in Motsau, 1990: 21) indicates that where children come from homes in which failure is part of the home and neighborhood environment, deficient motivation led to no motivation or anti-motivation. Thus, such children fail in school, usually locking themselves into failure for life.

4.3.1.3 Self-concept and Learning ability

According to Mekgwe (1998: 19) it is perfectly clear that learners cannot achieve at any level without the necessary ability, but that ability does not need to be as high as it is generally believed to be. This means it is possible for one learner with a high Intelligence Quotient (I.Q) to fail his or her studies while another one with a low I.Q. gains good marks, provided that he or she possesses other attributes which enable effective study and provided the opportunity to exercise those attributes is created.

Calitz (2001: 17) supports the idea that learners of low measured abilities sometimes complete their studies while some of the most promising fall by the wayside. Indeed, Caprara et al. (2000: 305) postulate that ability is not a fixed property, but rather a generative capability in which self-referent, motivational, affective and self-regulatory factors operate as influential factors. That is, individuals with the same intellectual ability may perform poorly, adequately, or skillfully depending on pre-existing or experimentally instilled beliefs of intellectual efficacy.

Ability is also influenced by the learners' self-concept. Studies have shown that learners who believe in themselves, in their worth as individuals and in their ability to do what is expected of them, develop high levels of learning ability and reach required levels of achievement more easily than otherwise (Clarke- Steward & Koch, 1983: 53; Motsau, 1990: 19). On the other hand, learners who experience failure for a long period of time may feel helpless and give up on their learning. When learners are doing poorly at school, their teachers, parents and peers may conclude falsely that they are untalented or even stupid. These learners may be depressed and learned helplessness and this behaviour may be preventing them from fulfilling their potentials. Learned helplessness is defined by Shaffer (1999: 455) and Seligman (as cited in Maier, Peterson & Schwartz, 2000: 1) as a tendency to give up or to stop trying after failing, because these failures have been attributed to a lack of ability that one can do little about. These learners do not complete work. They give up quickly when faced with a task that is difficult for them and become anxious when they must read aloud or take a test.

Maier et al. (2000: 16) revised the learned helplessness as it applies to people by proposing that when individuals encounter an uncontrollable event, they ask themselves why. The answers people give to this question and the causal attribution they entertain sets the parameters for the helplessness that results. That is, if the attributed cause is stable ("it's going to last forever") rather than unstable, then helplessness would be long-lasting. If it is global ("it's going to undermine everything") rather than specific, then helplessness would be general. And if the causal attribution were internal ("it's me") rather than external, then helplessness would be accompanied by a loss of self-esteem. The pattern of causal attributions for a particular instance of uncontrollability would affect a person's expectations for the future. And these expectations would in turn affect the self concept and self-esteem of a learner.

In fact, Caprara et al. (2000: 305) contend that perceived academic, social and self-regulatory efficacy and academic aspirations foster learners' academic achievement and their occupational trajectories. This idea means that once learners in the rural secondary schools of Lesotho are convinced they cannot learn the task of teachers in matching teaching and learning styles may not yield the expected improvement in academic achievement. Therefore, to address learned helplessness, teachers can use attribution-training in which a learner is persuaded to attribute his/her failures to unstable causes, such as insufficient effort, that he/she can do something about. The other way of addressing learner-helplessness is by giving learners a success-only therapy in which they work on problems they could solve and receive tokens for their successes. Parents in this regard may also contribute by using tokens or any other form of incentives that could improve on their children's self concept (Shaffer, 1999: 456).

4.3.1.4 Gender and sex-role influences

It has been discovered by a number of studies that gender differences do, indeed, play a role with respect to academic achievement. Bland (2001: 2) asserts that males are more vulnerable to problems, such as dyslexia and hyperactivity, both of which are exacerbated by lack of hemispheric co-ordination: their compartmentalized thinking enables them to isolate specific problems as they attempt to solve them. Hence males

are more likely to excel in mathematics, mechanics and engineering, while females are able to take a more holistic view and are more likely to integrate logic emotion. In this case, females' performance seems to be affected more by motivation than ability (Mokoena, 1997: 58).

Again, Hannan (2007: 3) further reveals that males generally have better right hemispheres which dispose them towards spatial tasks, such as map-reading or interpreting technical drawings. Females on the other hand have developed left hemispheres which explains why they learn to speak earlier than males and are often more adept at languages. On this note, Craig (1996: 24) and Mokoena (1997: 58) indicate that girls tend to be more verbal and articulate than boys, and boys more proficient on mechanical reasoning and spatial relations than girls, with verbal differences becoming more marked in the late childhood and early adolescence.

On the other hand, sex-roles can also play an influential role in the development of certain cognitive abilities. Calitz (2001: 14) argues that as boys grow up, they identify with the notion that they should excel at mathematics, and thus often do, while girls, however, learn that mathematics ability is not an acceptable feminine trait and tend to avoid mathematics. Additionally, Bielby and Doherty (1990: 23) are of the opinion that the sex differences that are evidenced with respect to intellectual abilities can arise or be accentuated by sex-role biases that are embedded not only in the society as a whole, but also in the classroom as well. This internal bias can lead the teacher to treat males and females differently within the same classroom setting, and in doing so, provide boys and girls an unequal quality of education.

On the whole, teachers may need to understand the influences of gender differences and sex-roles in the way learners approach learning so as to try and eliminate practices that promote inequality in education. Sometimes it may be that learners possess certain learning styles or prefer certain styles over others as a result of sex-role influences in their culture and environments. Therefore it could be of good benefit that teachers in the rural schools of Lesotho become aware of such influences in order to enhance the

learners' weak learning styles, while also maximizing their potentials in the preferred and strong learning styles.

4.3.1.5 Discipline

Indiscipline at schools has become a matter of concern to many educationists across the globe. According to *The American Heritage* (2000), indiscipline refers to lack of discipline or restraint. At Brent in England, part of the blame for shockingly poor examination results in 1984 was for example put on the lack of discipline in schools (Wilce, as cited in Motsau, 1990: 18). Again, a national survey of violence and vandalism in 642 public secondary schools in the USA demonstrated that schools with above average proportions of academically uninterested learners were also schools with high rates of attacks against teachers and learners (Motsau, 1990: 18). Moreover, Boyens (1990) indicates that education in black public secondary schools in Africa, especially in South Africa, is being compromised by indiscipline and behavioural problems that cause poor learning environments. This is also the case in Lesotho, where discipline problems in secondary schools is an issue of concern to teachers and parents who contend that learners fail to achieve reasonably at school because of indiscipline and behavioural problems (Mulkeen, 2005: 21).

On the other hand, society expects schools to be orderly and to produce well-educated, well-behaved people. Public concern about school results, learner misbehaviour and dysfunctional schools are often reported in the media and are the subject of widespread debate (Tsepa, 2008: 34). According to Squelch (2000: 1) discipline does not happen by chance and needs to be purposefully managed. She further ascertains that although there are various reasons for learners' misbehaviour, the school environment is as much a factor as the home environment. Therefore it is necessary to create a positive, disciplined school environment aimed at preventing disciplinary problems.

On the notion above, Squelch (2000: 4-5) suggests that a whole school behaviour policy should be developed which should be based on the following aims:

- To develop an opportunity to put shared values about the ways school communities should behave into practice.
- To develop a positive reputation for the school community.
- To enable all members of the school community to behave appropriately towards each other and to co-operate in the teaching and learning environment.
- To provide the positive school ethos, conducive to teaching and learning.
- To enable each learner to have an appropriate environment for learning and each teacher to have a suitable environment for teaching.
- To define what is meant by appropriate and inappropriate behaviour.
- To enable appropriate rewards and punishments to be developed.

Teachers in rural secondary schools can use these guidelines to develop their policy on discipline, in an attempt to minimize the influence of indiscipline on academic achievement. Following the above discussion on learner-related factors, it is evident that learners' factors that influence academic achievement may be intellectual or non-intellectual, but surely both contribute to a learner's academic achievement (Duckworth & Seligman, 2005: 939). Understanding and addressing all these factors, teachers may enhance academic achievement in the rural schools of Lesotho. On the other hand, there are other factors besides those that are learner-related, that might also influence learners' academic achievement. In the next section, parent-related factors will be reviewed.

4.3.2 Parent-related factors

According to LeCroy and Krysik (2008: 197) earlier research concerning lower academic achievement among minority populations focused, among other factors, on parent-related factors. These factors include the socio-economic status of parents, parental involvement in their children's education and parents' education level.

4.3.2.1 Socio-economic status

Motsau (1990: 22) states that socio-economic status is generally strongly linked with the quality of the area in which families live, the access they have to the area's schools of their choice, and also with the academic achievement of learners in schools. In the same way, Lesotho Ministry of Education and Training (2005: 42) has indicated that underlying the education crisis, are socio-economic problems of an enormous scale: grinding poverty and massive unemployment place education beyond the reach of most learners in the rural schools of Lesotho.

Again, Jubber (1988: 290) revealed in his study that the poorest homes proportionally produce more underachievers than average and rich homes. He further contended that family income contributed directly or indirectly to a child's cognitive development. That is, its effects relate to such things as the relationship between income and nutrition, health, quality of school attended, pre-school education, the quality of home, such as information environment and the ability of the family to supply all kinds of educational support, equipment and experiences which foster school success.

According to LeCroy and Krysik (2008: 198) in most developing countries, there are inadequate numbers of centres of learning and other facilities to meet the educational needs of the population as a result of economic barriers. These inadequacies in provision are also linked to other factors, such as urban/rural disparities, as well as those arising from discrimination on grounds such as gender, race and disability.

Beyond issues of inadequacy of services by discrimination, the Department of Education (2002: 44) argues that lack of access to services, such as welfare and communication also affects the learning process and leads to learning breakdown. Transport and other basic services such as access to clinics also impinge on the learning process and academic achievement of learners. In Lesotho's rural areas, learners are, for example unable to reach schools because of lacking transport that is caused by poor roads. This sometimes leads to absentees in schools, especially during rainy days, and thus promoting academic underachievement.

Closely linked to the lack of access to basic services is the effect which sustained poverty has on learners. Under-nourishment leads to a lack of concentration and a range of other symptoms which affect the ability of the learner to engage effectively in the learning process (Department of Education, 2002: 133). With this problem prevailing, academic achievement becomes low, especially in the rural schools of Lesotho which are characterized by poverty (Lesotho Government Gazette, 1994: 55). To address this problem of academic underachievement, it is important for teachers to improve on other factors that could enhance achievement, such as matching teaching and learning styles.

4.3.2.2 Parental involvement

Calitz (2001: 17) indicates that parental involvement and parental attitude are crucial factors affecting the young person's desire to finish a high school education. On the other hand, parents want their children to become successful and caring adults and try to be involved with the formal education of their children. In the Lesotho Ministry of Education and Training (2005:40) there are, however, concerns about the fact that sometimes parents do not know how to make contributions and positive connections with the school, especially in rural areas. This is why, in most cases, learners attain poor academic achievement when they leave secondary schools.

According to Mqhatazane, Mokhethi and Anderson (1979: 89) and the Lesotho Ministry of Education and Training (2005: 40) it is observed that parents' involvement in their learners' education is mostly confined to paying school fees and other school fares, and they fail to follow their learners actual learning at both school and home. These researchers also suggest that in the complex world of education, it takes more than a good school and often a good home as well to educate children. Both family and school, as educational institutions, should work together in providing quality education.

There is an increasing recognition within developmental, educational and sociological theories that both school and home are important institutions that socialize and educate children. The family (parents in particular) has been described as playing a central role

in the social, psychological and academic development of children and adolescents (Lesotho Ministry of Education and Training, 2005: 30). In the process of socialization, children internalize the reflected appraisals expressed towards them and come to respond to themselves in a way that develops self-perceptions similar to those expressed by the significant others in their lives, most importantly their parents (Lesotho Ministry of Education and Training, 2005: 39). In other words, children define and evaluate themselves in terms of how they perceive others to define and evaluate them. In this case, if children perceive their parents' behaviour towards them as expressing positive evaluation, such as being helpful, supportive and interested and a source of encouragement, they may evaluate themselves positively, and thus may strive for the best and obtain higher academic achievement.

Again, parents have a strong influence on the development of their children's achievement motivation and their related expectations which are closely linked to motivation (Mekgwe, 1998: 22). That is, children whose achievement, initiative and competitiveness are reinforced by their parents are more likely to develop a high level of achievement motivation. Still on this note, Zigarelli (1996: 104) states that the more parents are involved in a school, the better the educational experience of the learners and an improvement in overall academic achievement. In support to this notion, Mathibeli (1996: 29) holds that the kind of attitude parents have towards their children's education is a key determinant to their children's level of academic achievement.

In Lesotho some parents, still have negative attitudes towards schooling and believe that their sons and daughters should focus on domestic work, such as herding or house chores to become good adults, while in some cases boys alternate between going to school and herding the animals (Lesotho Ministry of Education and Training, 2005: 102). In this case, school attendance becomes very poor and may result in low academic achievement.

Mekwe (1998: 19) holds that successful academic achievement appears to be greatly influenced by good parenting skills, and that a prompt effective adult response to learner's behaviour problems and learning problems early in secondary school may

short-circuit what otherwise may be a flow of negative school experiences and poor academic achievement. When one parent, for example ignores his or her child's questions, but another parent responds and assists the child, two different environments are created. The first parent has created an environment that operates against learning while the second one has promoted learning. In an attempt to improve academic achievement, teachers in the rural schools of Lesotho may also need to advise parents on how to support their children. Likewise, parents can also be informed of their children's strong and weak learning styles and be advised to help them appropriately.

4.3.2.3 Parents' education level

It has been found by numerous researchers that a high education level of a learner's parents is related to the learner's high academic achievement, while a low educational level of parents is related to poor academic achievement (Moller, 1995: 88; Calitz, 2001: 24). Moller (1995: 88) further indicates that completion of secondary school education on the part of the learner's parents is a significant indicator for the high academic achievement of learners, while most of the learners whose parents have a tertiary education are able to achieve even more than others.

According to Calitz (2001: 24) fathers who have higher qualifications are often able to enrich their children's intellectual lives with their own knowledge, while those fathers with lower qualifications find this enrichment harder to do. Highly qualified fathers are likely to have a wide variety of books and magazines in their homes, which better equip their children with resources that enable them to effectively complete projects and assignments that are given at school. With regard to the rural places in Lesotho, only a small percentage of fathers may have completed their education due to prominent practices that have been prevailing in the past years, such as herding and ploughing, while other parents seek employment in mines of the neighbouring countries at an early age. As a result of these factors, it could be very difficult for parents in these places to support their children, unless teachers give them the necessary support.

In the same way Motsau (1990: 27) and Calitz (2001: 25) contend that the mother's education level has an impact on the academic achievement of the learner in that learners, whose mothers possess higher education levels, perform better academically. This notion they attribute not only to the fact that there is a likelihood of having good resources available for the child in the home, but also to the fact that they found that these mothers seem to be more involved with their children's day-to-day educational activities.

In Lesotho, especially in rural places, many mothers may have low levels of education because of the old Basotho tradition and custom that girls are supposed to practice house chores in order to be good mothers, while women are supposed to look after the family when men have gone out to work. In this case, there may be little educational support for learners in the rural homes of Lesotho that could be compensated for by teachers in schools as a means of improving academic achievement that is seemingly low.

4.3.3 School-related factors

It can be expected that school related factors would have an impact on the academic achievement of a learner, as it is in this environment that the child is expected to perform the scholastic tasks and excel at them. The discussion in this section will focus on the influence of factors, such as school facilities and infrastructure, teacher qualifications, teaching styles, class size, medium of instruction, transition from primary to secondary education and discipline on academic achievement. These factors will also be considered with regard to the prevailing situations in the rural schools of Lesotho.

4.3.3.1 Facilities and teaching aids

Calitz (2001: 26) states that facilities and equipment made available to learners at school play an important role in the academic achievement of such learners. According to Calitz, the lack of facilities, such as libraries, laboratories and an adequate number of

classrooms and equipment, such as desks, scientific apparatus, computers and other teaching aids, serve to lower the academic achievement of learners as their experience of school is negative and their experiential learning opportunities are limited. Motsau (1990: 13) concurs with the idea that in order to have a positive school environment that encourages learning and improves academic achievement, the minimum requirements for every school should include an adequate space for learning, an adequate number of classrooms with no broken windows, doors and roofing, an equipped library and adequate teaching materials.

According to Mtshali (2006: 44) the differences between urban and rural schools with regard to the facilities and resources available to them, promote the inequality in the level of academic achievement of learners. The Department of Education (2004: 35) states that the rural schools of Lesotho are way behind in as far as provision of infrastructure, availability of resources and facilities are concerned, and this fact accounts for the poor learning activity and low academic achievement in those schools. Additionally, in some of the rural schools that have many classrooms there are broken windows and roofing, while in other schools, text books, classroom teaching aids and scientific material are very limited. In these inappropriate learning situations, teaching and learning may be hectic, and may require certain ways, such as improvising for the teaching materials and also directing teaching to the needs of learners to improve academic achievement.

4.3.3.2 Teacher qualifications

Many researchers, such as Mqhatazane et al. (1979: 23), Motsau (1990: 10), and Mulkeen (2005: 10) have found that one of the main factors contributing to the poor academic achievement of learners is the low calibre of teachers who teach them, as well as the poor teaching methods and inappropriate teaching styles they employ.

In relation to the above-mentioned, Motsau (1990: 10) indicates that teachers in the third world countries have tremendous academic and professional shortcomings that result from poor professional guidance from higher learning institutes or as a result of

unqualified teachers who work in schools without the knowledge and skills that are required. Such teachers become less competent in a classroom and also find it very difficult to handle new materials. In the same way, Mqhatazane et al.(1979: 24) and the Department of Education (2004: 23) found that poorly qualified teachers are among the factors contributing most to the poor academic achievement of learners in Lesotho, especially in the rural areas.

As it was stated earlier in this research, there are a very low percentage of qualified teachers in the rural secondary schools of Lesotho. Among other reasons, this could be caused by teacher deployment in Lesotho, which is based on the local hiring of teachers. The Ministry of Education in Lesotho “grants” teachers to schools in relation to the total school population and budget considerations. Once the school is granted a post, the school management committee can select the teacher, and then paper work, known as “the nomination form”, is sent to the Teaching Service Commission (TSC) for ratification and ultimate payment of salaries by the government.

According to Mulkeen (2005: 10) this local hiring system has a number of implications. Firstly, teachers are not sent to schools; instead they apply to schools where they would be willing to work. Schools do not have problems with teachers refusing postings; therefore qualified teachers who are unwilling to work in rural areas do not apply for posts in those areas. Instead, these qualified teachers compete for jobs in urban areas, and so many of the rural schools recruit unqualified teachers. Secondly, the appointment of teachers in schools favours local applicants more than teachers from other outside areas. In this case, although posts are advertised, many schools have a person in mind before they begin the selection process. In some cases this results in a local person being appointed in preference to an outsider. These cases could even lead to qualified teachers being rejected by the schools wishing to hire local, but unqualified teachers.

The other reason for the low percentage of qualified teachers in the rural secondary schools of Lesotho is the lack of incentives for teachers (Mulkeen, 2005: 13). A teacher who is employed in a rural secondary school receives an amount of 275 Maloti (equivalent to Rand) per month, which is included in a teacher’s salary. This amount,

however, is far too little in as much as it does not cover the travel expenses and the cost of living in rural areas, and is thus too small to encourage qualified teachers to locate to rural areas (Mulkeen, 2005: 13 and Tsepa, 2008: 48).

4.3.3.3 Teaching styles

Various authors castigate the teaching styles of some teachers as contributory to poor academic achievement (Jacobs et al., 2004: 128). On this claim, Motsau (1990: 12) contends that in-school and in-class differences in teaching style can affect achievement and that schools inefficiently influence learners' levels of literacy and academic achievement.

The significance of the relationship between the teaching styles and learning styles merits more attention, because of the shift of emphasis from teacher-centred to learner-centred learning (Mokoena, 1997: 59; Jacobs et al., 2004: 128). Several definitions and descriptions of teaching style have been covered in chapter 3. From the researcher's view point teaching style could, however, mean the persistent and pervasive way in which a teacher prefers to structure and present the learning content in an attempt to promote learning.

Mokoena (1997:59) distinguishes between the different classroom types that characterize different teaching styles, as described by Solomon and Kendall (1979) and Benett (1978). These classroom types are illustrated in Table 4.3 below.

Table 4.3 Classroom types as described by Solomon and Kendall, and Bennett

Classroom type	Solomon and Kendall classroom types	Bennett classroom types
1.	Permissive and uncontrolled with much learner autonomy.	Integration of subject matter, learner choice of work and where to sit; little control of movement around classroom, little emphasis on testing.

2.	Warm and friendly, strongly orientated towards learner expressiveness and creativity (rather than traditional academic outcomes) and moderate with respect to teacher control and learner autonomy.	Integration of subject matter, low teacher control, less freedom of choice on seats and work to do, little emphasis on testing.
3.	Academically orientated, with individualized teacher-learner interaction.	Whole-class teaching and group work both used, but integrated subject matter preferred.
4.	Learner self-direction within a controlled, disciplined and somewhat impersonal setting.	Separate subjects taught, but a good deal of freedom left to the learners.
5.	Limited self-direction and little formal assessment.	Separate subjects taught with an emphasis on class teaching and individual work. Little movement and formal assessment allowed.
6.	Hostile, arbitrary and regimented, but also somewhat uncontrolled and disorganized teaching and learning.	Separate subjects, whole-class teaching, individual work, little freedom of choice or movement allowed, corporal punishment used.
7.	Controlled, disciplined, academically orientated and supportive teaching and learning environment.	Extreme emphasis on formal methods and control, but with emphasis on assessment rather than punishment.

Adapted from Mokoena (1997: 60)

The classroom types indicated above could be used by teachers in the rural secondary schools of Lesotho to select teaching methods, techniques, practices and environments

to use that could be appropriate to the teaching styles they have chosen to be matching their learners' learning styles. Beside these classroom types, teachers could consider differential factors and outcomes related to contrasting teaching styles, as indicated by Dixon and Woolhouse (1996: 16) and Mokoena (1997: 62). These factors and outcomes are as follows:

- Peak academic achievement is associated with controlled and disciplined teaching styles while the poorest academic achievement to permissive and uncontrolled teaching/ learning contexts.
- Teaching styles do not seem to be significantly related to the learners' aptitudes. For example, learners with above average aptitude scores, particularly in verbal reasoning, display consistently higher levels of academic achievement in spite of exposure to contrasting teaching styles.
- Teaching styles, anxiety and academic achievement seem to interrelate substantially. The less anxious learners learn more effectively by means of facilitative or learner-centered exploratory approaches while the more anxious learners learn better with didactic teacher-controlled and supportive approaches.
- A mismatch between teaching style and learning style seems to have detrimental effects on attainment, and could either impede or even impair the learning process.
- Teaching styles are reflective of teachers' learning styles and contrasting underlying cognitive styles.
- It is possible for teachers to suffer from improvidence, and this could predispose learners to suffer the same reasoning problem in relation to their learning styles.

The importance of optimal academic achievement by ensuring compatibility between the teaching styles, methods and aids has been discussed in this section. Teachers can use this literature to find ways suitable to the context in which they can best address their learners learning styles. Most importantly, as discussed in previous sections the shortage of teaching aids in the rural secondary schools of Lesotho is of great concern, thus affecting the selection of teaching styles and methods used by teachers, but these teachers should find ways of improvising and using the limited resources they have to teach effectively according to the learning styles in their classes.

4.3.3.4 Class size

Motsau (1990: 15) and Tsepa (2008:45) assert that as the class size increases, the teacher-learner ratio also increases, and teachers manage to know a smaller proportion of the total number of learners. Similarly, Khati (1993: 54-60) contends in his study that the immediate effects of the increase in learner numbers are among other factors that caused a serious shortage of classrooms. In turn, that led to overcrowded classes and high teacher-learner ratios which resulted in a high drop-out rate and poor academic achievement.

In accordance with Masitsa (2006: 20) conditions in many black schools are poor, particularly in rural areas due to overcrowding. These conditions include shortage of desks, shortage of instructional materials and teaching aids, and also limited opportunity for individual attention from overloaded teachers. This overload makes class management difficult, inhibits teacher-learner interaction and militates against giving learners individual attention. This situation also applies to Lesotho, where there are shortcomings in learning as a result of overcrowded classes in secondary schools. According to the Lesotho Government Gazette (1994: 22), it is indicated that teachers' workloads in overcrowded classes in Lesotho have become a deterrent to teachers' effective teaching. Such workloads do not only pose a threat

to effective teaching, but also to effective evaluation and prompt feedback, while revision of work done also becomes only remotely possible.

From the situation above, the class may become a breeding ground for underachievers who work at a slow pace as a result of not receiving individual attention, while the intelligent learners may also achieve poorly as a result of teachers not being able to identify their strengths. Furthermore, teachers in the rural schools of Lesotho may not be able to use certain teaching styles that match up with their learners' styles as a result of a high classroom population and limited instructional materials. Teachers could, however, in the meantime try to use some techniques, such as group-work and peer-tutoring, even though such techniques may have certain shortcomings.

4.3.3.5 Medium of instruction

In schools there is a choice as to which language will be used as the medium of instruction. According to Calitz (2001: 27) this, however, places a number of learners who do not speak the chosen language at a disadvantaged learning situation, more especially when required to compete with learners who are native speakers of the language. It can be expected that the language used by the school will significantly influence the educational outcomes of the learner. This is so because during the teaching and learning process learners express emotion, refer to events and learn more about their world using their language (Lesotho Ministry of Education and Training, 2005: 15). This notion implies that if the learner is unable to understand what the teacher is saying in the classroom, the likelihood of capturing that information is greatly reduced.

In Lesotho the medium of instruction is the English language from standard 5 at primary level to Form E, which is the exit level of secondary education. In these levels the proficiency of learners in English may yield good knowledge and understanding of the English language, which is one of the subjects that is taught, and vice versa. Matsoso (1995: 11) attributes the failure of English as a subject to

the lack of proficiency in English of the majority of the teachers, for whom English is a second language in which they themselves were poorly taught. With the low percentage of qualified teachers in the rural secondary schools of Lesotho, as indicated earlier, many teachers may be struggling to communicate clearly to learners as a result of their limited proficiency in English. In this case, even if teachers could match the teaching and learning styles, the effect might not be that much, due to the communication breakdown brought about by language problems. Therefore, while focusing on the match between teaching and learning styles, it might be important for teachers to get adequate training in English proficiency.

4.3.3.6 Transition from primary to secondary school

A number of researchers are of the opinion that poor academic achievement in the secondary school phase has its roots in the primary school (Motsau, 1990: 16; Mulkeen, 2005: 7; Lesotho Ministry of Education and Training, 2005: 18). These researchers indicate that elementary school success is a precondition for success in the secondary school and that difficulties which were less acute during the primary phase seem to re-surface in the secondary school. In the Lesotho Ministry of Education and Training (2005: 42), it is indicated that roughly half of all learners who make it to the entry level of the secondary phase (Form A), reach the exit level of the junior secondary phase (Form C).

A number of reasons could negatively affect the quality of instruction in the primary phase, which in turn might also influence learners to reach the secondary phase with a lack of basic skills in learning. In the rural primary schools of Lesotho, there is a shortage of classrooms and a lack of equipment and teaching aids as a result of Free Primary Education (FPE). This situation leads to a tremendous increase in the numbers of learners in classes who do not receive adequate instruction. The increase in school populations has also promoted the employment of unqualified teachers (Curriculum and Assessment Policy, 2008: 38). In this case, it may be important that teachers in primary schools are provided with some training or

knowledge on learning and teaching styles which could improve the effectiveness of learning. With this idea in mind, research on teaching and learning styles at primary schools of Lesotho may be required.

4.3.3.7 Curriculum and aims of education

According to Entwistle (as cited in Mokoena, 1997: 66), there are two viewpoints regarding the overall aims of education, namely the narrow and broad viewpoints respectively. The former is mainly didactic and aims primarily at the attainment of vocational qualifications. In this narrow view, teaching approaches are characterized by intellectual/learning control by the teacher, less learner involvement and responsibility as well as the use of certain principles of learning such as reinforcement. The broad view of educational aims is mainly facilitative in nature in that it is aimed at preparing the learners for life by the promotion of individuality, self-expression as well as self-actualization and intellectual growth. The teacher's role in this case includes the selection of suitable teaching material, methods and styles appropriate for the different intellectual and maturity levels of learners. Discovery-learning and co-operative-learning are examples of teaching approaches essential for effective learning (Jacobs et al., 2004: 209)

Until recently, the curriculum of Lesotho has been more teacher-centred. Rote learning and traditional teaching methods, such as lecturing and the text-book-based approach, have been common practices during lessons (Lesotho Ministry of Education and Training, 2005: 45). Currently, it is indicated in the Curriculum and Assessment Policy of Lesotho (2008: 38) that the focus of teaching in the curriculum has shifted more towards teaching and learning methods that can further develop creativity, independence and life skills of learners. Hence teaching methods and styles that are more learner-centred are encouraged. Mokoena (1997: 59) and Jacobs et al. (2004: 128) emphasize that the significance of the relationship between the teaching styles and learning styles merits more attention, because of the shift of emphasis from teacher-centred to learner-centred learning.

The Curriculum and Assessment Policy (2008: 39), however, indicates that at schools, teachers are still relying on didactic-orientated teaching methods. The researcher's experience as a teacher also confirms that in the secondary schools of Lesotho, teachers heavily rely on didactic teaching methods, such as lecturing and whole-class teaching, which could be inappropriate for the learning styles of certain learners. On this note, matching teaching and learning styles might be a positive action to improve the learning process and academic achievement of learners.

4.4 CONCLUSION

This chapter was meant to give an insight on academic achievement with regard to the rural secondary schools of Lesotho. It is therefore evident that there are various factors that influence the rural schools of Lesotho other than the use of teaching styles. The researcher's idea in this case, however, is that as much as each of the factors discussed has an effect on academic achievement, improving the learning process by matching teaching and learning styles will significantly improve academic achievement in these rural schools (Moallem, 2007: 217).

In the following chapter the research design and methodology will be addressed.

CHAPTER 5

RESEARCH DESIGN AND METHODOLOGY

5.1 INTRODUCTION

This chapter outlines the empirical methods that were used to gather data that is relevant to the research questions stated. The aim of this chapter is to describe the empirical research design, methods of data-collection, sampling of participants, method of data-analysis and the demarcation of the study. The description of these components of research methodology is directed at identifying learning and teaching styles in the rural secondary schools of Lesotho, and determining the extent to which matches of the identified teaching and learning styles yield high academic achievement.

5.2 PREPARING FOR THE EMPIRICAL STUDY

Prior to conducting the empirical study, the researcher analyzed literature with respect to the issues that relate to teaching and learning styles. After this analysis of literature, the researcher was able to make an informed decision on the type of empirical study that is appropriate in addressing the research questions. In preparation for the empirical study, the researcher wrote a letter of consent to the Principal Secretary in the Ministry of Education and the director of the Teaching Service Department in Lesotho, requesting permission to conduct research in the ten educational districts of Lesotho. This letter was accompanied by the study leader's letter of consent to the director of the Teaching Service Department. After being granted permission to conduct research in the rural secondary schools of Lesotho, the researcher was able to conduct empirical investigations in such schools. The next section describes the empirical research design that was used to decide on the type of data-collection instruments that were to be used.

5.3 EMPIRICAL RESEARCH DESIGN

A number of research methods can be used in conducting research. These methods can be categorized under research designs, such as qualitative and quantitative designs. It is the responsibility of the researcher to choose the method(s) suitable for the research to be conducted. The selection of methods is basically guided by the aims and objectives of the particular research to be conducted, and these methods therefore will determine the appropriate research design. According to Mouton (2001: 80) and Kumar (2005: 84), a research design is a set of guidelines and instructions to be followed in addressing the research problem validly, objectively, accurately and economically. All research designs address six basic elements, namely: the setting in which the research occurs, the subjects to include in the research, the sample size or number of subjects in the study, the conditions under which data is collected, the methods used to collect data and the researcher's plan for analyzing the findings (Massey, 1995: 49). In order to achieve the stated objectives, quantitative research methodology was used in this study.

5.3.1 Quantitative research

The selection of this methodology was based on the assumption that it would provide data that is relevant and appropriate in answering the research questions. Burns (2000: 43) contends that quantitative research is a numerical method describing observations of materials or characteristics. In this approach, methods of data-collection are rigid, strict and regimented. Numerical and graphical techniques are used for summarizing data. According to Neuman (2006: 181), quantitative researchers move deductively from abstract ideas, to specific data-collection methods, to precise numerical information produced by the methods. Kumar (2005: 118) furthermore describes quantitative data as data which can be sorted, classified, measured in a strictly objective way.

In relation to objectivity, (Burns, 2000: 43) describes quantitative research as a positivist approach that is based on the idea that there is an objective truth existing in the world

that can be measured and explained scientifically. Additionally, Creswell (2003: 2) contends that quantitative researchers use theory as the starting point of an investigation, because the quantitative approach follows a positivist approach that focuses on positive facts and phenomena. Equally important, Niemann (2000: 22) postulates that a quantitative approach can be used for the purpose of isolating causes and effects through quantifying phenomena. Following the description of quantitative research, it is important to review its advantages and disadvantages that might affect the current research.

5.3.2 Advantages and disadvantages of quantitative research

Kruger (2003: 18-19) postulates that quantitative research methods allow us to summarize vast sources of information and facilitate comparisons across categories over time. Further, Niemann (2000:123) is of the opinion that in quantitative research, a researcher can be immersed in an overwhelming amount of data by looking for patterns in lives, actions and the words of people. In this case, the researcher is able to accumulate and manipulate the large amount of data which can be collected from a large sample. For this research, there are three sets of data, namely: data from the teacher questionnaire, data from the learner questionnaire and learners' exam marks.

On the other hand, Kruger (2003: 18-19) holds the critique that quantitative methods collect a much narrower information and superficial dataset. Results are limited as they provide numerical descriptions in statistical form rather than detailed narratives and generally provide less elaborate accounts of human perception. Additionally, Kruger indicates that these statistics can be humanely insignificant, therefore yielding insignificant results. The researcher, however, believes that despite these disadvantages, quantitative research methods seem appropriate in addressing the research objectives at hand. The next section describes the methods of data-collection employed in this study.

5.4 METHODS OF DATA-COLLECTION

According to Massey (1995: 79) and Struwig and Stead (2001: 80), data collection is the process by which the researcher acquires subjects and collects the information needed to answer the research question. The researcher may use various data collection methods to gather information, such as questionnaires, scales, interviews, observation and/or projective techniques. In quantitative research, methods that can be used include questionnaires, scales and projective techniques. For this research a questionnaire method was used to identify the learning styles of learners and their teachers' teaching styles. The academic achievement of learners in Form C was also determined by their end-of-year examination marks.

5.4.1 The questionnaire

De Vos, Strydom, Fouche and Delport (2005: 166) define a questionnaire as a group of written questions on a form which is completed by the respondent in respect of a research project. Babbie and Mouton (2001: 233) further clarify that although the term *questionnaire* suggests a collection of questions, a typical questionnaire will probably contain as many statements as questions, especially if the researcher is interested in determining the extent to which respondents hold a particular attitude or perspective. The basic objective of a questionnaire is to obtain facts and opinions about a certain phenomenon from people. Questionnaires are probably the most generally used instruments in research.

A questionnaire usually consists of a number of measurement scales, open-ended items, as well as closed-ended items. Closed-ended questions allow the respondents to choose appropriate answers from a predetermined list of responses; such questions facilitate analysis and ensure comparability of responses; although they are easy to administer, they are difficult to construct. Open-ended questions, on the one hand, allow the respondents to respond in their own words; although they typically provide detailed information, they are time-consuming and sometimes difficult to analyze (Creswell, 2003: 58). Additionally, Massey (1995: 82) suggests that before one can construct any

question, one needs to consider the research objectives and decide on the questions to ask in order to achieve those objectives.

As much as there are open-ended and closed-ended questions in a questionnaire, there are also types of questionnaires which are characterized by certain types of questions. According to Massey (1995: 82) and Struwig and Stead (2001: 92-95), a highly structured questionnaire contains only predetermined questions and response options; respondents are asked to respond to the same questions in the same order, using the same set of response options. This type of a questionnaire is characterized by closed-ended questions. In a totally unstructured questionnaire, the researcher collects data with no preconceived plan of content or order of information to obtain; respondents are encouraged to express themselves in relation to their experiences. A semi-structured questionnaire contains some open-ended questions and some closed-ended questions and a specific format of obtaining information is followed. In this study, a semi-structured questionnaire was designed to determine teachers' knowledge on learning and teaching styles, and also to determine the teaching styles of teachers. Also used is a modified Felder and Solomon's instrument on learning styles, which is basically characterized by closed-ended questions.

To achieve the stated objectives of this study, a questionnaire was chosen over other methods of data-collection because of the perceived advantages of using it. The following sub-section reviews the advantages and disadvantages of questionnaires.

5.4.1.1 Advantages and disadvantages of a questionnaire

There are various advantages and disadvantages of using a questionnaire method for the collection of data. Knowing these influential factors might help the researcher to minimize the disadvantages and maximize the advantages. According to Massey (1995: 82), Ngxabazi (1997: 55), and Breakwell, Hammond and Gife-Schaw (2002: 158) the advantages of using questionnaires include the following:

- A questionnaire is advantageous because of its wide scope since it offers a relatively inexpensive mass coverage. This means that it is efficient in terms of money, because the researcher can post the questionnaire if the respondents are far away. For this study, the questionnaires were hand-delivered to the identified schools by the researcher while some were sent by post to the few schools that were far from reach. Therefore, the distribution of these questionnaires was inexpensive.
- Questionnaires are easier to administer. They can be sent to all respondents at the same time, and respondents can fill them in on their own, at their own time. The researcher, in this study, hand-delivered the questionnaires and gave the respondents two days to fill them in, after which he collected them. With regards to the posted questionnaires, the researcher had contact with a teacher in each of the schools, who facilitated the completion of the questionnaires.
- Questionnaires are relatively efficient data-collection methods in terms of time. Although the construction of questionnaires, especially those with closed-ended questions, may be difficult, they are generally simple to record, score and analyze. In this study, a large amount of information was collected in a relatively short period of time. Kotze (1992: 258) argues that a great number of responses would not be possible with another method. The validity of the study is also significantly increased through a high percentage (%) of teachers and learners who completed the questionnaires. In this research, 95 percent (%) of the distributed questionnaires were completed and received back, thus increasing the validity of the study.
- To obtain more reliable and valid data on certain issues, questionnaires are appropriate because they offer the possibility of respondents' anonymity. The questionnaire is preferable when addressing sensitive issues, because it avoids the embarrassment of direct questioning and so enhances honesty and validity of responses. In the rural schools of Lesotho, teachers might be embarrassed to

give true information on issues, such as age, educational qualifications, knowledge of learning styles and teaching styles to strangers or for publications. Therefore anonymity, in terms of not giving the name of the teacher, and giving teachers an opportunity to complete questionnaires at the same time, was ensured in this study. In the case of the learners' questionnaire, learners' names were required for the purpose of data-analysis.

- Using a questionnaire method avoids potential interviewer bias, since it is standardized; instructions to which the respondents are exposed are exactly the same.

On the other hand, there are also disadvantages of using questionnaires for collecting data in research. Massey (1995: 82), Ngxabazi (1997: 57), and Kumar (2005: 130) argue that as much as questionnaires are appropriate for collecting certain types of data, they have disadvantages that need to be considered by researchers. These are:

- Application is limited to a study population that can read and write. It cannot be used on a population that is illiterate, very young, very old or handicapped. For this study, this disadvantage does not apply because the respondents are all at school where learning and teaching are taking place.
- Questionnaires are notorious for their low response rates; that is, people fail to return them. The low response rate, in turn, reduces the sample size. The response rate depends upon a number of factors: the interest of the sample in the topic of the study; the layout and length of the questionnaire; the quality of the cover letter; and the methodology used to deliver the questionnaire. To overcome the problem of low response rate in this study, questionnaires were printed on both sides to reduce the number of sheets used, while the posted questionnaires were handled by teachers that were known by the researcher in the case of each school.

- Questionnaires allow self-selecting bias in that not everyone who receives a questionnaire returns it. Those who return their questionnaire may have attitudes, attributes or motivations that are different from those who do not. Hence, if the response rate is low, the findings may not be representative of the total study population.
- In questionnaires, opportunity to clarify issues is lacking. If, for any reason, respondents do not understand some questions, there is no opportunity for them to have the meaning clarified. Respondents may also interpret questions differently, and this affects the quality of the information provided.
- Spontaneous responses are not allowed for in questionnaires. Mailed questionnaires are inappropriate when spontaneous responses are required, because respondents have time to reflect before answering. Respondents may also consult with other people before responding.
- The response to a question may be influenced by the response to other questions. As respondents can read all the questions before answering, the way they answer a particular question may be affected by their knowledge of other questions.

Additionally, the vast distances and bad roads to the rural areas of Lesotho influenced the distribution of questionnaires to the schools in that only half of the schools received questionnaires by hand. The other 10 schools received these questionnaires through post, and it took a long time before the questionnaires were received.

Although a questionnaire has several disadvantages, it is important to note that not all data collection using this method has these disadvantages. Kumar (2005: 130) contends that the prevalence of a disadvantage depends on a number of factors that the researcher needs to be aware of in order to understand their bearing on the quality of data. Despite the above-mentioned disadvantages, the researcher chose the questionnaire method to collect data that is appropriate and relevant to the research

objectives. In the next sub-sections, the questionnaires that were used to collect data are described.

5.4.1.2 Felder-Solomon Index of Learning Style

While there are several different instruments for measuring individuals' learning styles, as discussed in chapter 2, the index developed by Felder and Solomon (2003) was used. This instrument is also known as the Index of Learning Style (ILS), which is a questionnaire based on the Felder-Silverman learning style model. The reasons for choosing this particular learning style instrument are as follows: firstly, it covers all four learning style dimensions and is based on a sound theoretical base. Secondly, the instrument has been widely tested and used successfully in many studies in helping to guide the design, development and use of effective learning environments. Thirdly, this instrument is simple to use and the results obtained using the instrument are easy to interpret. Fourthly, this instrument has good validation results (Graf et al., 2007: 83; Kovacic, 2003: 796).

The Felder-Solomon ILS questionnaire consists of four dimensions, namely: Processing with poles: Processing (active/reflective), Perception (sensing/intuitive), Input (visual/verbal) and Understanding (sequential/global). The instrument consists of 11 questions for measuring each of the four dimensions, thus a total of 44 questions. Each question about a dimension is designed to determine if a respondent tends to belong to one category or another, on that dimension. This determination is ensured by asking the respondent to choose only one of the two options where each option represents a category. The Processing dimension, for example has two categories: active/reflective. If a respondent chooses (a) in one of the 11 questions that represent the Processing dimension, then the respondent tends to be active, while one who chooses (b) tends to be reflective. Table 5.1 on the next page illustrates the distribution of questions across the four learning style dimensions.

Table 5.1: Dimensions in the Learning Style Questionnaire

Dimension	Style	ILS questions (answer a)	style	ILS questions (answer b)
Perception	Sensory	2,6,10,14,18,22,26,30 ,34,38,42	Intuitive	2,6,10,14,18,22,26 ,30,34,38,42
Input	Visual	3,7,11,15,19,23,27,31 ,35,39,43	Verbal	3,7,11,15,19,23,27 ,31,35,39,43
Processing	Active	1,5,9,13,17,21,25,29, 33,37,41	Reflective	1,5,9,13,17,21,25, 29,33,37,41
Understanding	Sequential	4,8,12,16,20,24,28,32 ,36,40,44	Global	4,8,12,16,20,24,28 ,32,36,40,44

According to Table 5.1, a respondent is classified as belonging to a particular category if he or she chooses more of the options that correspond to those of that particular category. Since there are 11 questions for each dimension, the range of data for each dimension is from 0 to 11. This learning style instrument was used to measure the learning styles of individual learners in the rural schools of Lesotho. To ensure that these learners understand the questions and provide valid data that the instrument aims to measure, questions 2, 10 and 18 in the instrument, were simplified. For example, the original question 18 in the instrument is as follows:

“I prefer the idea of:

a) certainty

b) theory”

The modified question 18 is as follows:

“I prefer the idea of:

a) feeling sure about things

b) set of opinions that explain something”

5.4.1.3 Teaching Style Questionnaire

Teaching styles of teachers were measured by a self-designed questionnaire. This questionnaire included both open-ended and closed-ended questions. It was divided into three sections in which the first part (section A) sought to determine teachers biographical information, the second part (section B) sought to determine teachers knowledge on learning styles and teaching styles and the last part (section C) consisted of the teaching style instrument. The design of this instrument (section C) was based on the Felder-Silverman Teaching Style Theory, which suggest that as much as there are various learning styles, a variety of teaching styles also exist (Felder & Silverman, 1988: 675). Felder and Silverman came up with four teaching style dimensions that correspond to the learning style dimensions. The four teaching style dimensions are: Processing with poles: (active/passive), Perception (concrete/abstract), Input (visual/verbal) and Understanding (sequential/global). Table 5.2 illustrates the dimensions and how they correspond to the learning style dimensions.

Table 5.2: Dimensions of Learning and Teaching style (Felder and Solomon)

Preferred Learning Style	Corresponding Teaching Style
Sensory/intuitive	Concrete/abstract
Visual/verbal	Visual/verbal
Active/reflective	Active/passive
Sequential/global	Sequential/global

This teaching style instrument consists of 11 questions for measuring each of the four teaching style dimensions, thus a total of 44 questions. In answering questions, the questionnaire was designed in such a way that teachers choose between answer (a) or (b), like in the learning style questionnaire. The range of data for each dimension is also from 0 to 11. Table 5.3 gives an overview of the distribution of questions across all four teaching style dimensions.

Table 5.3: Teaching Style Instrument

Dimension	Style	Questions (answer a)	Style	Questions (answer b)
Perception	Concrete	1,2,3,4,5,6,7,8,9,10,11	Abstract	1,2,3,4,5,6,7,8,9,10,11
Input	Visual	12,13,14,15,16,17,18,19,20,21,22	Verbal	12,13,14,15,16,17,18,19,20,21,22
Processing	Active	23,24,25,26,27,28,29,30,31,32,33	Passive	23,24,25,26,27,28,29,30,31,32,33
Understanding	Sequential	34,35,36,37,38,39,40,41,42,43,44	Global	34,35,36,37,38,39,40,41,42,43,44

The researcher chose to use the Felder-Silverman Teaching Style Theory to design the questionnaire because it was able to provide the necessary guidelines of teaching on each of the dimensions. Moreover, the teaching style dimensions and learning style dimensions correspond and were developed by the same theorists, thus making it easier for data analysis.

5.4.2 Academic achievement

Among data collected are the end-of-year examination results of learners, which represented their academic achievement. At Form C level in Lesotho, learners write examinations at the end of the year, which determine whether or not a learner will proceed to the senior classes. These results were obtained from the national newspaper, schools and some from the Examinations Council of Lesotho.

In order to determine the academic achievement of learners, these end-of year results are classified into levels of achievement. This classification is ideal for this study as it delineates many levels of achievement, which provide a good overview of learners' academic achievement in rural secondary schools of Lesotho. These levels are indicated in Table 5.4.

Table 5.4: Levels of achievement

Levels of achievement	Description
Level 1 (0-29%)	Not achieved
Level 2 (30-39%)	Elementary achievement
Level 3 (40-49%)	Moderate achievement
Level 4 (50-59%)	Adequate achievement
Level 5 (60-69%)	Substantial achievement
Level 6 (70-79%)	Meritorious achievement
Level 7(80-100%)	Outstanding achievement

Adapted from the Department of education (2005: 43)

5.5 CRITERIA RELEVANT TO THE QUESTIONNAIRE

In a study, the researcher may rely on an existing instrument or may develop a new one to fit the study's needs. To determine whether the instruments will yield the accurate and valid data, their reliability and validity need to be considered. Neuman (2006: 188) contends that reliability and validity are central issues in all measurement because they both connect measures to constructs.

5.5.1 Reliability

Massey (1995: 79) postulates that reliability refers to the degree of consistency and accuracy with which an instrument measures a variable. Kumar (2005: 156) further indicates that if a research tool is consistent and stable, and hence, predictable and accurate, it is said to be reliable. That is, the greater the degree of consistency and stability in an instrument, the greater is its reliability. Reliability implies that if the same

measurement is repeated under the identical or very similar conditions, the results yielded will be the same. The opposite of reliability is a measurement process that yields erratic, unstable or inconsistent results (Neuman, 2006: 188).

In this research, the Felder-Solomon ILS questionnaire seems to be reliable in measuring learning styles, because it is relatively short and conveys more dimensions of learning styles that are well defined. This instrument is often used and has been well investigated in measuring learning styles (Graf et al., 2007: 83). Felder and Spurlin (2005: 103) conducted studies that deal with analyzing the response data of ILS regarding the distribution of preferences for each dimension as well as with verifying the reliability of the instrument. Among the studies conducted, one tested the test-retest reliability of the ILS. When testing this aspect, the interval between test administrations was large enough so that respondents could not remember their responses from one test to the next. The results concluded that the test-retest reliability of the Felder-Solomon ILS is satisfactory, even after an interval of 8 months and a sample size of only 24 respondents (Felder & Spurlin, 2005: 107).

Similarly, the self-designed teaching style questionnaire was designed according to the existing theory of Felder and Silverman on teaching styles. The construction of questions in this questionnaire was based on how Felder and Silverman describe the teaching styles and also based on the type of questions in the learning style instrument. Since the questionnaire was also tested in a pilot study, it may be considered reliable.

5.5.2 Validity

In terms of measurement procedures, validity refers to the extent to which an instrument measures what it is designed to measure. Kumar (2005: 153) contends that validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration. Neuman (2006: 192) cautions that when an instrument is said to be valid, it is valid for a particular purpose and definition, and therefore cannot be used for other dissimilar purposes. The same indicator may be less valid or invalid for other purposes. With regards to reliability and validity, Massey (1995:

79) contends that an unreliable instrument cannot be valid, but a reliable instrument can be invalid. This implies that validity is very difficult to achieve. On this note (Neuman, 2006: 192) postulates that validity is more difficult to achieve than reliability, and that researchers cannot have absolute confidence about validity, but some measures are more valid than others.

With regards to measuring learners' learning styles, the Felder-Solomon ILS questionnaire seems to be valid. In studies by Felder and Spurlin (2005: 107), the instrument was tested in terms of the extent to which it actually measures what it claims to test. These studies confirmed the validity of this instrument, in that the instrument scores correlated with quantities with which they were to correlate. In the same way, the researcher believes that the teaching style questionnaire is valid because it was designed from an existing theory which corresponds to the model on which the development of the Felder-Solomon ILS was based. In fact, both the self-designed teaching style questionnaire and the learning style instrument were administered in a pilot study in an attempt to determine their applicability and validity in this study. Some adjustments were made on the two questionnaires to make them appropriate to the respondents of the study.

5.6 THE PILOT STUDY

De Vos et al. (2005: 210) postulate that a pilot study can be regarded as a small-scale trial run of all aspects planned for use in the main study, which helps the researcher to fine-tune the study. Neuman (2006: 190) further indicates that a pilot study is conducted prior to a larger piece of study to determine whether the methodology, sampling, instruments and analysis are adequate and appropriate. It is usually carried out when a researcher wants to explore areas about which she/he has little or no knowledge.

In this research, the empirical investigation began with a pilot study which was done in two rural secondary schools of Lesotho. In each school, 5 learners in Form C and 5 of their teachers were selected randomly and completed the learning style questionnaire and teaching style questionnaire, respectively. This sample consisting of 20

respondents were asked to indicate any problems they had with the instructions or the items in the questionnaires. Among the problems they mentioned were the difficulty in understanding the meaning of words and the missing instructions. The results from this pilot study were analyzed to determine whether the research is feasible and the instruments are valid.

5.7 SAMPLING AND SELECTION OF RESPONDENTS

Struwig and Stead (2001: 109) define sampling as taking any portion of a population or universe as representatives of that population or universe. In this case, the sample taken is considered to be representative. Neuman (2006: 219) states that in sampling, the primary goal is to get a representative sample or a small collection of units from a much larger collection or population such that the researcher can study the smaller group and produce accurate generalizations about the larger group. Usually, there are various reasons for using a sample in data-collection rather than using the whole research population. On this note, Massey (1995: 71) contends that sampling is used by researchers because it is an economical and efficient means of collecting data and because collecting data from the entire population is not necessary or feasible.

There are two major types of sampling, namely: the probability (random) sampling, in which sampling involves the selection of elements from the population using random procedures in which each element has an equal and independent chance of being chosen; the non-probability sampling, in which sampling involves the selection of elements from a population using non-random procedures (Massey, 1995: 72,74). This research is based on the random sampling method, in which the researcher used stratified random sampling. According to Struwig and Stead (2001: 113) stratified random sampling differs from a simple random sampling in that with simple random sampling, the sample items or respondents are chosen from the entire universe, while with stratified random sampling a predetermined number of items are chosen from each stratum or section.

With regards to the sample of this research, the identified strata were districts and schools in which a total sample of 300 respondents was randomly selected. Two secondary schools per district were selected randomly from the rural areas of the 10 educational districts of Lesotho. The respondents were divided into 2 subgroups: learners and teachers. The respondents were 10 learners in Form C class (equivalent to Grade 10 in South Africa) and 5 of their teachers, in each school. All learners and teachers were selected randomly. Each learner completed the Felder-Solomon ILS questionnaire and each teacher completed a teaching style questionnaire. This means that there were 15 respondents per school, and 30 respondents per district, making a total of 300 respondents in all the 10 districts of Lesotho. Within this total of 300 respondents were 200 learners and 100 teachers.

In relation to the sample size, Van den Berg (1989: 25) states that respondents used in a study need to be representative of the universe/ study population. This implies that the researcher can, with confidence, deduce relevant assumptions with regard to the universe. In conjunction with Van den Berg, Sekaran in Alexander (2004: 285) the researcher is of the opinion that a sample for a universe/population representing 200 learners needs to be 132 and for a population representing 100 teachers needs to be 80. Additionally, a total sample of 300 (N=300) needs to be represented by 169 respondents. Table 5.5 gives an overview of the representative sample sizes.

Table 5.5: Sample size (s) for a given population/universe (n)

N	S	N	S	N	S	N	S
10	10	140	103	420	201	1800	317
15	14	150	108	440	205	1900	320
20	19	160	113	460	210	2000	322
25	24	170	118	480	214	2200	327
30	28	180	123	500	217	2400	331
35	32	190	127	550	226	2600	335

40	36	200	132	600	234	2800	338
45	40	210	136	650	242	3000	341
50	44	220	140	700	248	3500	346
55	48	230	144	750	254	4000	351
60	52	240	148	800	260	4500	354
65	56	250	152	850	265	5000	357
70	59	260	155	900	269	6000	361
75	63	270	159	950	274	7000	364
80	66	280	162	1000	278	8000	367
85	70	290	165	1100	285	9000	368
90	73	300	169	1200	291	10000	370
95	76	320	175	1300	297	15000	375
100	80	340	181	1400	302	20000	377
110	86	360	186	1500	306	30000	379
120	92	380	191	1600	310	40000	380
130	97	400	196	1700	313	50000	381

Adapted from Sekaran in Alexander (2004: 85)

Considering the representative sample sizes of research populations above, the researcher concludes that the total of 285 respondents was representative of the population of this study. This total number consisted of 190 learners and 95 teachers who completed and returned the questionnaires. This implies that a total of 285 questionnaires was completed and collected from respondents, giving 95 percent (%) response rate. In this case, a high degree of validity was ensured.

5.8 DEMARCATION OF THE STUDY

The demarcation of this study was confined to the ten educational districts of Lesotho so that every district was being represented. In all these districts, there are schools situated in rural areas, which consist of the following ecological regions, namely the foothills and mountainous zones. As has been mentioned in chapter 1, these schools are lacking resources and facilities as a result of, among other reasons, the ecological environments in which they are positioned. The choice of rural secondary schools as the research area follows the researcher's concern on the low academic achievement in such schools. It is believed that the selection of two schools, which make a total of 20 schools, will ideally represent the whole of rural secondary schools in Lesotho.

5.9 PROCEDURE

Most of the rural schools of Lesotho are not easily accessible due to bad roads. In some cases the researcher had to walk a distance of about 7 kilometers to a school. As a result of this situation, the researcher was able to deliver questionnaires by hand to 10 schools among the selected 20. In four schools, teachers and learners were able to complete the questionnaires immediately, giving the researcher a chance to leave with them the same day. In the case of another six schools, these questionnaires were collected two to three days later, because teachers indicated that they were busy preparing learners for trial examinations. The remaining questionnaires were sent by post to schools that could not be reached by the researcher. In this case, the researcher assigned a teacher in each of the schools to facilitate the completion and mailing of the questionnaires. These questionnaires were sent together with a return envelope which contained the postage stamp and the researcher's address. Among those 20 schools that were selected for this study, only 19 schools returned the questionnaires. Therefore a total of 285, out of 300 questionnaires, were received back.

5.10 DATA ANALYSIS

According to Massey (1995: 92), data analysis involves various techniques to summarize and examine the collected information to help determine trends and relationships among the variables. Its primary purpose is to organize voluminous data so that conclusions can be made and communicated. Struwig and Stead (2001: 150) postulate that quantitative data analysis involves the use of statistical computations to summarize the collected data, compare and contrast the data, test theoretical relationships, generalize about the population based on sample findings and evaluate cause-and-effect relationships.

Computers can help the researcher to detect data coding and entry errors, merge data from two or more sources into one data file, store the data for retrieval and display the data in table or graph form. In this study, the program on statistical packages for the social sciences (SPSS) was used to analyze data. To address the research objectives, the descriptive statistics used included measurement and analysis in forms of distributions, frequencies and correlations. In this case, data presentation includes tables, graphs, pie-charts and histograms.

5.11 CONCLUSION

This chapter outlined the research methodology of the study. In the chapter it was indicated that the empirical investigation of this study was basically quantitative with the use of questionnaires to collect data. The method of sampling, demarcation of the study, the procedure followed in collecting data and the type of data-analysis, have been described to provide an overview of the empirical investigation. In the next chapter the findings will be presented, analyzed, and interpreted.

CHAPTER 6

PRESENTATION, ANALYSIS AND INTERPRETATION OF THE RESEARCH RESULTS

6.1 INTRODUCTION

The overall aim of this study was to investigate which teaching and learning styles are dominant in the rural secondary schools of Lesotho and to develop a teacher manual that can help in matching these styles with an aim of improving academic achievement. In the preceding chapters, a literature study described issues that relate to teaching and learning styles and issues that relate to the matching of these styles. In chapter 5, the empirical design was outlined. Therefore, in this chapter, the empirical results are presented and interpreted in accordance with the aim of the study. However, the first section comprises of the presentation and interpretation of the participants' biographical data.

To achieve the aim of this study, an empirical investigation was conducted to gather information on these specific research questions:

- Do teachers have adequate knowledge about teaching and learning styles to direct their teaching to the learning styles of their learners?
- What are the predominant characteristic learning styles of learners and teaching styles of their teachers in the rural secondary schools of Lesotho?
- To what extent does matching teaching and learning styles improve learners' individual academic achievement?
- What strategies can be deduced from these research findings to help in addressing the learning styles of learners in the rural secondary schools of Lesotho?

The analysis and interpretation of the research results is done by means of the measurement frequencies for respondents in the different educational districts of Lesotho, with data being presented in frequency tables, histograms and pie charts in accordance with the questionnaire sections and the above-stated research questions. Furthermore, cross-tabulations were used to determine the frequency of teaching and learning styles across biographical factors.

6.2 BIOGRAPHICAL INFORMATION

The first section of the two questionnaires included personal particulars such as age, gender, subjects and teaching qualifications, in the case of teachers. In this section, this biographical information is presented.

6.2.1 Demographics of learners

Questions 1 to 4 in section A of the learner questionnaire (Appendix A) sought information on the names, age, and gender of learners. The presentation below entails the age and gender of learners.

QUESTION 3: AGE OF LEARNERS

Table 6.1: DISTRIBUTION OF LEARNERS ACCORDING TO AGE.

Age	Frequency	Percentage	Valid percentage	Cumulative percentage
14	1	0.5	0.5	0.5
15	16	8.4	8.4	8.9
16	39	20.5	20.5	29.5
17	45	23.7	23.7	53.2
18	25	13.2	13.2	66.3
19	26	13.7	13.7	80
20	23	12.1	12.1	92.1
21	5	2.6	2.6	94.7
22	6	3.2	3.2	97.9
23	1	0.5	0.5	98.4
24	3	1.6	1.6	100
Total (N) =	190	100	100	

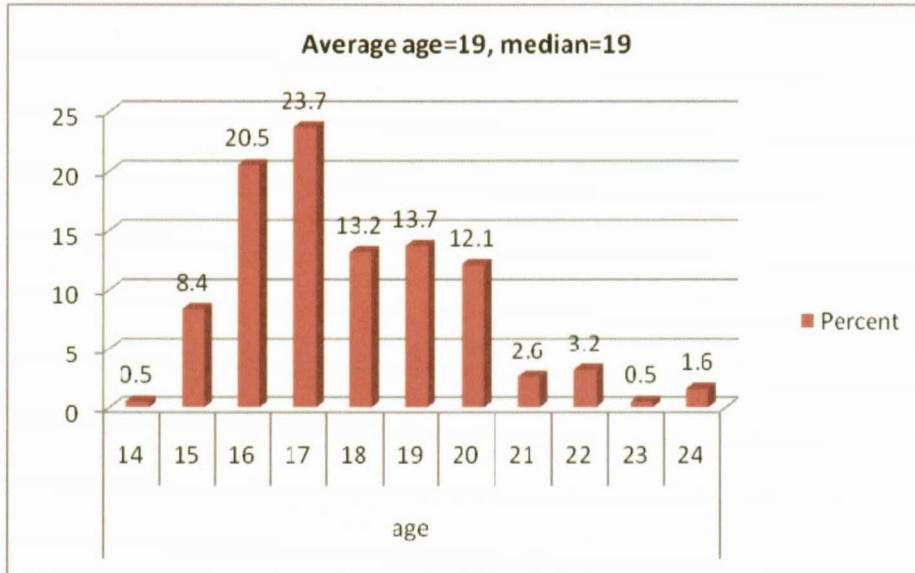


FIGURE 6.1: DISTRIBUTION OF LEARNERS ACCORDING TO AGE.

According to Table 6.1 and Figure 6.1, most of the learners (23.7%) and (20.5%) in Form C from the rural secondary schools of Lesotho were 17 and 16 years of age respectively. Learners between 14 and 20 years made up a total of 92.1%. A minority (7.9%) of the learners were more than 20 years old.

QUESTION 4: GENDER OF LEARNERS

TABLE 6.2: DISTRIBUTION OF LEARNERS ACCORDING TO GENDER.

Gender	Frequency	Percentage	Valid percentage	Cumulative percentage
Male	88	46.3	46.3	46.3
Female	102	53.7	53.7	100
Total	190	100	100	

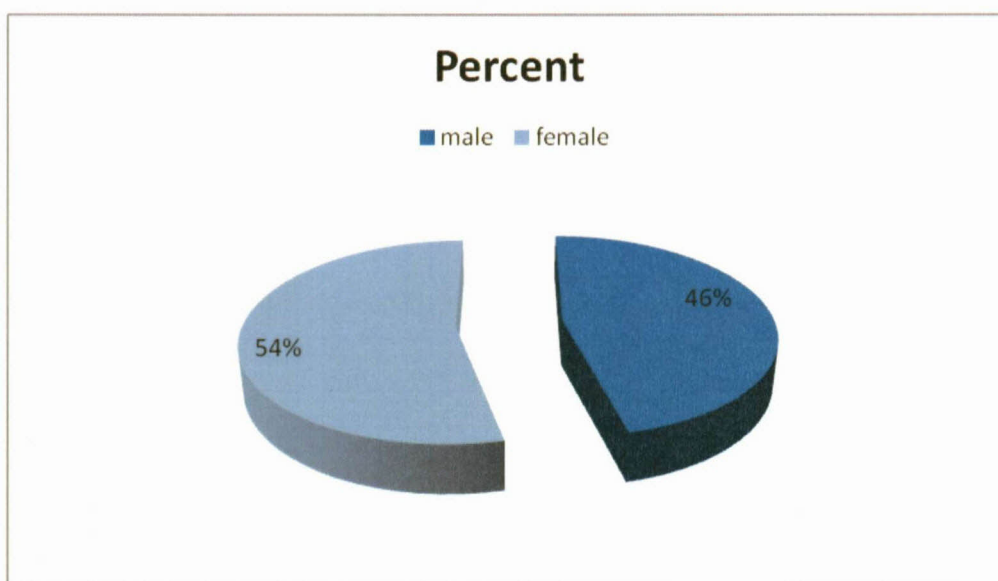


FIGURE 6.2: DISTRIBUTION OF LEARNERS ACCORDING TO GENDER.

Table 6.2 and Figure 6.2 indicate that the majority (54%) of the Form C learners in the rural schools of Lesotho were females. Only 46% of the learners were males in these schools.

6.2.2 Demographics of teachers

From the teacher questionnaire, questions 1 to 9 in section A were used to gather biographical information such as subjects taught, age and gender of the individual teachers that participated in this study.

QUESTION 1: NUMBER OF TEACHERS PER SCHOOL

TABLE 6.3: DISTRIBUTION OF TEACHERS PER SCHOOL.

School	Frequency	Percentage	Valid percentage	Cumulative percentage
1	5	5.3	5.3	5.3
2	5	5.3	5.3	10.5
3	5	5.3	5.3	15.8
4	5	5.3	5.3	21.1
5	5	5.3	5.3	26.3
6	5	5.3	5.3	31.6
7	5	5.3	5.3	36.8
8	5	5.3	5.3	42.1
9	5	5.3	5.3	47.4
10	5	5.3	5.3	52.6
11	5	5.3	5.3	57.9
12	5	5.3	5.3	63.2
13	5	5.3	5.3	68.4
14	5	5.3	5.3	73.7
15	5	5.3	5.3	78.9
16	5	5.3	5.3	84.2
17	5	5.3	5.3	89.5
18	5	5.3	5.3	94.7
19	5	5.3	5.3	100
Total (N) =	95	100	100	

Table 6.3 above shows that a sample of five teachers from each of the nineteen schools was selected to participate in the empirical investigation.

QUESTION 2: NUMBER OF TEACHERS PER DISTRICT

TABLE 6.4: DISTRIBUTION OF TEACHERS ACCORDING TO EDUCATIONAL DISTRICTS.

District	Number of teachers	Percentage	Valid percentage	Cumulative percentage
Maseru	10	10.5	10.5	10.5
Mohale's Hoek	10	10.5	10.5	21.1
Quthing	10	10.5	10.5	31.6
Berea	10	10.5	10.5	42.1
Qacha's Nek	10	10.5	10.5	52.6
Mafeteng	10	10.5	10.5	63.2
Leribe	10	10.5	10.5	73.7
Butha-Buthe	10	10.5	10.5	84.2
Mokhotlong	10	10.5	10.5	94.7
Thaba-Tseka	5	5.3	5.3	100
Total (N) =	95	100	100	

As depicted from Table 6.4, all of the 10 educational districts of Lesotho participated in this study. In nine of these educational districts, 10 teachers per district participated in the study. In the Thaba-Tseka district, only 5 teachers participated in this study.

QUESTION 3: SUBJECTS TAUGHT

TABLE 6.5: DISTRIBUTION OF TEACHERS ACCORDING TO SUBJECTS TAUGHT.

Subject	No. of teachers	Percentage	Valid percentage	Cumulative percentage
English	19	20	20	20
Sesotho	19	20	20	40
Mathematics	19	20	20	60
Science	19	20	20	80
Religious Studies	3	3.2	3.2	83.2
Business Education	9	9.5	9.5	92.6
Development Studies	4	4.2	4.2	96.8
Agriculture	2	2.1	2.1	98.9
Geography	1	1.1	1.1	100
Total	95	100	100	

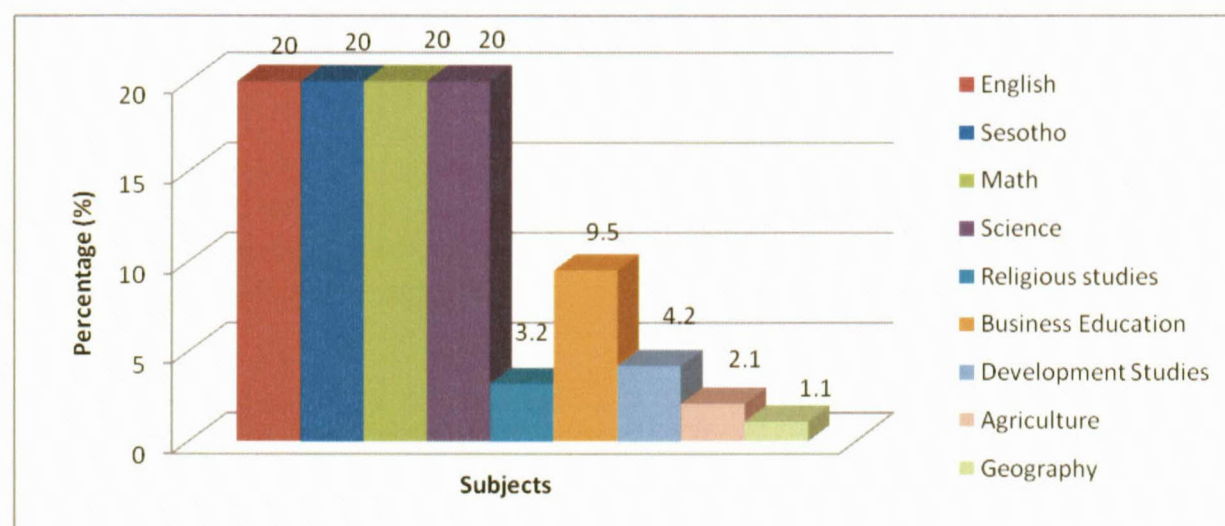


FIGURE 6.3: DISTRIBUTION OF TEACHERS ACCORDING TO SUBJECTS TAUGHT.

Table 6.5 and Figure 6.3 reveal that the majority (20%) of teachers in this study taught English, Sesotho, Science and Mathematics, respectively. Again, 9.5% of teachers taught Business Education, while 4.2% of teachers taught development studies. Additionally, 3.2% of teachers taught Religious Studies, 2.1% of teachers taught agriculture while 1.1% of them taught Geography.

QUESTION 4: ACADEMIC QUALIFICATION

TABLE 6.6: DISTRIBUTION OF TEACHERS ACCORDING TO ACADEMIC QUALIFICATIONS.

Qualification	Frequency	Percentage	Valid percentage	Cumulative percentage
COSC	6	6.3	6.5	6.5
Certificate	22	23.2	23.7	30.1
Diploma	32	33.7	34.4	64.5
Bachelor's Degree	33	34.7	35.5	100
Total	93	97.9	100	
Missing	2	2.1		
Total	95	100		

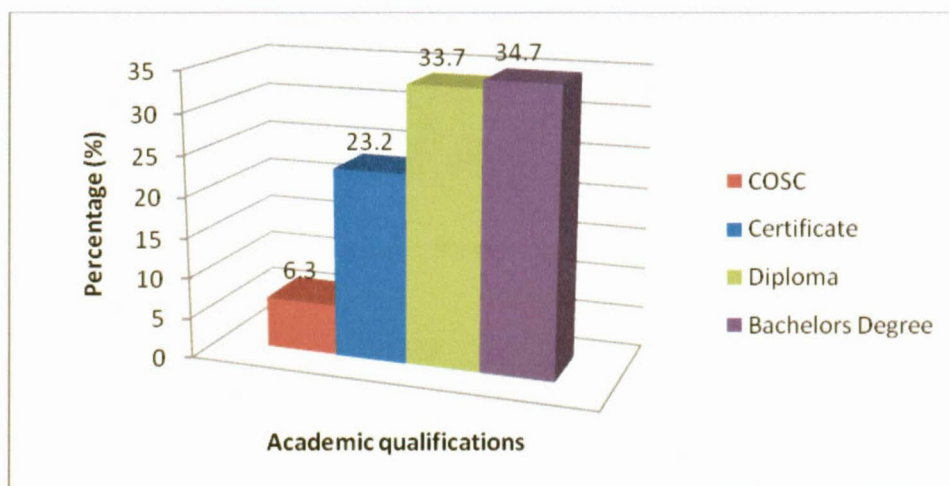


FIGURE 6.4: DISTRIBUTION OF TEACHERS ACCORDING TO ACADEMIC QUALIFICATIONS.

According to Table 6.6 and Figure 6.4, most teachers (34.7%) asserted that they had a degree in the subjects they taught. Again, 33.7% of teachers held a diploma, while 23.2% had certificates. Moreover, 6.3% of teachers were teaching with a high school qualification.

QUESTION 5: TEACHING EXPERIENCE

TABLE 6.7: DISTRIBUTION OF TEACHERS ACCORDING TO TEACHING EXPERIENCE.

No. of years	Frequency	Percentage	Valid percentage	Cumulative percentage
1-10	55	57.9	59.1	59.1
11-20	28	29.5	30.1	89.2
21-30	9	9.5	9.7	98.9
31+	1	1.1	1.1	100
Total	93	97.9	100	
Missing	2	2.1		
Total	95	100		

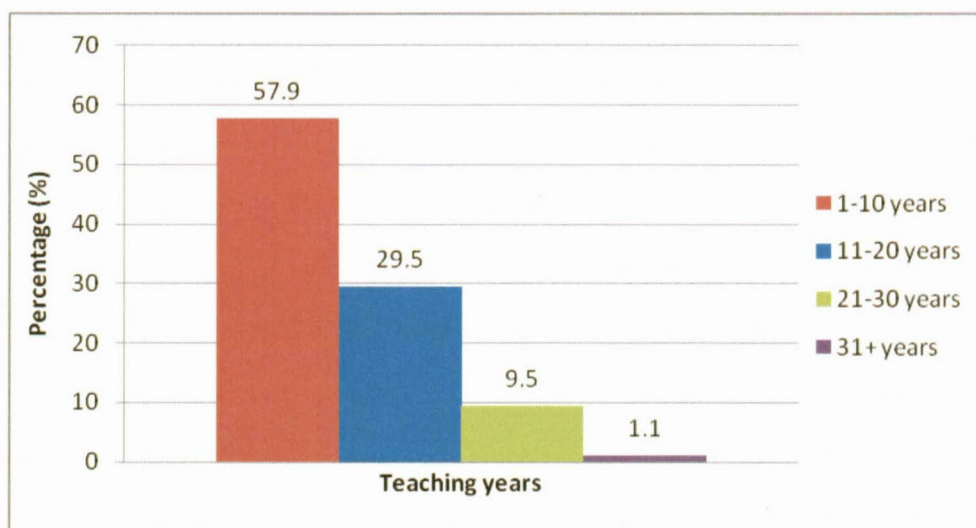


FIGURE 6.5: DISTRIBUTION OF TEACHERS ACCORDING TO TEACHING EXPERIENCE.

Depicted from Table 6.7 and Figure 6.5, the majority (57.9%) of teachers had teaching experience that ranged between 1 up to 10 years. Teachers that had teaching experience of between 11 and 20 years represented 29.5% of the sample. The most experienced teachers with 21 to 30 years and above 30 years in teaching were represented by 9.5% and 1.1% respectively.

QUESTION 6: PROFESSIONAL QUALIFICATIONS

TABLE 6.8: DISTRIBUTION OF TEACHERS ACCORDING TO PROFESSIONAL QUALIFICATIONS.

Professional qualification	Frequency	Percentage	Valid percentage	Cumulative percentage
None	23	24.2	24.2	24.2
STC/ACE	23	24.2	24.2	48.4
Dip. Ed/Dip. Sc Ed/Dip. Agric Ed.	26	27.4	27.4	75.8
B. Ed/BSc. Ed/BA. Ed	20	21	21	96.8
B. Ed(Hons)	2	2.1	2.1	98.9
M. Ed	1	1.1	1.1	100
Total	95	100	100	

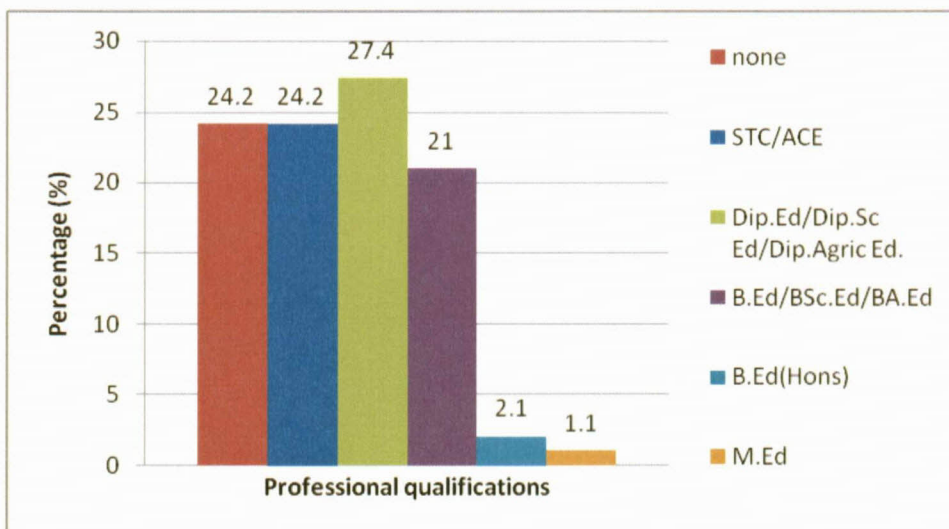


FIGURE 6.6: DISTRIBUTION OF TEACHERS ACCORDING TO PROFESSIONAL QUALIFICATIONS.

In reference to Table 6.8 and Figure 6.6, most teachers (27.4%) indicated that they had diplomas in teaching, while 24.2% of teachers did not have any teaching qualifications. Another 24.2% of teachers had teaching certificates while 21% had teaching degrees. Only a few teachers (3.2%) had post-graduate degrees in teaching.

QUESTION 7: NUMBER OF LEARNERS IN CLASS

TABLE 6.9: DISTRIBUTION OF NUMBER OF LEARNERS PER CLASS

No. of learners in class	Frequency	Percentage	Valid percentage	Cumulative percentage
8	5	5.3	5.3	5.3
11	4	4.2	4.3	9.6
32	5	5.3	5.3	14.9
42	5	5.3	5.3	20.2
49	10	10.5	10.6	30.9
51	10	10.5	10.6	41.5
54	5	5.3	5.3	46.8
63	5	5.3	5.3	52.1
64	5	5.3	5.3	57.4
65	5	5.3	5.3	62.8
67	15	15.8	16	78.7
68	5	5.3	5.3	84
71	5	5.3	5.3	89.4
72	5	5.3	5.3	94.7
82	5	5.3	5.3	100
Total	94	98.9	100	
System	1	1.1		
	95	100		

Table 6.9 above indicates that the class ratio for 15.8% of teachers was 1:67. Additionally, 15.9% of teachers taught classes with more than 70 learners, while 5.3% of these teachers had 82 learners in their respective classes. The average number of learners per class in the rural secondary schools of Lesotho was depicted to be 53. From table 6.9, it is also depicted that about half (48.9%) of the respondents had large classes that consisted of more than 63 learners.

QUESTION 8: GENDER OF TEACHERS

TABLE 6.10: DISTRIBUTION OF TEACHERS ACCORDING TO GENDER

Gender	Frequency	Percentage	Valid percentage	Cumulative percentage
Male	42	44.2	44.2	44.2
Female	53	55.8	55.8	100
Total	95	100	100	

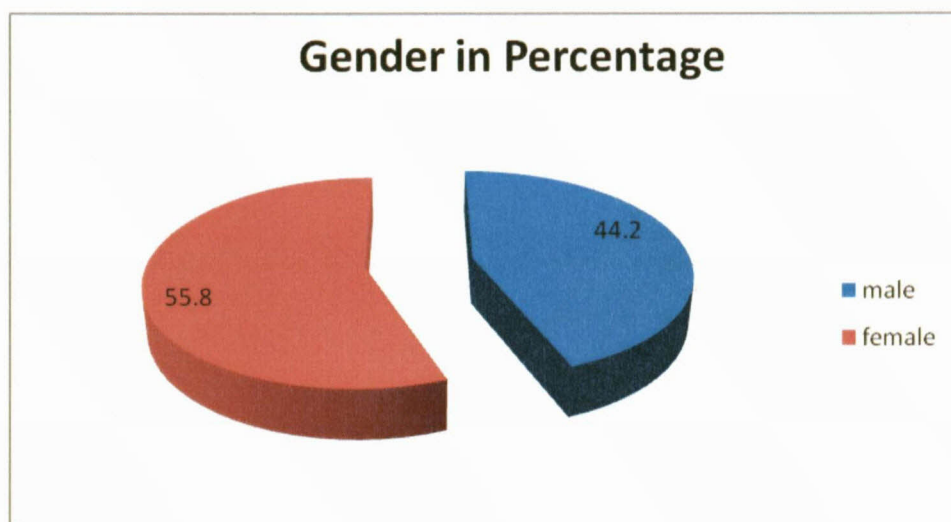


FIGURE 6.7: DISTRIBUTION OF TEACHERS ACCORDING TO GENDER

A vast majority (55.8%) of teachers in the research population indicated that they were females, while only 44.2% were males. These percentages were representative of the total number of teachers in all the ten districts that participated in the study.

QUESTION 9: AGE OF TEACHERS

The information on teachers' age is presented by Table 6.11 below. Figure 6.8 illustrates this information by showing the representation across the categories of age.

TABLE 6.11: DISTRIBUTION OF TEACHERS ACCORDING TO AGE

Age	Frequency	Percentage	Valid percentage	Cumulative percentage
21-30	31	32.6	32.6	32.6
31-40	38	40	40	72.6
41-50	19	20	20	92.6
50+	7	7.4	7.4	100
Total	95	100	100	

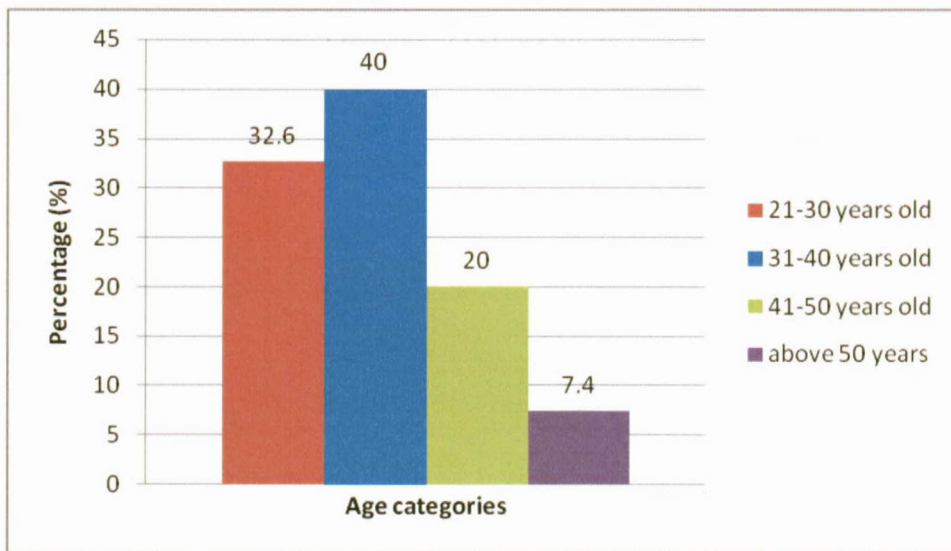


FIGURE 6.8: DISTRIBUTION OF TEACHERS ACCORDING TO AGE

From Table 6.11 and Figure 6.8, most teachers (40%) in the rural secondary schools of Lesotho indicated that they were between 31 and 40 years of age. The other 32.6% of teachers were between 21-30 years old while 20% were 41 to 50 years old. Moreover, there were some teachers (7.4%) who were above 50 years of age.

6.3 TEACHING AND LEARNING STYLE KNOWLEDGE

Teachers were asked to provide information on the knowledge they have with regards to teaching and learning styles. In this section, this information is presented as it was addressed in the teacher questionnaire (Appendix B).

6.3.1 Background knowledge on teaching and learning styles.

Questions 1.1 to 1.10 in the questionnaire were asked to determine whether teachers had enough knowledge about teaching and learning styles in order to direct their teaching to the styles of learners.

QUESTION 1.1: I HAVE ENOUGH KNOWLEDGE ABOUT LEARNING STYLES

TABLE 6.12: KNOWLEDGE ABOUT LEARNING STYLES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	1	1.1	1.1	1.1
Disagree	40	42.1	42.1	43.2
Agree	45	47.3	47.3	90.5
Strongly agree	9	9.5	9.5	100
Total	95	100	100	

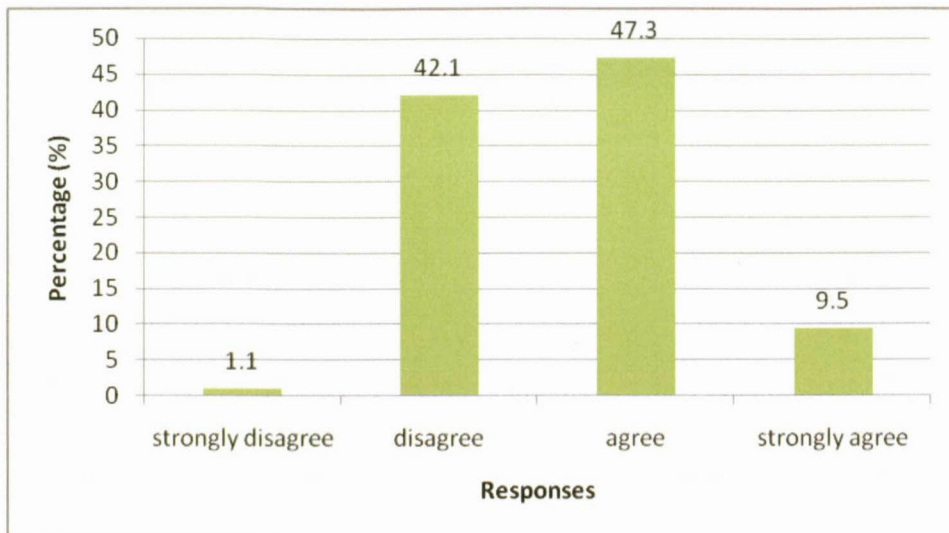


FIGURE 6.9: KNOWLEDGE ABOUT LEARNING STYLES

In accordance with Figure 6.9 and Table 6.12, many teachers (47.3%) agreed that they had enough knowledge about learning styles, while 9.5% of teachers strongly agreed that they had enough of this knowledge. Additionally, 42.1% of teachers indicated that they did not have enough knowledge on learning styles. Moreover, 1.1% of teachers strongly disagreed that they had enough knowledge on learning styles.

QUESTION 1.2: I AM AWARE OF THE LEARNING STYLES OF LEARNERS IN MY CLASS.

TABLE 6.13: AWARENESS OF LEARNING STYLES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Disagree	46	48.3	48.9	48.9
Agree	43	45.3	45.8	94.7
Strongly agree	05	5.3	5.3	100
Total	94	98.9	100	
Missing	1	1.1		
Total	95	100		

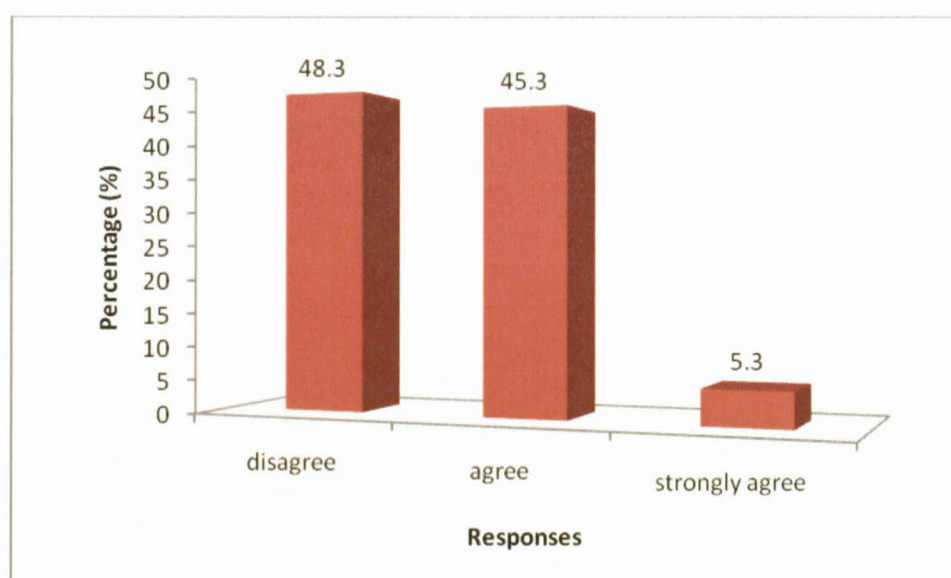


FIGURE 6.10: AWARENESS OF LEARNING STYLES

Most of teachers (48.3%) asserted that they were not aware of the learning styles of the learners in their classes, whilst 45.3% of teachers indicated that they were aware of these styles in their classes. A small percentage (5.3 %) of teachers strongly agreed that they were aware of learning styles in their classes.

QUESTION 1.3: I HAVE ENOUGH KNOWLEDGE ABOUT TEACHING STYLES

TABLE 6.14: KNOWLEDGE ABOUT TEACHING STYLES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	2	2.1	2.1	2.1
Disagree	34	35.8	35.8	37.9
Agree	46	48.4	48.4	86.3
Strongly agree	13	13.7	13.7	100
Total	95	100	100	

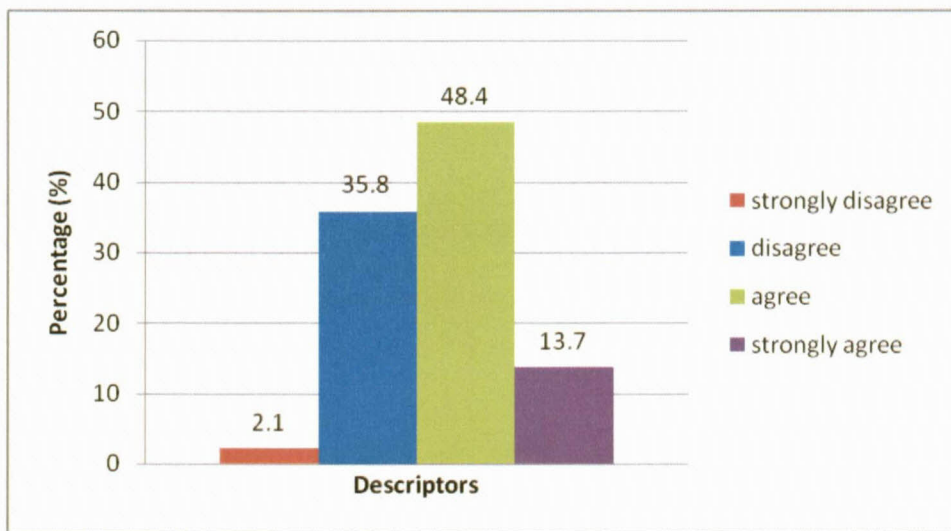


FIGURE 6.11: KNOWLEDGE ABOUT TEACHING STYLES

Depicted from Table 6.14 and Figure 6.11, most teachers (48.4%) indicated that they agreed that they had enough knowledge about teaching styles, while 13.7% of the teachers strongly agreed with this notion. On the other hand, 35.8% of the teachers asserted that they did not have enough knowledge on teaching styles. Some teachers (2.1%) indicated that they strongly disagreed with having knowledge on teaching styles.

QUESTION 6.14: I AM SUFFICIENTLY TRAINED TO TEACH LEARNERS WITH DIFFERENT LEARNING STYLES

TABLE 6.15: TEACHER TRAINING

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	5	5.3	5.3	5.3
Disagree	51	53.6	53.6	58.9
Agree	28	29.5	29.5	88.4
Strongly agree	11	11.6	11.6	100
Total	95	100	100	

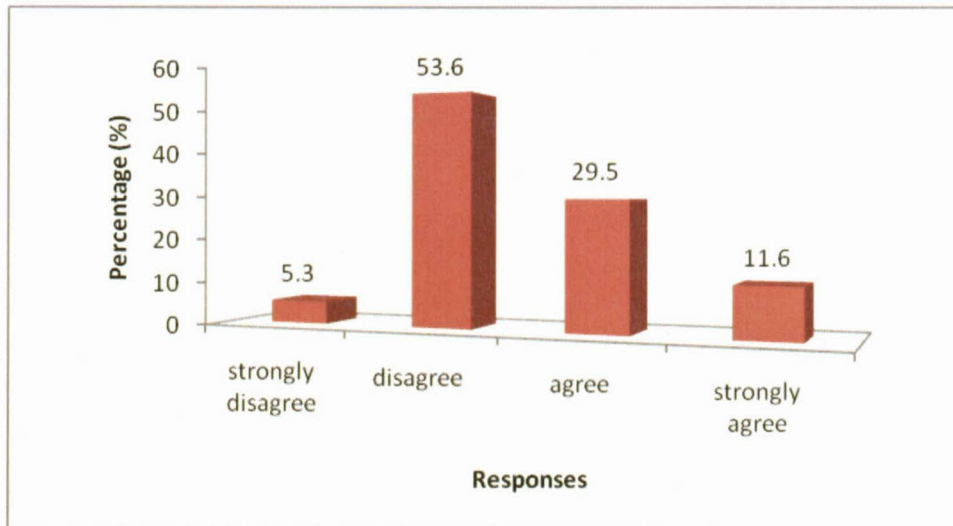


FIGURE 6.12: TEACHER TRAINING

The majority (53.6%) of teachers in the rural secondary schools of Lesotho indicated that they were not sufficiently trained to teach learners with different learning styles, whilst 5.3% of the teachers emphasized and strongly disagreed that they were sufficiently trained. The two percent of teachers made up a total of 58.9% untrained teachers. On the other hand, some teachers 29.5% and 11.6% indicated that they had received enough training on teaching styles.

QUESTION 1.5: I TEACH TO ADDRESS INDIVIDUAL LEARNING STYLES OF MY LEARNERS

TABLE 6.16: ADDRESSING LEARNING STYLES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Disagree	30	31.6	31.9	31.9
Agree	56	58.9	59.6	91.5
Strongly agree	8	8.4	8.5	100
Total	94	98.9	100	
Missing	1	1.1		
Total	95	100		

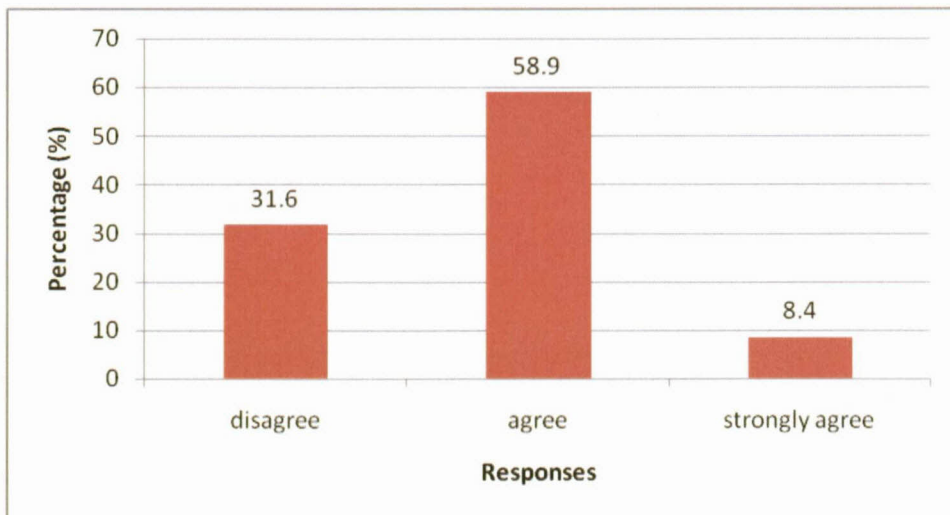


FIGURE 6.13: ADDRESSING LEARNING STYLES

According to Table 6.16 and Figure 6.13, the majority (58.9%) of the teachers indicated that they taught to address the learning styles of their learners. Again, 8.4% of the teachers asserted that they strongly agreed with the notion. On the one hand, 31.6% of the teachers disagreed that they addressed learners' individual learning styles in their classes.

QUESTION 1.6: KNOWING LEARNERS' LEARNING STYLES IS IMPORTANT FOR TEACHERS

TABLE 6.17: THE IMPORTANCE OF KNOWLEDGE ON LEARNING STYLES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Disagree	2	2.1	2.1	2.1
Agree	37	38.9	38.9	41.1
Strongly agree	56	59	59	100
Total	95	100	100	

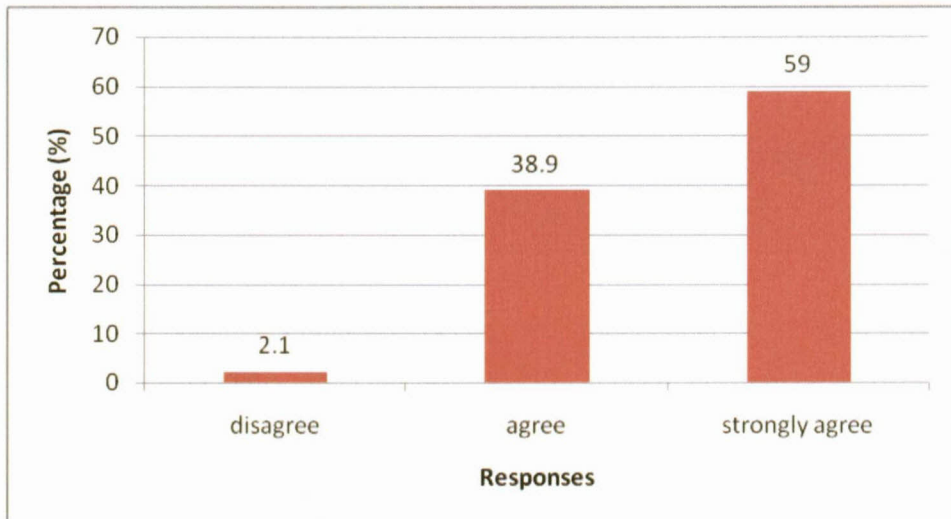


FIGURE 6.14: THE IMPORTANCE OF KNOWLEDGE ON LEARNING STYLES

The information in Figure 6.14 and Table 6.17 indicate that the majority (59%) of the teachers strongly agreed that knowledge about learners' learning styles was important. The remaining 38.9% of the teachers also showed that they agreed with the notion; whilst on the other hand, some teachers (2.1%) considered this knowledge to be unimportant.

QUESTION 1.7: I HAVE ENOUGH TIME TO USE TEACHING STYLES THAT ADDRESS INDIVIDUAL LEARNING STYLES IN MY CLASS

TABLE 6.18: AVAILABILITY OF TIME IN ADDRESSING LEARNING STYLES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	26	27.4	27.4	27.4
Disagree	41	43.2	43.2	70.6
Agree	23	24.1	24.1	94.7
Strongly agree	5	5.3	5.3	100
Total	95	100	100	

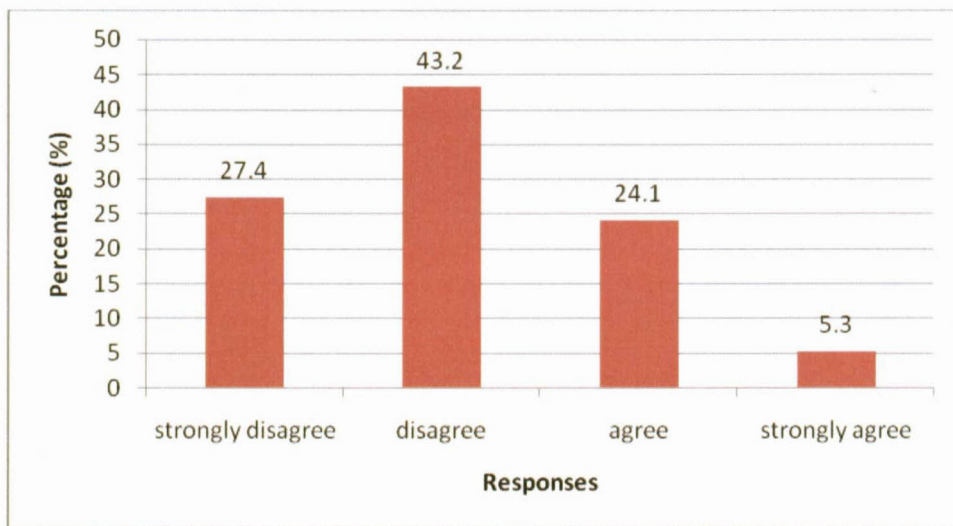


FIGURE 6.15: AVAILABILITY OF TIME IN ADDRESSING LEARNING STYLES

Most teachers (43.2%) in this study disagreed that there was enough time to address individual learning styles. Additionally, 27.4% of the teachers strongly disagreed with the adequate time available to teach to different learning styles. All in all, 70.6% of the teachers indicated that there was not enough time to use teaching styles that addressed the individual learning styles of their learners. On the other hand, 29.4% of the teachers indicated that they had enough time to address different learning styles.

QUESTION 1.8: I KNOW THE FACTORS THAT CAN INFLUENCE EACH LEARNER'S LEARNING STYLES

TABLE 6.19: TEACHERS' KNOWLEDGE CONCERNING THE FACTORS OF LEARNING STYLES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Strongly disagree	6	6.3	6.3	6.3
Disagree	38	40	40	46.3
Agree	45	47.4	47.4	93.7
Strongly agree	6	6.3	6.3	100
Total	95	100	100	

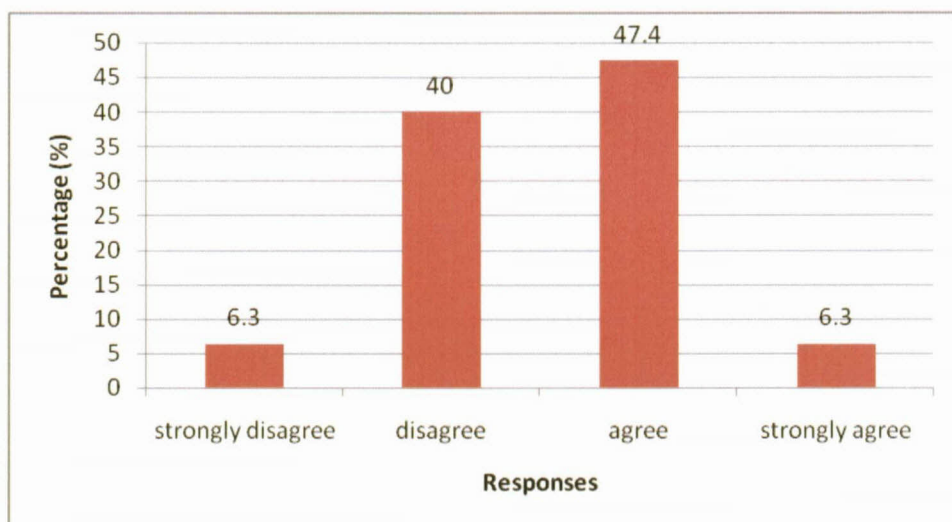


FIGURE 6.16: TEACHERS' KNOWLEDGE CONCERNING THE FACTORS OF LEARNING STYLES

Most teachers (47.4%) asserted that they had knowledge on the factors that relate to the learning styles, while 6.3% of the teachers emphasized their knowledge on these factors. Additionally, 40% of the teachers on the other hand, indicated that they did not have knowledge on these factors, whilst 6.3% strongly disagreed with knowing the factors.

QUESTION 1.9: EFFECTIVE TEACHING CAN BE ENHANCED BY MATCHING TEACHING AND LEARNING STYLES

TABLE 6.20: THE INFLUENCE OF MATCHING TEACHING AND LEARNING STYLES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Disagree	8	8.4	8.4	8.4
Agree	42	44.2	44.2	52.6
Strongly agree	45	47.4	47.4	100
Total	95	100	100	

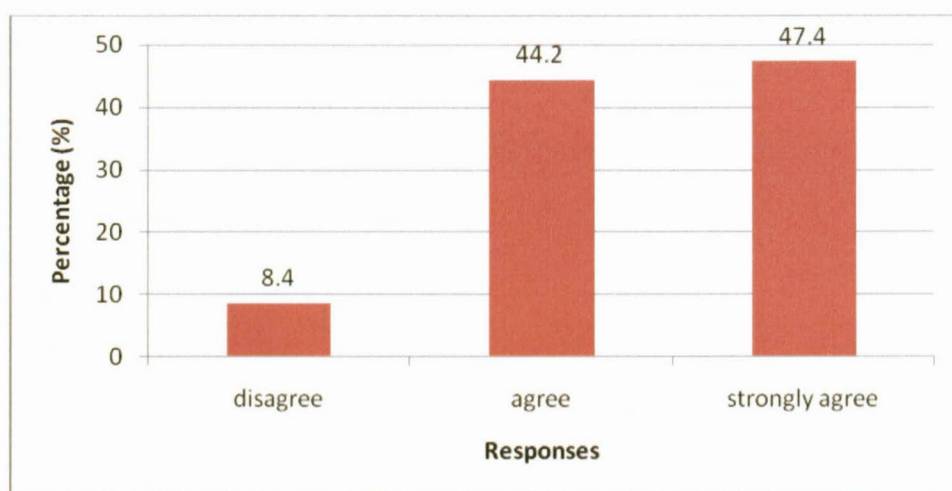


FIGURE 6.17: THE INFLUENCE OF MATCHING TEACHING AND LEARNING STYLES

Depicting from Table 6.20 and Figure 6.17, 44.2% of the teachers in the rural secondary schools of Lesotho indicated that they agreed with the statement that matching teaching and learning styles enhanced effective teaching. Additionally, 47.4% of the teachers also indicated that they strongly agreed with the statement. In contrast, 8.4% of the teachers disagreed with this influence.

QUESTION 1.10: TEACHERS NEED SPECIAL TRAINING IN LEARNING STYLES IN ORDER TO FULFILL LEARNERS' LEARNING STYLES

TABLE 6.21: NEED FOR SPECIAL TRAINING IN LEARNING STYLES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Disagree	2	2.1	2.1	2.1
Agree	16	16.8	16.8	18.9
Strongly agree	77	81.1	81.1	100
Total	95	100	100	

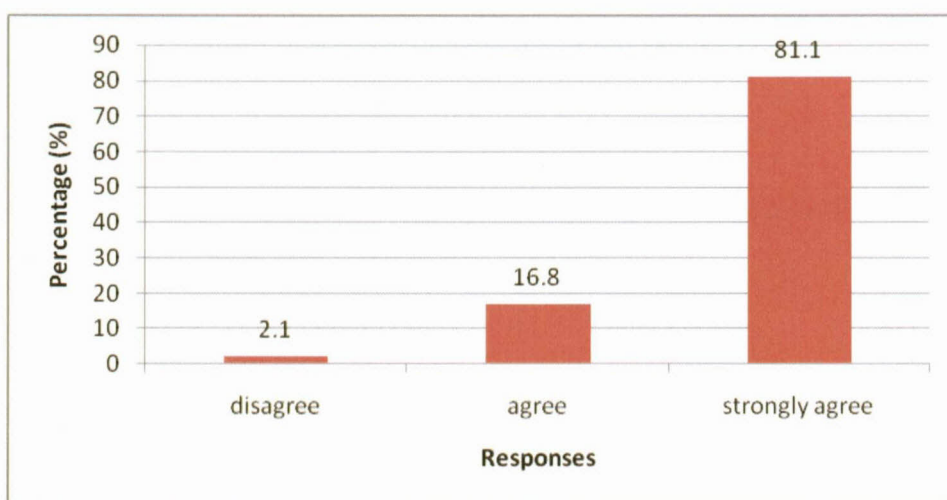


FIGURE 6.18: NEED FOR SPECIAL TRAINING IN LEARNING STYLES

Figure 6.18 and Table 6.21 indicate that the vast majority (81.1%) of the teachers in the rural secondary schools of Lesotho strongly agreed that teachers needed special training on learning styles in order to fulfill the learners' learning styles. Other teachers (16.8%) also agreed with this notion, and thus increased the number of teachers in support of teacher training to 97.9%. On the other hand 2.1% of the teachers indicated that training was not needed.

6.3.2 Factors that inhibit the accommodation of individual learning styles

In the teacher questionnaire, questions 3.1 to 3.6 were used to gather information on the factors that had the possibility of inhibiting the use of instruction that addressed individual learning styles for all learners in a class.

QUESTION 3.1: OVERCROWDED CLASSES

Table 6.22: OVERCROWDED CLASSES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Not at all	9	9.5	9.6	9.6
Small extent	16	16.8	17	26.6
Large extent	69	72.6	73.4	100
Total	94	98.9	100	
Missing	1	1.1		
Total	95	100		

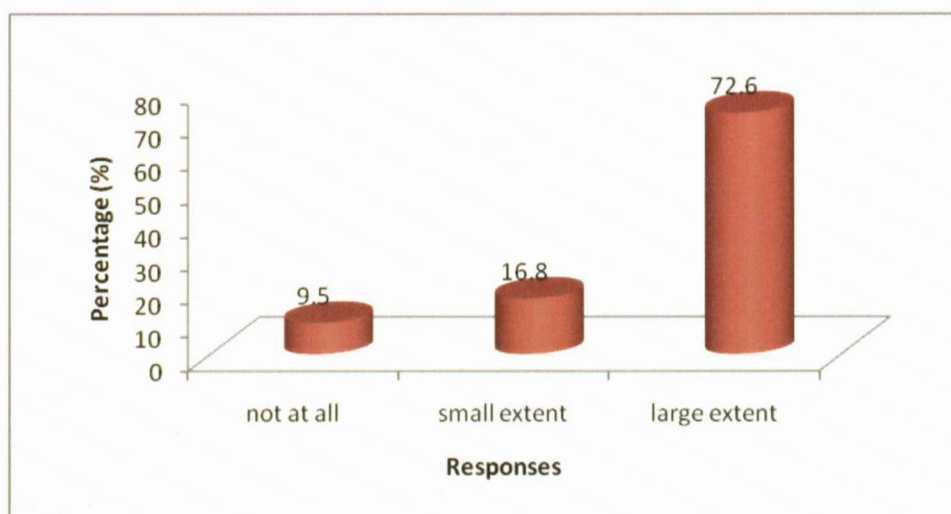


FIGURE 6.19: OVERCROWDED CLASSES

The vast majority (72.6%) of the teachers were of the opinion that overcrowded classes inhibited the use of instruction that could address the individual learning styles of all learners in their classes. Some teachers (16.8%) indicated that although overcrowding affected their teaching with regards to learning styles, this influence was limited to a

small extent. A small number of teachers (9.5%) asserted that overcrowded classes had no influence in addressing learning styles.

QUESTION 3.2: TOO MUCH SUBJECT CONTENT AND TIME PRESSURE

Table 6.23: SUBJECT CONTENT AND TIME PRESSURE

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Not at all	3	3.2	3.2	3.2
Small extent	25	26.3	26.6	29.8
Large extent	66	69.5	70.2	100
Total	94	98.9	100	
Missing	1	1.1		
Total	95	100		

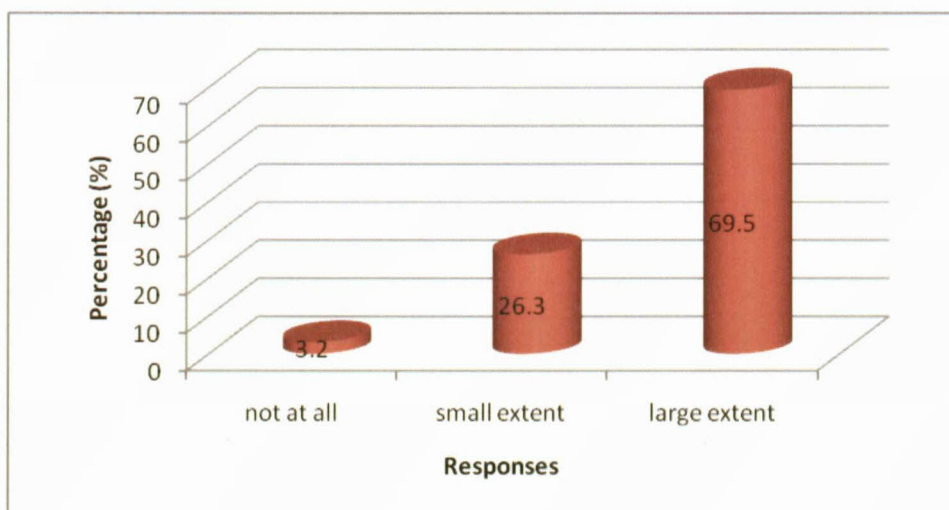


FIGURE 6.20: TOO MUCH SUBJECT CONTENT AND TIME PRESSURE

According to Table 6.23 and Figure 6.20, the vast majority (69.5%) of the teachers indicated that too much subject content and time pressure to a large extent, did not allow them to teach to their learners' learning styles. At the same time, 26.3% of the teachers pointed out that it was only to a small extent that the subject content and time pressure influenced their teaching with regards to learning styles. The other 3.2% of the teachers indicated that they were not affected by subject content or time pressure.

QUESTION 3.3: FOLLOWING THE STRICT SYLLABUS

TABLE 6.24: FOLLOWING THE STRICT SYLLABUS

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Not at all	10	10.5	10.6	10.6
Small extent	36	37.9	38.3	48.9
Large extent	48	50.5	51.1	100
Total	94	98.9	100	
Missing	1	1.1		
Total	95	100		

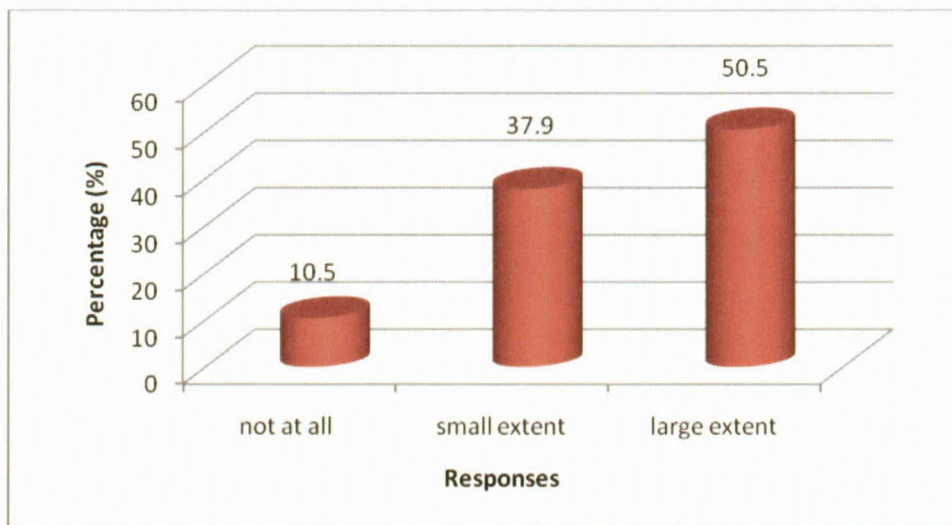


FIGURE 6.21: FOLLOWING THE STRICT SYLLABUS

As indicated in Table 6.24 and Figure 6.21, about half of the teachers (50.5%) in the rural secondary schools of Lesotho were of the opinion that the strict syllabus influenced them to a large extent to teach to the learning styles. Again, 37.9% of the teachers indicated that the influence was to a small extent, while other teachers (10.5%) said it did not influence the way they taught with regard to learning styles.

QUESTION 3.4: PREPARING LEARNERS FOR STANDARDIZED EXTERNAL EXAMINATIONS

TABLE 6.25: PREPARING FOR EXTERNAL EXAMS

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Not at all	18	18.9	19.1	19.1
Small extent	39	41.1	41.5	60.6
Large extent	37	38.9	39.4	100
Total	94	98.9	100	
Missing	1	1.1		
Total	95	100		

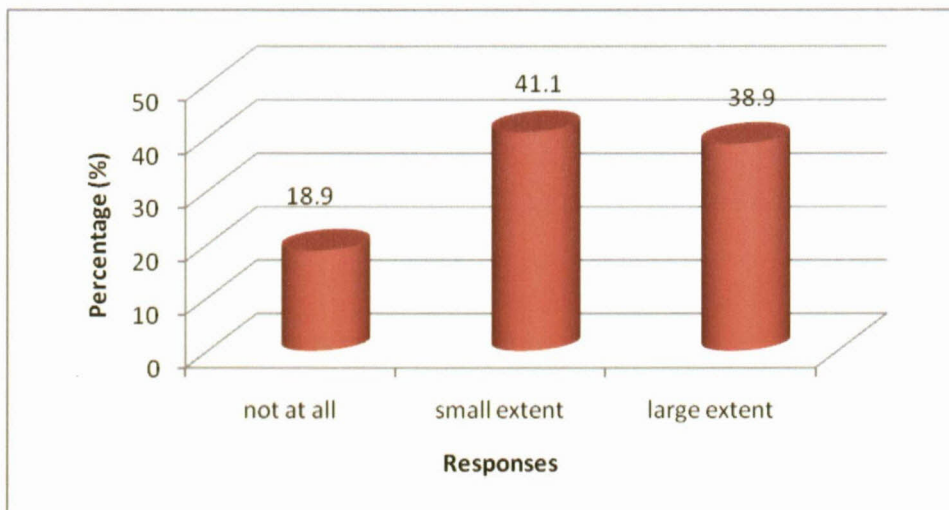


FIGURE 6.22: PREPARING FOR EXTERNAL EXAMS

In relation to Table 6.25 and Figure 6.22, 41.1% of the teachers in the rural secondary schools of Lesotho asserted that preparing learners for the standardized external exams could affect the attempts of addressing the individual learning styles of their learners, while 38.9% of teachers said this influence was true to a large extent. Some teachers (18.9%) said that this aspect does not affect them.

QUESTION 3.5: USE AND AVAILABILITY OF VARIOUS TEACHING AIDS

TABLE 6.26: AVAILABILITY OF VARIOUS TEACHING AIDS.

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Not at all	10	10.5	10.6	10.6
Small extent	36	37.9	38.3	48.9
Large extent	48	50.5	51.1	100
Total	94	98.9	100	
Missing	1	1.1		
Total	95	100		

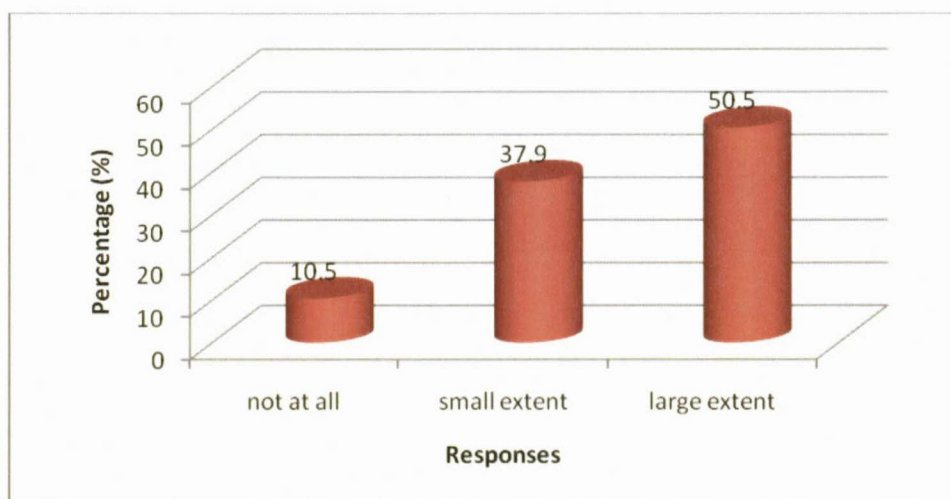


FIGURE 6.23: AVAILABILITY OF VARIOUS TEACHING AIDS

Most teachers (50.5%) asserted that the use and availability of teaching aids influenced teaching learners with regard to their learning styles. Again, 37.9% of the teachers indicated that this influence was true to a small extent. On the other hand, 10.5% of the teachers differed in that they said the use and availability of teaching aids did not affect them in addressing individual learning styles.

QUESTION 3.6: KNOWLEDGE OF THE LEARNING PROCESS

TABLE 6.27: KNOWLEDGE OF THE LEARNING PROCESS

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
Not at all	16	16.8	17.2	17.2
Small extent	37	38.9	39.8	57
Large extent	40	42.1	43	100
Total	93	97.9	100	
Missing	2	2.2		
Total	95	100		

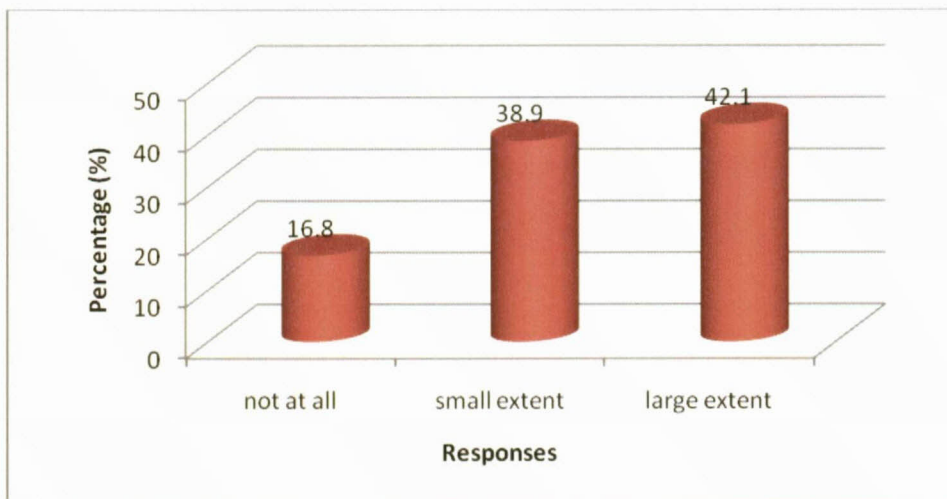


FIGURE 6.24: KNOWLEDGE OF THE LEARNING PROCESS

Table 6.27 and Figure 6.24 indicate that some of the teachers (42.1%) in the rural secondary schools of Lesotho were of the opinion that knowledge of the learning process influenced their attempts to teach to their learners' individual learning styles. At the same time, some teachers (38.9%) asserted that this influence was only to a small extent, while a few teachers (16.8%) said that knowledge of the learning process did not influence their attempts to teach to individual learning styles.

From the tables and figures above, data has been presented with regard to the factors that influence the attempts of addressing learning styles in the rural secondary schools of Lesotho. This data is summarized in Table 6.28.

TABLE 6.28: SUMMARY ON THE FACTORS THAT INFLUENCE LEARNING STYLES IN THE RURAL SCHOOLS OF LESOTHO.

Factors	Not at all	Small extent	Large extent
	%	%	%
Overcrowded classes	9.5	16.8	72.6
Too much subject content and time pressure	3.2	26.3	69.5
Following the strict syllabus	10.5	37.9	50.5
Preparing learners for standardized external exams	18.9	41.1	38.9
Use of various teaching aids	10.5	37.9	50.5
Knowledge of the learning process	16.8	38.9	42.1

From Table 6.28 above, the majority (72.6%) of the teachers asserted that overcrowded classes largely influenced their attempts to teach to their learners' learning styles. At the same time, 69.5% of the teachers pointed out that too much subject content and time pressure also largely affected measures of addressing learning styles. Additionally, 50.5% of the teachers were of the opinion that the large extent of the influence was caused by following the strict syllabus and the limited teaching aids. According to some teachers (42.1%), knowledge of the learning process also influenced the way teachers might address individual learning styles, and lastly 38.9% of the teachers also indicated that preparing learners for standardized external exams could restrain the support of individual learning styles in class.

6.3.3 Other problems that affect addressing learners' individual learning styles

QUESTION 4: IF YOU EXPERIENCE OTHER PROBLEMS IN ADDRESSING LEARNERS' INDIVIDUAL LEARNING STYLES, SPECIFY THEM

Question 4 in section B of the teacher questionnaire was asked in order to identify problems, other than those presented above, that affected teachers' attempts to address their learners' individual learning styles. Respondents indicated the following problems:

- **Lack of knowledge on learning styles.** (e.g. Teacher 36 said " I still have a lot to learn about learning styles").
- **Use of English as a language of instruction.** (e.g. Teacher 12 said " communicating in English is a problem for most learners").
- **Lack of learners' motivation to participate in the learning process.** (e.g. Teacher 41 said " lack of participation by pupils in class activities is a problem. Almost all pupils have little motivation to learn").

QUESTION 5: DO YOUR TEACHING STYLES ADDRESS A VARIETY OF LEARNING STYLES IN YOUR CLASS? GIVE COMMENTS

Question 5 was asked to determine whether teachers used teaching styles that accommodated a variety of learning styles. Respondents indicated that their teaching styles did not accommodate a variety of learning styles due to the following factors:

- **Lack of knowledge and need for training on learning styles.** (e.g. Teacher 95 said " I have not been trained enough on learning styles and it is not easy to cater for all learners").

- **No instruments in schools to determine learning styles.** (e.g. Teacher 5 said “ I am not able to identify different learning styles in my class. Teachers need instruments that measure styles”).
- **Difficulty in addressing learning styles and achieving the curriculum objectives.** (e.g. Teacher 74 said “ it is difficult to achieve the objectives in the syllabus when I use teaching methods that address individual styles of my learners. The curriculum and subject syllabus should address learning styles”).
- **Too much subject content and time pressure.** (e.g. Teacher 50 said “ there is too much content to cover within a short period of time in my subject”).
- **Lack of facilities and teaching materials.** (e.g. Teacher 33 said “ there is lack of materials such as charts, models and scientific apparatus that would cater individual students. There are few materials shared by the whole class”).
- **Overcrowding and large classes.** (e.g. Teacher 67 said “ large classes do not permit due to overcrowding”).

6.4 DOMINANT TEACHING AND LEARNING STYLES

The presentation of data in this section was with regard to identifying the predominant learning styles of learners and dominant teaching styles of teachers in the rural secondary schools of Lesotho.

6.4.1 Predominant learning styles

Section B of the learner questionnaire consisted of the instrument that was used to measure the predominant learning styles of learners.

6.4.1.1 Dominant style with respect to all learning styles

TABLE 6.29: DISTRIBUTION OF LEARNING STYLES

Dimensions	Learning style	Frequency	Percentage (%)
1	Sensory	35	18.4
	Intuitive	10	5.3
2	Visual	30	15.8
	Verbal	18	9.5
3	Active	19	10
	Reflective	4	2.1
4	Sequential	4	2.1
	Global	6	3.2
Combination of styles	Sensory-visual	3	1.6
	Sensory-sequential	4	2.1
	Sensory-global	5	2.6
	Intuitive-verbal	6	3.2
	Intuitive-active	2	1.0
	Visual-active	9	4.7
	Visual-sequential	3	1.6
	Visual-global	7	3.7
	Verbal-active	8	4.2
	Active-sequential	5	2.6
	Reflective-sequential	2	1.0
	Balanced styles	10	5.3
		Total (N) =	190

According to Table 6.29, most learners (18.4%) were using the sensory learning style. The other 15.8% of the learners used the visual learning style, while 10 % of learners used the active style. Additionally, 9.5% of the learners used the verbal learning style, while 5.3% of the learners used intuitive and balanced styles, respectively. All other styles were represented by a low percentage of learners (less than 5% per style). Again, 66.4% of all the dominant learning styles were single styles, while 33.6% of the dominant styles were combinations of styles

6.4.1.2 Learning styles and age of learners

TABLE 6.30: LEARNING STYLE CROSS TABULATED AGAINST AGE OF LEARNERS

Dimensions	Learning style	Male		Female	
		Frequency	Percentage	Frequency	Percentage
1	Sensory	14	15.9	21	20.6
	Intuitive	5	5.7	5	4.9
2	Visual	13	14.8	17	16.6
	Verbal	4	4.6	14	13.7
3	Active	10	11.4	9	8.8
	Reflective	1	1.1	3	2.9
4	Sequential	2	2.3	2	2.0
	Global	4	4.5	2	2.0
Combination of styles	Sensory-visual	1	1.1	2	2.0
	Sensory-sequential	2	2.3	2	2.0
	Sensory-global	3	3.4	2	2.0
	Intuitive-verbal	4	4.6	2	2.0
	Intuitive-active	1	1.1	1	0.9
	Visual-active	6	6.8	3	2.9
	Visual-sequential	1	1.1	2	2.0
	Visual-global	5	5.7	2	2.0
	Verbal-active	3	3.4	5	4.9
	Active-sequential	3	3.4	2	2.0
	Reflective-sequential	1	1.1	1	0.9
	Balanced styles	5	5.7	5	4.9
		Total (N) =	88	100	102

Table 6.30 indicates that 15.9 % of the learners with sensory learning styles were males whilst 20.6% of sensory learners were females. In relation to visual learners, 14.8% of visual learners were males and 16.6% of visual learners were females. Additionally, only 4.6% of verbal learners were males while 13.7% of verbal learners were females. Moreover, 11.4 % of active learners were males while 8.8% of active learners were females. With regard to combined styles, 6.8% of visual-active learners were males whilst only 2.9% of these learners were females.

6.4.1.3 Learning styles and age of learners

TABLE 6.31: LEARNING STYLE CROSS TABULATED AGAINST AGE OF LEARNERS (in percentage)

Learning style	Age of learners										
	14yr	15yr	16yr	17yr	18yr	19yr	20yr	21yr	22yr	23yr	24yr
Sensory	2	14.2	29	40	8.6	2.9	2.9	-	-	-	-
Intuitive	-	20	20	30	-	20	-	-	10	-	-
Visual	-	13.3	16.7	16.7	13.3	23.3	3.3	6.6	3.3	3.3	-
Verbal	-	16.7	11.1	11.1	11.1	22.2	27.8	-	-	-	-
Active	-	10.5	21.1	10.5	21.1	5.3	15.8	5.3	5.3	-	5.3
Reflective	-	-	-	-	25	25	25	-	-	-	25
Sequential	-	-	25	25	-	25	-	-	25	-	-
Global	-	-	33.3	33.3	-	-	16.7	16.7	-	-	-
Sensory-visual	-	-	33.3	33.3	33.3	-	-	-	-	-	-
Sensory-sequential	-	-	25	50	-	-	25	-	-	-	-
Sensory-global	-	-	20	20	-	20	-	20	20	-	-
Intuitive-verbal	-	-	33.3	16.7	16.7	-	16.7	-	16.7	-	-
Intuitive-active	-	-	50	50	-	-	-	-	-	-	-
Visual-active	-	-	33.3	22.2	11.1	22.2	11.1	-	-	-	-
Visual-sequential	-	-	-	33.3	33.3	33.3	-	-	-	-	-
Visual-global	-	-	14.3	42.9	28.6	14.3	-	-	-	-	-
Verbal-active	-	-	25	25	12.5	12.5	25	-	-	-	-
Active-sequential	-	-	20	40	20	20	-	-	-	-	-
Reflective-sequential	-	-	-	-	-	-	50	-	-	-	50
Balanced styles	-	-	-	-	30	20	50	-	-	-	-

According to Table 6.31, most sensory learners (40%) and intuitive learners (30%) were 17 years of age. With regard to intuitive-active learning styles, 50% of intuitive-active learners were 16 years of age and another 50 % of intuitive-active learners were 16 years of age. Additionally, 33.3% of sensory-visual learners were 16, 17 and 18 years of age, respectively. In the same way, 33.3% of Visual-sequential learners were 17, 18, and 19 years of age respectively. Furthermore, 33.3% of global learners were 16 and 17 years of age. Moreover, 50% of the learners with balanced styles were 20 years of age.

6.4.2 Dominant teaching styles

Section C of the teacher questionnaire consisted of the instrument that was used to measure the teaching styles of teachers.

6.4.2.1 Dominant teaching styles in the rural schools of Lesotho

TABLE 6.32: DISTRIBUTION OF TEACHING STYLES

Dimensions	Teaching style	Frequency	Percentage
1	Concrete	4	4.2
	Abstract	5	5.3
2	Visual	18	18.9
	Verbal	26	27.3
3	Active	12	12.6
	Passive	2	2.1
4	Sequential	8	8.4
	Global	4	4.2
Combination of styles	Active-global	2	2.1
	Visual-active	7	7.4
	Abstract-verbal	2	2.1
	Active-sequential	1	1.1
	Concrete-sequential	2	2.1
	Active-verbal	1	1.1
	Concrete-visual	1	1.1
	Total (N) =	95	100

As depicted in Table 6.32, most teachers (27.3%) used the verbal teaching style and 18% of the teachers used the visual teaching style. Besides that, 12.6% of the teachers used the active teaching style while 8.4% of the teachers used the sequential teaching style. Additionally, 7.4% of the teachers used the active-visual teaching style, while 5.3% of the teachers used the abstract teaching style. At the same time, 4.2% of the teachers used the concrete teaching style while the same number of teachers (4.2%) used the global teaching style. The passive, active-global, abstract-verbal and concrete-sequential teaching styles were used by 2.1% of the teachers respectively. Some teachers (1.1%) used the concrete-visual, active-verbal and active-sequential styles respectively.

6.4.2.2 Teaching styles and Gender

TABLE 6.33: TEACHING STYLE CROSS TABULATED AGAINST GENDER OF TEACHERS

Dimensions	Teaching style	Male		Female	
		Frequency	Percentage	Frequency	Percentage
1	Concrete	1	2.4	3	5.7
	Abstract	2	4.7	3	5.7
2	Visual	13	31	5	9.4
	Verbal	5	11.9	21	39.6
3	Active	5	11.9	7	13.2
	Passive	1	2.4	1	1.9
4	Sequential	3	7.1	5	9.4
	Global	1	2.4	3	5.7
Combinations of styles	Active-global	0	0	2	3.7
	Visual-active	6	14.3	1	1.9
	Abstract-verbal	1	2.4	1	1.9
	Active-sequential	0	0	1	1.9
	Concrete-sequential	2	4.7	0	0
	Active-verbal	1	2.4	0	0
	Concrete-verbal	1	2.4	0	0
	Total (N) =	42	100	53	100

According to Table 6.33, most female teachers (39.6%) used the verbal teaching style, while there were only 11.9% of male and verbal teachers. On the other hand, most male teachers (31%) used the visual teaching style while only 9.4% of the female teachers used the visual style. Furthermore, 11.9% of the male teachers used the active teaching style, while 13.2% of the female teachers used the active style. Additionally, 7.1% of the male teachers used the sequential teaching style, while 9.4% of the female teachers used the sequential style. Moreover, 14.3% of the male teachers used the visual-active teaching style, while only 1.9% of the female teachers used the visual-active style.

6.4.2.3 Teaching styles and Age

TABLE 6.34: TEACHING STYLE CROSS TABULATED AGAINST AGE OF TEACHERS.

Teaching style	Age							
	21-30 years		31-40 years		41-50 years		Above 50 years	
	%	F	%	F	%	F	%	F
Concrete	25	1	25	1	25	1	25	1
Abstract	20	1	40	2	40	2	-	-
Visual	38.9	7	38.9	7	22.2	4	-	-
Verbal	34.6	9	38.5	10	19.2	5	7.7	2
Active	41.7	5	33.3	4	8.3	1	16.7	2
Passive	-	-	-	-	50	1	50	1
Sequential	25	2	37.5	3	25	2	12.5	1
Global	25	1	50	2	25	1	-	-
Active-global	50	1	50	1	-	-	-	-
Visual-active	28.6	2	42.8	3	28.6	2	-	-
Abstract-verbal	-	-	100	2	-	-	-	-
Active-sequential	-	-	100	1	-	-	-	-
Concrete-sequential	50	1	50	1	-	-	-	-
Active-verbal	-	-	100	1	-	-	-	-
Concrete-visual	100	-	-	-	-	-	-	-

As depicted in Table 6.34, 25% of the concrete teaching style was used by teachers between 21-30 years of age, 31-40 years of age, 41-50 years of age, and above 50 years of age. Again, 40% of the abstract style was used by teachers between 31 and 40 years of age, while 20% of the teachers who were between 21 and 30 years of age, used this style. With regard to the sequential style, 37.5% of the teachers were in the range of 31-40 years of age, whilst there were 25% of the teachers in the ranges of 21-30 years and 41-50 years. In relation to the visual style, 38.9% of teachers are both in the ranges 21-30 years of age and 31-40 years of age while 22.2% of the teachers were between 41 and 50 years of age. With regard to the active style, 41.7% of the teachers were in the range 21-30 years of age, whilst 33.3% and 8.3% of the teachers were in the ranges of 31-40 and 41-50 years of age respectively.

6.5: MATCHING OF TEACHING AND LEARNING STYLES

• TEACHING AND LEARNING STYLES IN SCHOOL 1

TABLE 6.35: DISTRIBUTION OF TEACHING AND LEARNING STYLES IN SCHOOL 1

			Teaching styles and learner marks in percentage				
School 1	Learner	Learning style	teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5
			Active-global	Abstract	Active	Active	Active
	1	Sensory	54	52	44	48	38
	2	Intuitive	46	66	23	44	47
	3	Active	77	49	74	62	65
	4	Sensory-global	65	54	29	48	61
	5	Active-sequential	67	41	57	74	56
	6	Visual	43	51	66	42	50
	7	Active-intuitive	64	43	91	80	74
	8	Visual-sequential	43	52	27	46	43
	9	Verbal	27	39	64	62	68
	10	Visual	52	46	47	35	28

TABLE 6.36: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 1

Levels of achievement	Frequency of Matches	Frequency of Mismatches
Level 1 (0-29%) - Not achieved	0	5
Level 2 (30-39%)- Elementary achievement	0	3
Level 3 (40-49%)- Moderate achievement	1	15
Level 4 (50-59%)- Adequate achievement	2	7
Level 5 (60-69%)- Substantial achievement	6	5
Level 6 (70-79%)- Meritorious achievement	4	0
Level 7(80-100%)-Outstanding achievement	2	0
Total	15	35

Tables 6.35 and 6.36 indicate that for learners on level 1 of achievement; there were 5 mismatching cases with regard to matching learning styles with teaching styles. On level 2 of learner achievement, there were 3 mismatching cases. On level 3 of

achievement, learners experienced 1 matching case and 15 cases of mismatch in teaching and learning styles. Again, on level 4 of achievement, there were 2 matching cases and 7 mismatching cases in teaching and learning styles. On level 5 of achievement, there were 6 cases that matched and 5 cases that did not match. Additionally, on level 6 of achievement, there were 4 cases of matches between learners' learning styles and teachers' teaching styles, and no mismatches of styles occurred. Moreover, on level 7 of achievement, there were 2 cases where learners' styles matched with the teachers' styles, and no mismatches of styles occurred.

• **TEACHING AND LEARNING STYLES IN SCHOOL 2**

TABLE 6.37: DISTRIBUTION OF TEACHING AND LEARNING STYLES IN SCHOOL 2

School 2	Learner	Learning style	Teaching styles and learners' exam marks in percentage				
			teacher 6	teacher 7	teacher 8	teacher 9	teacher 10
			Verbal	Verbal	Visual	Visual	Global
	11	Active-verbal	67	72	78	47	64
	12	Active	53	67	72	45	66
	13	Sequential	57	74	53	48	63
	14	Active	52	64	37	43	24
	15	Active	37	72	76	47	41
	16	Global	47	66	72	42	59
	17	Verbal	81	77	63	48	48
	18	Global	58	77	54	44	67
	19	Sensory	57	67	42	45	48
	20	Visual	44	52	64	47	45

TABLE 6.38 MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 2

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	1
Level 2 (30-39%)- Elementary achievement	0	2
Level 3 (40-49%)- Moderate achievement	1	16
Level 4 (50-59%)- Adequate achievement	1	8
Level 5 (60-69%)- Substantial achievement	3	8
Level 6 (70-79%)- Meritorious achievement	2	7
Level 7(80-100%)-Outstanding achievement	1	0
Total	8	42

According to Tables 6.37 and 6.38, 1 case of a mismatch was found on level 1 of achievement, whilst there were no cases of a match between the styles. On level 2 of achievement, there were no cases of a match and 2 cases of a mismatch of teaching and learning styles. Further, on level 3, there was 1 case of a match and 16 cases of mismatches in the teaching and learning styles. Additionally, on level 4 of achievement, there was 1 case of a match and 8 cases of mismatches in teaching and learning styles. On level 5 of achievement, there were 3 cases of matches and 8 cases of mismatches of teaching and learning styles. Moreover, in level 6 of achievement, there were 2 cases of matches and 7 cases of mismatches in teaching and learning styles. Furthermore, on level 7 of achievement, there was 1 case of a match and no cases of mismatches of styles.

- **TEACHING AND LEARNING STYLES IN SCHOOL 3**

TABLE 6.39: DISTRIBUTION OF TEACHING AND LEARNING STYLES IN SCHOOL 3

School 3	Learner	Learning style	Teaching styles and Learners' exam marks in percentage				
			teacher11	teacher12	teacher13	teacher14	Teacher15
			Active	Visual	Global	Visual	Visual
	21	Active	77	55	62	58	67
	22	Balanced	52	63	28	57	51
	23	Balanced	57	72	43	48	75
	24	Active- verbal	66	46	29	47	53
	25	Active	67	68	49	41	56
	26	Active- sequential	62	64	38	47	42
	27	Visual- active	67	64	25	41	43
	28	Sensory	52	73	56	53	66
	29	Sensory	59	61	47	42	51
	30	Sensory	47	68	35	45	52

TABLE 6.40: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 3

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	1	2
Level 2 (30-39%)- Elementary achievement	0	2
Level 3 (40-49%)- Moderate achievement	2	12
Level 4 (50-59%)- Adequate achievement	4	10
Level 5 (60-69%)- Substantial achievement	6	7
Level 6 (70-79%)- Meritorious achievement	3	1
Level 7(80-100%)-Outstanding achievement	0	0
Total	16	34

According to Tables 6.39 and 6.40, there were 2 cases of mismatches and 1 case of a match in teaching and learning styles on level 1 of achievement. On level 2 of achievement, there were no cases of matches and 2 cases of a mismatch in learning and teaching styles. Again, on level 3 of achievement, there were 2 cases that matched and 12 cases of mismatches in teaching and learning styles. Additionally, on level 4, only 4 cases of a match occurred whilst there were 10 cases of mismatches. On level 5 of achievement, there were 6 cases that matched and 7 cases that mismatched in teaching and learning styles. Moreover, on level 6 of achievement, 3 teaching and learning styles matched while only 1 case of a mismatch occurred. Lastly on level 7 of achievement, there were no cases of a match or a mismatch of teaching and learning styles.

• **TEACHING AND LEARNING STYLES IN SCHOOL 4**

TABLE 6.41: DISTRIBUTION OF TEACHING AND LEARNING STYLES IN SCHOOL 4

School 4	Learner	Learning style	Teaching styles and learners' exam marks in percentage				
			teacher16	teacher17	teacher18	teacher19	teacher20
			Verbal	Abstract	Visual	Visual	Verbal
	31	Verbal	42	63	47	42	59
	32	Sensory	53	64	27	43	67
	33	Sensory	45	52	53	57	42
	34	Sensory	48	57	27	36	38
	35	Sensory-global	46	53	22	34	59
	36	Verbal	38	42	18	17	47
	37	Sensory	37	62	27	29	38
	38	Sensory	29	37	17	15	42
	39	Visual-global	33	48	28	27	25
	40	Visual	36	53	59	43	48

TABLE 6.42: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 4

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	2	10
Level 2 (30-39%)- Elementary achievement	1	8
Level 3 (40-49%)- Moderate achievement	3	11
Level 4 (50-59%)- Adequate achievement	2	9
Level 5 (60-69%)- Substantial achievement	0	4
Level 6 (70-79%)- Meritorious achievement	0	0
Level 7(80-100%)-Outstanding achievement	0	0
Total	8	42

As depicted in Tables 6.41 and 6.42, there were only 2 cases that matched and 10 cases of mismatches of teaching and learning styles on level 1 of achievement. On level 2 of achievement, there was only one match and 8 mismatches in teaching and learning styles. On level 3 of achievement, there were 3 cases that matched and 11 cases of mismatches of teaching and learning styles. Again, on level 4 (adequate achievement), there were 2 cases that matched and 9 mismatched cases in teaching and learning styles. In the case substantial achievement (level 5), there were 4 cases of mismatches in teaching and learning styles.

• **TEACHING AND LEARNING STYLES IN SCHOOL 5**

TABLE 6.43: DISTRIBUTION OF TEACHING AND LEARNING STYLES IN SCHOOL 5

			Teaching styles and learners' exam marks in percentage				
School 5	Learner	Learning style	teacher21	Teacher2 2	teacher23	Teacher 24	teacher25
			Active	Active	Active	Visual-active	Sequential
	41	Verbal	32	52	54	22	57
	42	Balanced	56	76	89	73	47
	43	Active	62	78	64	58	38
	44	Verbal	53	61	46	54	42
	45	Intuitive	51	47	52	58	38
	46	Intuitive	53	72	54	56	28
	47	Active-verbal	71	62	70	64	41
	48	Active-sequential	48	63	54	53	42
	49	Active-verbal	41	63	42	67	33
	50	Balanced	43	61	29	33	28

TABLE 6.44: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 5

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	2	2
Level 2 (30-39%)- Elementary achievement	1	4
Level 3 (40-49%)- Moderate achievement	5	5
Level 4 (50-59%)- Adequate achievement	4	11
Level 5 (60-69%)- Substantial achievement	8	1
Level 6 (70-79%)- Meritorious achievement	5	1
Level 7(80-100%)-Outstanding achievement	1	0
Total	26	24

According to Tables 6.43 and 6.44, there were 2 cases of matches and 2 cases of mismatches of teaching and learning styles on level 1 of achievement. On level 2 of achievement, there was only 1 case that matched and 4 cases of mismatches in styles. On level 3 of achievement, there were equal (5) cases that matched and a mismatched in the case of these styles. On level 4 of achievement, there were 4 cases that matched and 11 cases of mismatches of teaching and learning styles. On the other hand, on level 5 of achievement, there were 8 cases that matched and 1 case of a mismatch.

Additionally, on level 6 of achievement, many cases (5) indicated a match of styles whilst there was only 1 case of a mismatch. Lastly, on level 7 of achievement, there was only one case of a match in teaching and learning styles.

• **TEACHING AND LEARNING STYLES IN SCHOOL 6**

TABLE 6.45: DISTRIBUTION OF TEACHING AND LEARNING STYLES IN SCHOOL 6

			Teaching styles and Learners' exam marks in percentages				
School 6	Learner	Learning style	teacher26	teacher27	teacher28	teacher29	teacher30
			Verbal	Verbal	Passive	Visual	Verbal
	51	Intuitive-verbal	63	71	61	54	72
	52	Active	49	62	54	41	53
	53	Intuitive	52	57	69	41	58
	54	Active-intuitive	41	67	52	48	42
	55	Verbal	72	65	58	46	44
	56	Sensory	47	57	41	38	32
	57	Active-sequential	44	52	38	29	35
	58	Verbal	49	61	25	18	60
	59	Verbal	52	63	26	38	42
	60	Intuitive-verbal	44	65	28	29	78

TABLE 6.46: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 6

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	6
Level 2 (30-39%)- Elementary achievement	0	5
Level 3 (40-49%)- Moderate achievement	4	10
Level 4 (50-59%)- Adequate achievement	1	10
Level 5 (60-69%)- Substantial achievement	5	5
Level 6 (70-79%)- Meritorious achievement	4	0
Level 7(80-100%)-Outstanding achievement	0	0
Total	14	36

In accordance with Table 6.45 and table 6.46, level 1 of achievement in school 6 was represented by 6 cases of mismatches in teaching and learning styles. On level 2 of achievement, there were 5 cases of mismatches in these styles. Again, on level 3 of achievement, there were 4 cases that matched and 10 cases of mismatches of teaching

and learning styles. At the same time, there was only 1 matching case and 10 cases that did not match on level 4 of achievement. On level 5 of achievement, there were equal cases (5) of matches and mismatches in teaching and learning styles. Additionally, on level 6 of achievement, there were 4 cases that matched and none that mismatched.

• **TEACHING AND LEARNING STYLES IN SCHOOL 7**

TABLE 6.47: DISTRIBUTION OF TEACHING AND LEARNING STYLES IN SCHOOL 7

School 7	Learner	Learning style	Teaching styles and Learners' exam marks in percentage				
			teacher31	teacher32	teacher33	Teacher 34	Teacher 35
			Active	Active	Active	Verbal	Abstract-verbal
	61	Intuitive – verbal	57	62	51	56	44
	62	Balanced	42	60	59	45	37
	63	Balanced	47	63	39	67	59
	64	Sensory	52	67	53	61	45
	65	Sensory-visual	59	50	16	40	48
	66	Intuitive	46	62	28	49	36
	67	Balanced	66	60	94	78	68
	68	Sensory	52	54	44	58	37
	69	Verbal	50	60	69	47	68
	70	Reflective	57	64	67	53	45

TABLE 6.48: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 7

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	2
Level 2 (30-39%)- Elementary achievement	2	2
Level 3 (40-49%)- Moderate achievement	5	7
Level 4 (50-59%)- Adequate achievement	3	12
Level 5 (60-69%)- Substantial achievement	6	9
Level 6 (70-79%)- Meritorious achievement	1	0
Level 7(80-100%)-Outstanding achievement	1	0
Total	18	32

In accordance with Tables 6.47 and 6.48, level 1 of achievement in school 7 was represented by 2 cases of mismatches in teaching and learning styles. On level 2 of achievement, there were equal (2) cases that matched and did not match in teaching and learning styles. On level 3 of achievement, 5 cases of matches and 7 cases of mismatches of styles were presented, whilst on level 4, there were 3 cases of matches and 12 cases of mismatches. At the same time, on level 5 of achievement, there were 6 cases of matches and 9 cases of mismatches in teaching and learning styles. With regard to level 7, only one matching case occurred.

- **TEACHING AND LEARNING STYLES IN SCHOOL 8**

TABLE 6.49: DISTRIBUTION OF TEACHING AND LEARNING STYLES IN SCHOOL 8

School 8	Learner	Learning style	Teaching styles and learners' exam marks in percentage				
			teacher36	teacher37	teacher38	teacher39	teacher40
			Verbal	Verbal	Visual	Visual	Verbal
	71	Active	44	69	47	45	56
	72	Reflective	54	73	51	47	56
	73	Sensory-global	47	52	39	46	37
	74	Reflective	44	61	41	58	47
	75	Visual-sequential	42	56	49	28	44
	76	Visual	29	42	79	47	34
	77	Visual	46	32	68	54	37
	78	Verbal	68	53	29	27	37
	79	Visual-global	18	32	19	16	35
	80	Sensory	29	55	48	37	41

TABLE 6.50: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 8

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	6
Level 2 (30-39%)- Elementary achievement	1	8
Level 3 (40-49%)- Moderate achievement	1	16
Level 4 (50-59%)- Adequate achievement	2	8
Level 5 (60-69%)- Substantial achievement	2	2
Level 6 (70-79%)- Meritorious achievement	1	1
Level 7(80-100%)-Outstanding achievement	0	0
Total	9	41

As depicted in Tables 6.49 and 6.50, there were 6 mismatched cases with regard to matching teaching and learning styles on level 1 of achievement in school 8. On level 2 of achievement, there was only 1 case that matched and 8 mismatched cases with regard to teaching and learning styles. On level 3, there was also 1 matching case and 16 mismatched cases. Additionally, level 4 of achievement was represented by 2 cases that matched and 8 cases that did not match whilst level 5 was represented by equal (2) cases of matches and mismatches. Moreover, on level 6 of achievement, there were equal (1) cases that matched and did not match.

- **TEACHING AND LEARNING STYLES IN SCHOOL 9**

TABLE 6.51: DISTRIBUTION OF TEACHING AND LEARNING STYLES IN SCHOOL 9

School 9	Learner	Learning style	Teaching styles and learners' exam marks in percentages				
			Teacher 41	Teacher 42	teacher43	Teacher 44	Teacher 45
			Visual-active	Verbal	Active	Abstract-verbal	Abstract
	81	Visual	68	42	29	44	48
	82	Global	23	52	34	31	43
	83	Active	68	57	89	44	37
	84	Visual	56	73	47	45	62
	85	Visual	76	65	45	20	52
	86	Sensory	42	65	29	44	38
	87	Active	37	53	56	30	37
	88	Visual-sequential	94	43	47	47	73
	89	Sensory	40	64	28	47	36
	90	Visual	54	94	49	58	39

TABLE 6.52: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 9

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	5
Level 2 (30-39%)- Elementary achievement	1	8
Level 3 (40-49%)- Moderate achievement	0	16
Level 4 (50-59%)- Adequate achievement	3	5
Level 5 (60-69%)- Substantial achievement	2	4
Level 6 (70-79%)- Meritorious achievement	1	2
Level 7(80-100%)-Outstanding achievement	2	1
Total	9	41

According to Tables 6.51 and 6.52, there were 5 mismatched cases with regard to matching teaching and learning styles on level 1 of achievement. On level 2 of achievement, only 1 matching case occurred, whilst there were 8 mismatched cases on the same level. Additionally, level 3 of achievement was represented by 16 mismatched cases, whilst level 4 was represented by 3 matched cases and 5 mismatched cases. Again, level 5 of achievement was represented by 2 cases that matched and 4 cases that did not match with regard to matching teaching and learning styles. At the same time, level 6 of achievement was represented by 1 matching case and 2 mismatched cases, while level 7 of achievement was represented by 2 cases that matched and 1 case that mismatched.

• **TEACHING AND LEARNING STYLES IN SCHOOL 10**

TABLE 6.53: DISTRIBUTION OF TEACHING/ LEARNING STYLES IN SCHOOL 10

			Teaching styles and learners' exam marks in percentage				
School 10	Learner	Learning style	teacher46	Teacher 47	Teacher 48	teacher49	Teacher 50
			Sequential	Sequential	Visual-active	Visual	Active-sequential
	91	Visual-global	27	42	65	59	32
	92	Sequential-reflective	86	78	18	37	35
	93	Visual-active	29	42	92	77	47
	94	Verbal-active	32	29	36	44	42
	95	Visual-global	29	27	60	48	39
	96	Active-verbal	28	42	27	30	36
	97	Sequential	50	47	29	42	54
	98	Reflective-sequential	72	66	27	23	81
	99	Visual	36	57	39	17	38
	100	Sensory	37	62	28	43	30

TABLE 6.54: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOLS 10

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	2	11
Level 2 (30-39%)- Elementary achievement	4	9
Level 3 (40-49%)- Moderate achievement	4	6
Level 4 (50-59%)- Adequate achievement	3	1
Level 5 (60-69%)- Substantial achievement	3	1
Level 6 (70-79%)- Meritorious achievement	3	0
Level 7(80-100%)-Outstanding achievement	3	0
Total	22	28

As indicated in Tables 6.53 and 6.54, level 1 of achievement in school 10 was represented by 2 matching cases and 11 mismatching cases with regard to matching teaching styles of teachers and learning styles of their learners. Level 2 of achievement was represented by 4 matching cases and 9 mismatching cases, whilst level 3 of achievement was represented by 4 cases that matched and 6 cases that did not match in teaching and learning styles. At the same time, level 4 of achievement was represented by 3 cases that matched and 1 mismatched case, whilst level 6 of

achievement was represented by 3 cases that matched. Lastly, level 7 of achievement was represented by 3 matching cases with regard to teaching and learning styles.

- **TEACHING AND LEARNING STYLES IN SCHOOL 11**

TABLE 6.55: DISTRIBUTION OF TEACHING/ LEARNING STYLES IN SCHOOL 11

			Teaching styles and learners' exam marks in percentage				
School 11	Learner	Learning style	teacher51	teacher52	teacher53	teacher54	teacher55
			Verbal	Verbal	Visual	Visual	Visual
	101	Visual-active	62	60	78	77	92
	102	Visual-active	58	63	47	59	51
	103	Active	57	65	30	35	35
	104	Sensory	45	66	35	42	38
	105	Verbal	71	62	28	31	35
	106	Intuitive	44	65	30	25	39
	107	Sensory-reflective	29	54	37	30	39
	108	Visual	37	50	64	49	60
	109	Visual	38	54	59	40	48
	110	Active	38	57	27	26	47

TABLE 6.56: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 11

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	5
Level 2 (30-39%)- Elementary achievement	0	15
Level 3 (40-49%)- Moderate achievement	4	4
Level 4 (50-59%)- Adequate achievement	3	6
Level 5 (60-69%)- Substantial achievement	3	6
Level 6 (70-79%)- Meritorious achievement	3	0
Level 7(80-100%)-Outstanding achievement	1	0
Total	14	36

From Tables 6.55 and 6.56, it is indicated that level 1 of achievement in school 11 was represented by 5 mismatched cases in relation to matching teaching and learning styles. Again, level 2 of achievement was represented by 15 cases that indicated mismatches whilst level 3 of achievement was represented by equal (4) cases that matched and did not match. Additionally, each of the levels 4 and 5 of achievement

were represented by 3 cases that matched and 6 cases that did not match. Lastly, level 6 of achievement was represented by 3 matching cases while level 7 of achievement was represented by 1 matching case with regard to matching teaching and learning styles.

- **TEACHING AND LEARNING STYLES IN SCHOOL 12**

TABLE 6.57: DISTRIBUTION OF TEACHING/LEARNING STYLES IN SCHOOL 12

			Teaching styles and learners' exam marks in percentage				
School 12	Learner	Learning style	Teacher 56	teacher57	Teacher 58	Teacher 59	Teacher60
			Verbal	Verbal	Visual	Concrete-sequential	Visual
	111	Intuitive	42	46	30	43	39
	112	Balanced	56	53	57	47	50
	113	Reflective	44	57	45	45	52
	114	Sensory	78	68	57	48	66
	115	Sensory	47	52	38	47	55
	116	Active	44	53	30	36	48
	117	Balanced	41	57	65	53	67
	118	Sensory	46	55	36	32	37
	119	Active	32	59	30	36	39
	120	sensory	34	37	30	32	37

TABLE 6.58: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 12

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	0
Level 2 (30-39%)- Elementary achievement	0	17
Level 3 (40-49%)- Moderate achievement	2	12
Level 4 (50-59%)- Adequate achievement	6	8
Level 5 (60-69%)- Substantial achievement	2	2
Level 6 (70-79%)- Meritorious achievement	0	1
Level 7(80-100%)-Outstanding achievement	0	0
Total	10	40

According to Tables 6.57 and 6.58, level 2 of achievement in school 12 was represented by 17 cases that indicated mismatches in teaching and learning styles. Again, level 3 of achievement was represented by 2 cases that indicated a match and

12 cases that indicated mismatches. Level 4 was represented by 6 cases that indicated a match and 8 cases that indicated mismatches. Additionally, level 5 was represented by equal (2) cases that indicated matches and mismatches whilst level 6 was represented by 1 mismatching case with regard to matching teaching and learning styles.

- **TEACHING AND LEARNING STYLES IN SCHOOL 13**

TABLE 6.59: DISTRIBUTION OF TEACHING/LEARNING STYLES IN SCHOOL 13

			Teaching styles and learners' exam marks in percentage				
School 13	Learner	Learning style	teacher61	teacher62	teacher63	teacher64	teacher65
			Verbal	Concrete	Visual-active	Visual	Passive
	121	Verbal	67	63	47	52	40
	122	Global	42	60	47	41	44
	123	Verbal	77	65	45	48	39
	124	Intuitive-verbal	67	59	40	47	38
	125	Sensory-visual	47	67	78	87	37
	126	Sensory	40	85	29	41	30
	127	Active	48	64	57	34	38
	128	Balanced	42	63	20	48	30
	129	Sensory	31	75	19	20	33
	130	Visual	34	56	48	40	32

TABLE 6.60: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 13

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	2	2
Level 2 (30-39%)- Elementary achievement	1	10
Level 3 (40-49%)- Moderate achievement	4	14
Level 4 (50-59%)- Adequate achievement	1	3
Level 5 (60-69%)- Substantial achievement	3	5
Level 6 (70-79%)- Meritorious achievement	3	0
Level 7(80-100%)-Outstanding achievement	2	0
Total	16	34

As depicted in Tables 6.59 and 6.60, level 1 of achievement in school 13 was represented by equal (2) matched and mismatched cases with regard to matching teaching and learning styles. Again, level 2 of achievement was represented by 1 matching case and 10 cases that indicated mismatches of teaching and learning styles, while level 3 of achievement was represented by 4 cases that matched and 14 cases that did not match in styles. Additionally, level 4 of achievement was represented by 1 matching case and 3 cases that did not match whilst level 5 of achievement was represented by 3 cases that matched and 5 cases that did not match. Lastly, level 7 of achievement in school 13 was represented by 2 cases that matched in teachers' teaching styles and learners' learning styles.

• **TEACHING AND LEARNING STYLES IN SCHOOL 14**

TABLE 6.61: DISTRIBUTION OF TEACHING/LEARNING STYLES IN SCHOOL 14

			Teaching styles and learners' exam marks in percentage				
School 14	Learner	Learning style	teacher66	teacher67	teacher68	teacher69	Teacher70
			Verbal	Verbal	Abstract	Global	Verbal
	131	Intuitive-verbal	54	61	41	47	60
	132	Intuitive	59	45	73	37	52
	133	Intuitive	41	67	89	43	59
	134	Active-verbal	77	67	20	32	61
	135	Sequential	55	52	27	38	52
	136	Sensory-sequential	43	61	19	28	44
	137	Sensory-sequential	57	65	29	26	37
	138	Sensory	59	53	44	20	57
	139	Sensory	45	65	20	25	36
	140	Sensory	38	56	21	31	53

TABLE 6.62: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 14

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	10
Level 2 (30-39%)- Elementary achievement	0	7
Level 3 (40-49%)- Moderate achievement	0	9
Level 4 (50-59%)- Adequate achievement	1	12
Level 5 (60-69%)- Substantial achievement	4	4
Level 6 (70-79%)- Meritorious achievement	2	0
Level 7(80-100%)-Outstanding achievement	1	0
Total	8	42

In accordance with Tables 6.61 and 6.62, level 1 of achievement in school 14 was represented by 10 mismatched cases with regard to matching teaching and learning styles. Additionally, level 2 of achievement was represented by 7 cases that indicated the mismatch of these styles whilst level 3 was represented by 9 cases that indicated mismatches. In level 4, there was only 1 case that matched and 12 cases that did not match in relation to teachers' teaching styles and learners' learning styles. Again, level 5 was represented by equal (4) cases that matched and did not match in teaching and learning styles, while level 6 was represented by 2 cases that matched in these styles. Lastly, level 7 of achievement was represented by 1 matching case in terms of teaching and learning styles.

• **TEACHING AND LEARNING STYLES IN SCHOOL 15**

TABLE 6.63: DISTRIBUTION OF TEACHING/LEARNING STYLES IN SCHOOL 15

School 15	Learner	Learning style	Teaching styles and learners' exam marks in percentage				
			teacher71	teacher72	teacher73	teacher74	teacher75
			Verbal	Concrete	Sequential	Global	Verbal
	141	Visual-global	57	77	48	56	64
	142	Visual-active	42	61	35	44	72
	143	Visual-global	40	65	38	81	65
	144	Sensory	48	83	47	51	44
	145	Visual	42	66	26	53	57
	146	Visual	44	61	20	44	53
	147	Visual-active	45	63	21	32	48
	148	Visual	27	52	28	19	36
	149	Visual	38	54	39	47	35
	150	Visual	46	67	26	48	32

TABLE 6.64: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 15

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	7
Level 2 (30-39%) - Elementary achievement	0	8
Level 3 (40-49%) - Moderate achievement	0	15
Level 4 (50-59%) - Adequate achievement	1	7
Level 5 (60-69%) - Substantial achievement	0	8
Level 6 (70-79%) - Meritorious achievement	0	2
Level 7 (80-100%) - Outstanding achievement	2	0
Total	3	47

From Tables 6.63 and 6.64, it is indicated that level 1 of achievement was represented by 7 cases that indicated mismatches in learners' learning styles and teachers' teaching styles in school 15. With regard to level 2, there were 8 cases that indicate the mismatch of these styles, while level 3 is represented by 15 cases that indicated mismatches. In addition, level 4 of achievement was represented by 1 case that indicated a match and 7 cases that indicated mismatches, while level 5 of achievement was represented by 8 cases of mismatches. Lastly, level 6 of achievement was represented by 2 mismatching cases while level 7 of achievement was represented by 2 cases that indicated a match in these styles.

• **TEACHING AND LEARNING STYLES IN SCHOOL 16**

TABLE 6.65: DISTRIBUTION OF TEACHING/LEARNING STYLES IN SCHOOL 16

School 16	Learner	Learning style	Teaching styles and learners' exam marks in percentage				
			teacher76	teacher77	teacher78	teacher79	teacher80
			Verbal	Sequential	Visual-active	Concrete	Verbal
	151	Visual	55	63	58	42	59
	152	Visual	42	58	67	45	46
	153	Balanced	63	67	28	44	65
	154	Visual-active	53	66	47	47	37
	155	Visual	44	48	26	41	29
	156	Sensory	43	56	20	81	52
	157	Sensory global	33	37	25	70	44
	158	Visual	41	27	17	26	42
	159	Visual-active	37	39	19	28	41
	160	Sensory	36	21	20	37	39

TABLE 6.66: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 16

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	1	11
Level 2 (30-39%) - Elementary achievement	1	7
Level 3 (40-49%) - Moderate achievement	1	15
Level 4 (50-59%) - Adequate achievement	0	6
Level 5 (60-69%) - Substantial achievement	4	2
Level 6 (70-79%) - Meritorious achievement	1	0
Level 7 (80-100%) - Outstanding achievement	1	0
Total	9	41

As depicted in Tables 6.65 and 6.66, level 1 of achievement in school 16 was represented by 1 case that indicated a match and 11 cases that indicated mismatches in teacher' teaching styles and learners' learning styles. Level 2 of achievement was represented by 1 case that indicated a match and 7 cases that indicated mismatches. Level 3 was represented by 1 case that matched and 15 cases that did not match in teaching and learning styles. Additionally, level 4 of achievement was represented by 6 mismatching cases while level 5 was represented by 4 cases that indicated a match and 2 cases that indicated mismatches of styles. At the same time, levels 6 and 7 were each represented by 1 case of matching styles.

• **TEACHING AND LEARNING STYLES IN SCHOOL 17**

TABLE 6.67: DISTRIBUTION OF TEACHING/LEARNING STYLES IN SCHOOL 17

			Teaching styles and learners' exam marks in percentage				
School 17	Learner	Learning style	Teacher 81	teacher82	Teacher 83	Teacher 84	Teacher 85
			Abstract	Verbal	Active-global	Active-verbal	Visual-active
	161	Global	43	52	71	44	67
	162	Global	53	78	32	47	63
	163	Sensory	44	69	20	29	52
	164	Active-sequential	59	63	44	63	51
	165	Visual	66	68	59	51	60
	166	Sensory	52	67	44	53	46
	167	Verbal-active	28	51	20	27	32
	168	Sensory	32	41	28	26	42
	169	Visual	68	52	49	47	41
	170	Active	33	59	66	66	71

TABLE 6.68: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 17

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	2	5
Level 2 (30-39%)- Elementary achievement	2	2
Level 3 (40-49%)- Moderate achievement	1	11
Level 4 (50-59%)- Adequate achievement	2	10
Level 5 (60-69%)- Substantial achievement	4	8
Level 6 (70-79%)- Meritorious achievement	2	1
Level 7(80-100%)-Outstanding achievement	0	0
Total	13	37

From Tables 6.67 and 6.68, it is indicated that level 1 of achievement in school 17 was represented by 2 cases that matched and 5 cases that did not match in teaching and learning styles. In level 2 of achievement, there were equal (2) cases that matched and mismatched in teaching and learning styles, while in level 3 there was only 1 case that matched and 11 cases that indicated mismatches in these styles. Additionally, level 4 was represented by 2 cases that matched and 10 cases that did not match, while level 5 was represented by 4 cases that matched and 8 cases that did not match. Lastly, there

were 2 cases that matched and 1 case that indicated a mismatch in teaching and learning styles on level 7.

- **TEACHING AND LEARNING STYLES IN SCHOOL 18**

TABLE 6.69: DISTRIBUTION OF TEACHING/LEARNING STYLES IN SCHOOL 18

School 18	Learner	Learning style	Teaching styles and learners' exam marks in percentage				
			teacher86	Teacher 87	teacher88	teacher89	Teacher90
			Verbal	Concrete-sequential	Concrete-visual	Sequential	Verbal
	171	Visual-active	57	93	95	78	76
	172	Sensory-global	41	75	59	46	65
	173	Sensory	48	59	48	46	67
	174	Verbal	55	75	37	44	76
	175	Visual	47	52	20	56	37
	176	Active	49	73	37	46	59
	177	Sensory-sequential	38	56	40	53	44
	178	Sensory	36	58	29	36	38
	179	Active	28	53	30	37	36
	180	Intuitive-verbal	41	56	37	30	43

TABLE 6.70: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 18

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	2	1
Level 2 (30-39%)- Elementary achievement	0	12
Level 3 (40-49%)- Moderate achievement	4	9
Level 4 (50-59%)- Adequate achievement	6	6
Level 5 (60-69%)- Substantial achievement	0	2
Level 6 (70-79%)- Meritorious achievement	2	4
Level 7(80-100%)-Outstanding achievement	1	1
Total	15	35

According to Tables 6.69 and 6.70, level 1 of achievement in school 18 was represented by 2 cases that indicated a match and 1 case that indicated a mismatch in teaching and learning styles. On level 2 of achievement, there were 12 cases of

mismatches of teaching and learning styles, while level 3 was represented by 4 cases of matches and 9 cases of mismatches. Additionally, level 4 of achievement was represented by equal (6) cases of matches and mismatches of these styles, while level 5 was only represented by 2 mismatches. Lastly, level 6 of achievement was represented by 2 cases of matches and 4 cases of mismatches, while level 7 was represented by equal (1) cases of a match and a mismatch.

• **TEACHING AND LEARNING STYLES IN SCHOOL 19**

TABLE 6.71: DISTRIBUTION OF TEACHING/LEARNING STYLES IN SCHOOL 19

			Teaching styles and learners' marks in percentage				
School 19	Learner	Learning style	Teacher91	teacher92	teacher93	teacher94	teacher95
			Sequential	Sequential	Active	Visual-active	Concrete
	181	Verbal	57	66	42	53	78
	182	Visual	44	69	29	63	42
	183	Sensory-visual	56	66	43	75	62
	184	Intuitive	43	72	37	36	33
	185	Intuitive-verbal	36	71	31	36	38
	186	Visual	28	64	42	72	58
	187	Sequential	77	71	29	20	36
	188	Sensory	38	62	44	29	61
	189	Visual	47	37	47	45	41
	190	Visual-global	44	42	46	63	48

TABLE 6.72: MATCHING OF STYLES AND ACHIEVEMENT IN SCHOOL 19

Levels of achievement	Frequency of matches	Frequency of mismatches
Level 1 (0-29%) - Not achieved	0	5
Level 2 (30-39%)- Elementary achievement	0	10
Level 3 (40-49%)- Moderate achievement	1	14
Level 4 (50-59%)- Adequate achievement	0	4
Level 5 (60-69%)- Substantial achievement	4	5
Level 6 (70-79%)- Meritorious achievement	3	4
Level 7(80-100%)-Outstanding achievement	0	0
Total	8	42

In accordance with Tables 6.71 and 6.72, level 1 of achievement in school 19 was represented by 5 mismatching cases in teaching and learning styles. Additionally, there were 10 cases of mismatches of styles on level 2 of achievement, while level 3 of achievement was represented by only 1 case that matched and 14 mismatching cases. Moreover, level 4 of achievement was represented by 4 mismatching cases, while level 5 was represented by 4 cases that matched and 5 cases that did not match in teaching and learning styles. At the same time, level 6 of achievement was represented by 3 cases that matched and 4 cases that did not match of teaching and learning styles.

- MATCHING OF TEACHING AND LEARNING STYLES AND ACADEMIC ACHIEVEMENT IN ALL RURAL SECONDARY SCHOOLS OF LESOTHO**

TABLE 6.73: MATCHING OF STYLES AND ACADEMIC ACHIEVEMENT IN ALL SCHOOLS

Levels of achievement	Matches		Mismatches	
	f	%	F	%
Level 1 (0-29%) - Not achieved	14	5.8	96	13.5
Level 2 (30-39%)- Elementary achievement	14	5.8	139	19.6
Level 3 (40-49%)- Moderate achievement	43	17.8	217	30.6
Level 4 (50-59%)- Adequate achievement	49	20.3	143	20.2
Level 5 (60-69%)- Substantial achievement	63	26.1	88	12.4
Level 6 (70-79%)- Meritorious achievement	38	15.8	24	3.4
Level 7(80-100%)-Outstanding achievement	18	7.5	2	0.3
Total	241	100	709	100

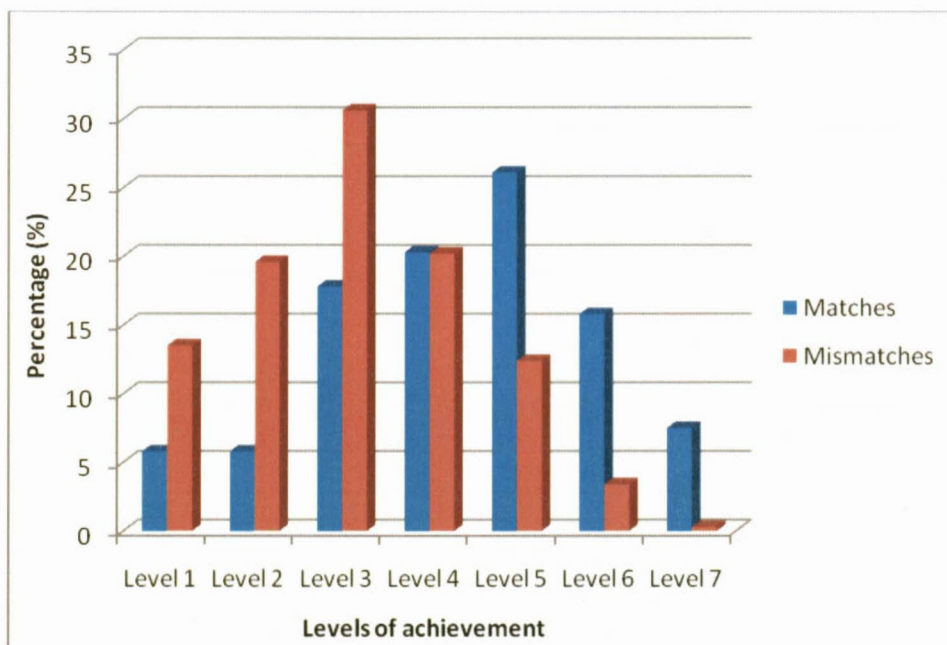


FIGURE 6.25: MATCHING OF TEACHING AND LEARNING STYLES IN ALL SCHOOLS

According to Table 6.74 and Figure 6.26, level 1 of achievement (not achieved) was represented by 5.8% matching cases and 13.5% mismatching cases of teaching and learning styles in rural schools of Lesotho. On level 2 of achievement (elementary achievement), there were 5.8% matching cases and 19.6% mismatching cases in teaching and learning styles. On level 3 of achievement (moderate achievement), there

were 17.8% matching cases and 30.6% mismatching cases of teaching and learning styles. On level 4 of achievement (adequate achievement), there were 20.3% of matching cases and 20.2% of mismatching cases in teaching and learning styles. Again, on level 5 (substantial achievement), there were 26.1% matching cases and 12.4% of mismatching cases with regard to matching teaching and learning styles. Moreover, on level 6 of achievement (meritorious achievement), there were 15.8% matching cases and 3.4% of mismatching cases while level 7 (outstanding achievement) was represented by 7.5% of matching cases and 0.3% of mismatching cases.

TABLE 6.74: SUMMARY OF ALL MATCHING AND MISMATCHING STYLES

Teaching and learning styles	Frequency	Percentage
Match	241	25.4
Mismatch	709	74.6
Total	950	100

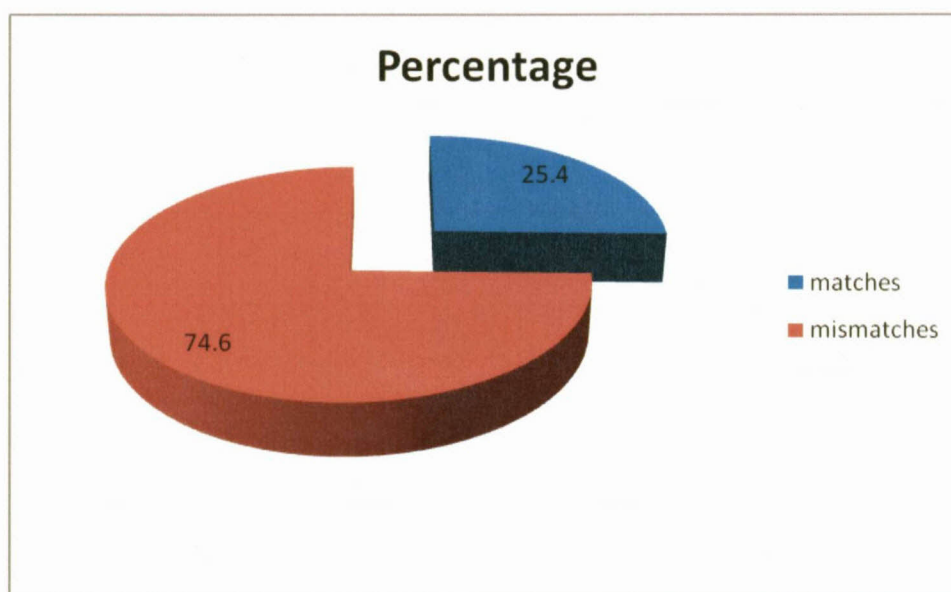


FIGURE 6.26: DISTRIBUTION OF ALL MATCHING AND MISMATCHING STYLES

According to Table 6.73 and Figure 6.25, there were 74.6% mismatching cases and 25.4% matching cases of teaching and learning styles in the rural secondary schools of Lesotho.

6.6 STRATEGIES TO IMPROVE KNOWLEDGE AND ACCOMMODATION OF LEARNING STYLES IN THE RURAL SECONDARY SCHOOLS OF LESOTHO

The data presentation in this section was in relation to the strategies that could be employed to help teachers to acquire adequate knowledge on teaching to individual learning styles. Questions 2.1 to 2.5 were asked to gather information with respect to these strategies.

QUESTION 2.1: INFORMATION-SHARING SESSIONS

TABLE 6.75: INFORMATION-SHARING SESSIONS

Response	Frequency	Percent	Valid percentage	Cumulative percent
most important strategy	47	49.5	52.8	52.8
least important strategy	33	34.7	37.1	89.9
Unimportant strategy	9	9.5	10.1	100
Total	89	93.7	100	
Missing	6	6.3		
Total	95	100		

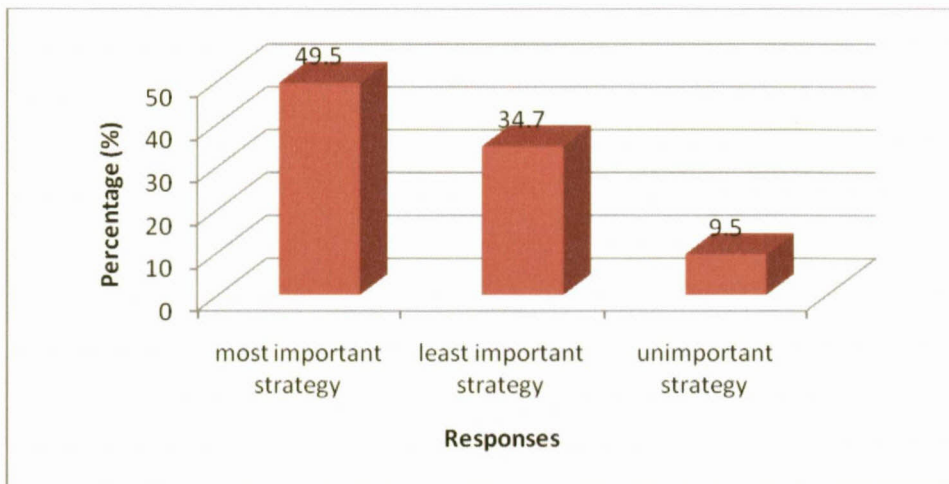


FIGURE 6.27: INFORMATION-SHARING SESSIONS

In accordance with Table 6.75 and Figure 6.27, 49.5% of the teacher respondents indicated that information-sharing sessions form the most important strategy of improving teachers' knowledge on learning styles in the rural secondary schools of Lesotho. Moreover, 34.7% of the teachers pointed out that this strategy was the least important, whilst 9.5% of the teachers said it was unimportant to use information-sharing sessions.

QUESTION 2.2: LEARNER-CENTERED CURRICULUM

TABLE 6.76: LEARNER-CENTERED CURRICULUM

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
most important strategy	56	58.9	61.5	61.5
least important strategy	29	30.5	31.9	93.4
Unimportant strategy	6	6.3	6.6	100
Total	91	95.8	100	
Missing	4	4.2		
Total	95	100		

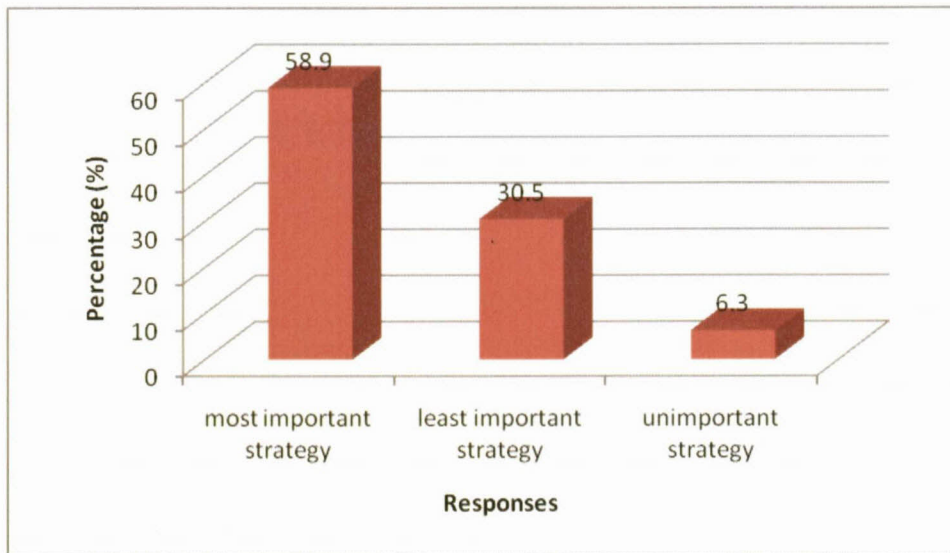


FIGURE 6.28: LEARNER-CENTERED CURRICULUM

The majority (58.9%) of the teachers asserted that learning styles knowledge and individual learning styles could be accommodated mostly by the learner-centered curriculum. Additionally, 30.5% of the teachers indicated that the learner-centered curriculum was the least important strategy. On the other hand some teachers (6.3%) considered this strategy to be unimportant.

QUESTION 2.3: PROVISION OF TEACHING MANUAL ON LEARNING STYLES

TABLE 6.77: PROVISION OF TEACHER MANUAL

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
most important strategy	49	51.6	54.4	54.4
least important strategy	33	34.7	36.7	91.1
unimportant strategy	8	8.4	8.9	100
Total	90	94.7	100	
missing	5	5.3		
Total	95	100		

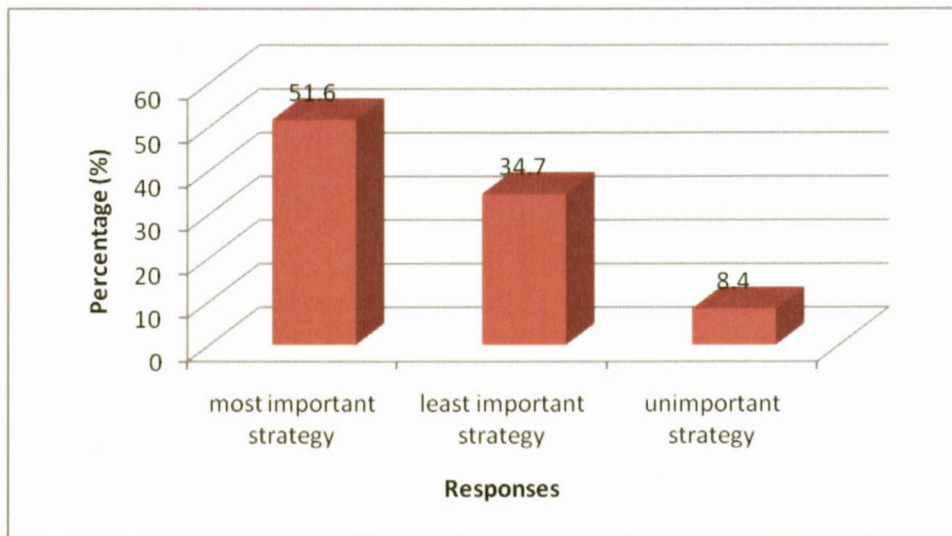


FIGURE 6.29: PROVISION OF TEACHER MANUAL

Both Figure 6.29 and Table 6.77 indicate that most teachers (51.6%) pointed out the provision of a teacher's manual as the most important strategy in providing teachers with knowledge on accommodating learners' individual learning styles. At the same time, 34.4% of the teachers asserted that providing teachers with manuals was the least important strategy, while 8.4% of the teachers were of the opinion that this strategy was unimportant.

QUESTION 2.4: FURTHER STUDIES

TABLE 6.78: FURTHER STUDIES

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
most important strategy	47	49.5	54	54
least important strategy	34	35.8	39.1	93.1
unimportant strategy	6	6.3	6.9	100
Total	87	91.6	100	
Missing	8	8.4		
Total	95	100		

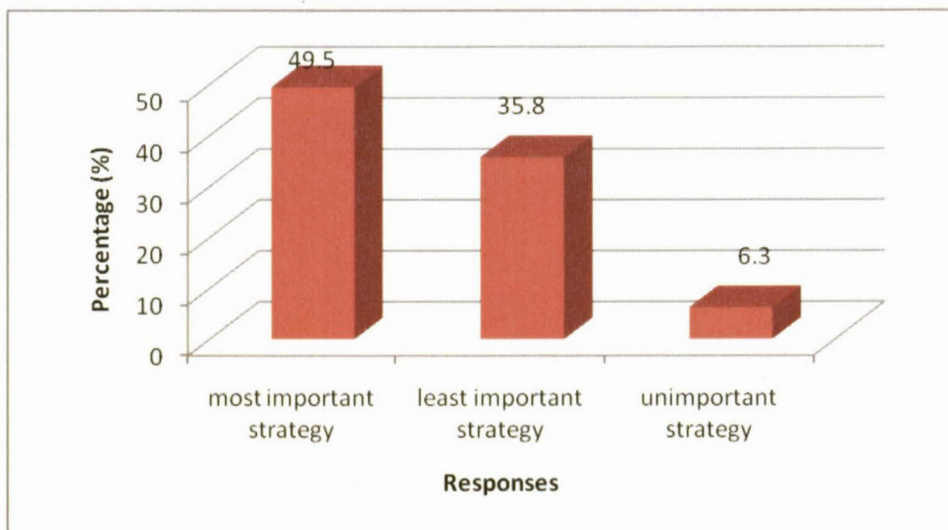


FIGURE 6.30: FURTHER STUDIES

The responses in Figure 6.30 and Table 6.78 indicate that 49.5% of the teachers were of the opinion that furthering their studies could improve knowledge on learning styles and that, in turn, could enable them to accommodate individual learning styles in their classes. In addition, 35.8% of the teachers said further studies could help to improve knowledge on learning styles, but this strategy was the least important. On the contrary, 6.3% of the teachers contended that this strategy was unimportant.

QUESTION 2.5: STAFF DEVELOPMENT SESSIONS

TABLE 6.79: STAFF DEVELOPMENT SESSIONS

Response	Frequency	Percentage	Valid percentage	Cumulative percentage
most important strategy	40	42.1	45.5	45.5
least important strategy	33	34.7	37.5	83
unimportant strategy	15	15.8	17	100
Total	88	92.6	100	
Missing	7	7.4		
Total	95	100		

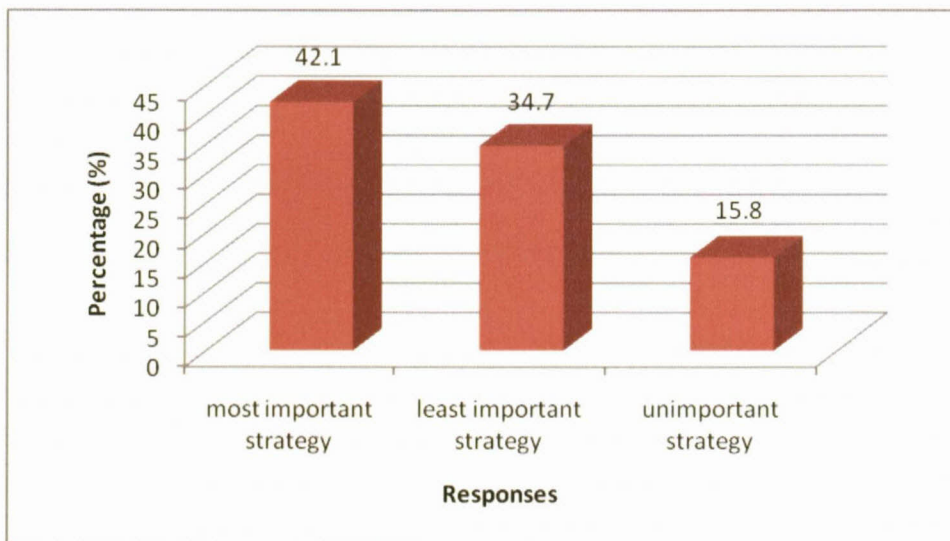


FIGURE 6.31: STAFF DEVELOPMENT SESSIONS

Some teachers (42.1%), as indicated in Table 6.79 and Figure 6.31, asserted that staff development sessions were most important in providing teachers in the rural secondary schools of Lesotho with adequate knowledge on learning styles. In addition, 34.7% of the teachers said these sessions were the least important, whilst 15.8% indicated that they were unimportant.

From the tables and figures in this section, data has presented on different strategies that could be employed to improve teachers' knowledge on learning styles and to effectively engage teachers in addressing individual learning styles in their classes.

Table 6.80 illustrates data on this information, clearly indicating differences in all strategies.

TABLE 6.80: SUMMARY OF STRATEGIES OF IMPROVING LEARNING STYLE KNOWLEDGE IN LESOTHO

Strategies	Most important	Least important	Unimportant
	%	%	%
Information-sharing sessions	49.5	34.7	9.5
Learner-centered curriculum	58.9	30.5	6.3
Teacher manual	51.6	34.7	8.4
Further studies	49.5	35.8	6.3
Staff development sessions	42.1	34.7	15.8

From Table 6.80 above, the majority (58.9%) of the teachers asserted that the learner-centered curriculum could effectively increase teachers' knowledge and accommodation of learning styles in class. Secondly, teachers (51.6%) contended that the provision of a teacher's manual could be the most important strategy regarding this issue of addressing individual learning styles. Thirdly, further studies were considered by some teachers (49.5%) to be the most important strategy. With regard to information sharing sessions and staff development sessions, teachers (49.5% and 42.1%) respectively, were of the opinion that these strategies were the most important in promoting teachers' learning style knowledge.

6.7 CONCLUSION

The empirical findings indicated that many teachers (43.2%) in the rural secondary schools of Lesotho did not have adequate knowledge on teaching and learning styles. As for those teachers (56.8%) who had adequate knowledge, the implementation of learning style instruction was a problem as a result of certain factors. The findings also included data on the dominant teaching styles and predominant learning styles in these schools. Moreover, it was indicated in the findings that there were many cases in which teachers' teaching styles did not match their learners' learning styles. Lastly, teachers had suggested ways that could be employed to promote their knowledge on learning styles and address their learners' learning styles. In the next chapter, these findings will be discussed.

CHAPTER 7

DISCUSSION OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

7.1 INTRODUCTION

The main aim of the study was to improve the academic achievement of learners in the rural secondary schools of Lesotho, by matching teaching and learning styles. This study was undertaken by means of a literature study and an empirical investigation, from which certain findings and recommendations can be made based on the data that was collected. The findings are discussed with regard to the research questions by considering both the literature and the empirical results. In an attempt to improve the academic achievement of learners in the rural secondary schools of Lesotho, recommendations and conclusions are drawn from these findings.

7.2 FINDINGS

In this section, findings are discussed in accordance with the order and content required to address the research questions of this study.

7.2.1 Do teachers have adequate knowledge about teaching and learning styles in order to direct their teaching to learning styles of their learners?

7.2.1.1 Knowledge about teaching and learning styles.

From the empirical investigation, only 56.8% of the teachers indicated that they had knowledge about learning styles (cf. Table 6.12 & Figure 6.9) while 62.9% of the teachers said they had enough knowledge about teaching styles (cf. Table 6.14 & Figure 6.11). Knowledge of learning styles would imply that the teacher also knew the

factors that could influence the development of learning styles (cf. 2.5). Only 53.7% of the teacher respondents (cf. Table 6.19) indicated that they had knowledge of the factors that could influence these styles. These empirical findings implied that about half of the teachers in the rural secondary schools of Lesotho had little or no knowledge about the teaching and learning style literature. Despite the large number of teachers who did not have enough knowledge on teaching and learning styles, 97.9% of the teacher respondents (cf. Table 6.17) indicated that knowledge of learning styles was very important for teachers. Knowledge about teaching and learning styles provides the teacher with a basis for the selection of teaching/learning materials and methods, procedures for grouping, and ways to individualize instruction (cf. 2.6, 3.5 & 3.6).

The percentages above indicated that there were many teachers in the rural secondary schools of Lesotho, who were going into the classrooms to teach while they had limited or no knowledge about the different styles of teaching and learning. These teachers could be lacking knowledge that could enable them to identify their own teaching styles and their learners' learning styles, and also could enable them to provide appropriate instruction that matched these styles to improve academic achievement (cf. 2.6.2, 3.6 & 4.3.3.3).

Most teachers (81.6%) in the rural secondary schools of Lesotho indicated that effective teaching could be enhanced by matching teaching and learning styles (cf. Table 6.20 & Figure 6.17). In accordance with the literature, effective teaching could be improved by using teaching styles that addressed the learning styles of the learners (cf. 2.6.5, 3.3 & 3.4.3). These findings implied that teachers needed to direct their teaching to the learning styles of their learners to promote teaching and learning.

7.2.1.2 Need for training

With regard to training, 53.6% of the teachers disagreed and 5.3% strongly disagreed as to having sufficient training to teach learners with different learning styles (cf. Table 6.15, Figure 6.12 & 4.3.3.2). At the same time, the majority (81.1% and 16.8%) of the teachers were of the opinion that special training in learning styles was required for

teachers in order to address their learners' learning styles (cf. Table 6.21, Figure 6.18 & 6.3.4). This training might need to be done in light of the educational qualifications of teachers in the rural secondary schools of Lesotho.

- **Academic qualification**

Most teachers (34.7%) asserted that they had the first degree in the subjects they taught. Furthermore, 33.7% of the teachers held a diploma, whilst 23.2% had certificates. Moreover, 6.3% of the teachers were teaching with a high school qualification (cf. Table 6.6 & Figure 6.4). These results indicate that only a few teachers held a university degree. Some teachers had a diploma, which implied that they might have enough knowledge of the content they taught. On the other hand, teachers with certificates and high school qualification might be lacking regarding knowledge of the subjects they teach and as such that they might find it difficult to handle new material or address individual learning styles (cf. 3.4.1 & 4.3.3.2).

- **Teaching experience**

The majority (57.9%) of the teachers had teaching experience that ranged between 1 and up to 10 years. Teachers that had teaching experience between 11 and 20 years were represented by 29.5%. The most experienced teachers with 21 to 30 years and above 30 years in teaching, were represented by a lower number of teachers (9.5% and 1.1%) respectively (cf. Table 6.7 & Figure 6.5). The empirical results indicated that most teachers had little teaching experience. In accordance with the literature, training in teaching and learning styles might help these teachers to understand their learners better, to be able to direct their teaching to the styles of learners with ease (cf. 2.5.1.4, 2.6 & 3.4.3).

- **Professional qualification**

Only a few teachers (3.2%) had post-graduate degrees in teaching. Some teachers (27.4%) indicated that they had diplomas in teaching, whilst 21% had degrees. Again, 24.2% of the teachers had teaching certificates while 24.2% of the teachers did not have the teaching qualifications (cf. Table 6.8 & Figure 6.6).

The latter implies that these teachers did not have knowledge in teaching and learning styles unless they were given special training (cf. 1.2 & 4.3.3.2). Considering the number of teachers (cf. Table 6.15, Figure 6.12 & 7.2.1.2) who indicated that they were insufficiently trained in learning styles, it seemed that even those teachers who had teaching qualification did not have enough knowledge on teaching and learning styles.

7.2.1.3 Factors or problems that inhibit the accommodation of learning styles in the rural secondary schools of Lesotho

- **Overcrowded classes**

The vast majority (72.6%) of teachers were of the opinion that overcrowded classes inhibited the use of instruction that could address the individual learning styles of all learners in their classes. Some teachers (16.8%) indicated that although overcrowding affected their teaching with regard to learning styles, this influence was limited to a small extent. A small number of teachers (9.5%) asserted that overcrowded classes had no influence in addressing learning styles (cf. Table 6.22, Table 6.28 & Figure 6.19). These results indicated that overcrowding was a serious problem for most of the teachers in the rural schools of Lesotho, which in turn, could be the reason for low academic achievement of learners (cf. 4.3.3.4).

- **Too much subject content and time pressure**

The vast majority (69.5%) of teachers indicated that too much subject content and time pressure by a large extent, did not allow them to teach to their learners' learning styles. At the same time, 26.3% of the teachers pointed out that it was only to a small extent that the subject content and time pressure influenced their teaching with regard to learning styles. Additionally, 3.2% of the teachers on the other hand indicated that they were not affected by subject content or time pressure (cf. Table 6.23, Table 6.28 & Figure 6.20). From these results, it seemed that there was too much subject content in the curriculum of Lesotho, to

such an extent that teachers were pressured by time to complete the content. In turn, this problem did not allow teachers to address the learning styles of their learners (cf. Figure 6.15 & 2.5.1).

- **Following the strict syllabus**

With regard to the syllabus, 50.5% of the teachers in the rural secondary schools of Lesotho were of the opinion that the strict syllabus to a large extent influenced teaching to the learning styles. In addition, 37.9% of the teachers indicated that the influence was to a small extent, while other teachers (10.5%) said it did not influence the way they taught with regard to learning styles (cf. Table 6.24, Table 6.28 & Figure 6.21). The results indicated that almost half of the teachers felt that the syllabus was too strict and did not leave room for the accommodation of individual learning styles (cf. 2.3.5 & 4.3.3.7).

- **Preparing learners for standardized external exams**

With regard to external exams, 38.9% of the teachers in the rural secondary schools of Lesotho asserted that preparing learners for the standardized external exams could largely affect the attempts of addressing the individual learning styles of their learners. In addition, 41.1% of the teachers said this influence was only so to a small extent while some teachers (18.9%) said it was not affecting them at all (cf. Table 6.25, Table 6.28 & Figure 6.22). These results imply that to some extent, the standardized external examinations also negatively influenced the teachers' attempts to accommodate individual learning styles in their classes. This could mean that these teachers spent most of the teaching time preparing and drilling learners for the external examinations, while depriving learners of an environment of meaningful learning and the development of critical-thinking skills (cf. 2.3.5, 3.4.1 & 4.3.3.3).

- **Use and availability of various teaching aids**

Most teachers (50.5%) asserted that the use and availability of teaching aids influenced teaching learners with regard to their learning styles. In addition,

37.9% of the teachers indicated that the influence was to a small extent. On the other hand, 10.5% of the teachers differed in that they said that the use and availability of teaching aids did not affect them in addressing individual learning styles (cf. Table 6.26, Table 6.28 & Figure 6.23). Therefore, it seems that the secondary schools in the rural areas of Lesotho did not have enough teaching aids that would otherwise help teachers to address the learning styles and needs of learners, and thus improve academic achievement (cf. 2.5.1.4 & 4.3.3.1).

- **Knowledge of the learning process**

Some teachers (42.1%) in the rural secondary schools of Lesotho were of the opinion that knowledge of the learning process influenced their attempts to teach to their learners' individual learning styles. At the same time, some teachers (38.9%) asserted that this influence was only to a small extent, while a few teachers (16.8%) said that this knowledge was not influential (cf. Table 6.27, Table 6.28 & Figure 6.24). According to these results, knowledge of the learning process was the least influential factor in addressing learning styles of learning in the rural secondary schools of Lesotho. This implies that teachers might be feeling they have enough knowledge of the learning process.

From the above findings, overcrowding (72.6%) seemed to be the biggest problem of teachers in the rural secondary schools of Lesotho with regard to attempts to accommodate learners' individual learning styles. Secondly, too much subject content and time pressure (69.5%) also largely affected measures of addressing learning styles. Thirdly, the strict syllabus and availability of teaching aids (50.5%) had strong influences on learning styles. Knowledge of the learning process (42.1%) and preparing for the external examinations (38.9%) also influenced the accommodation of learning styles. In addition, teachers identified some problems that also impacted negatively on the attempts to address individual learning styles. These problems were: lack of knowledge on learning styles, the use of English as a language of instruction and lack of learners' motivation to participate in the learning process (cf. 2.4.2.1, 2.6.2, 4.3.1.2, 4.3.3.5 & 6.3.4).

7.2.2 What are the predominant learning styles of learners and dominant teaching styles of teachers in the rural secondary schools of Lesotho?

The literature and empirical findings in relation to the predominant learning styles and the dominant teaching styles are discussed in this section.

7.2.2.1 Dominant learning styles

The empirical findings indicated that most (94.7%) of the learners in the rural secondary schools had only one or two dominant learning styles. Within this 94.7% category of learners, 66.4% of them had only one or single predominant learning styles (cf. Table 6.29). The literature findings coincide with regard to this idea in that people can have combinations of learning styles, but only one or two styles are normally dominant (cf. 2.2.3 & 2.4.2.2). Again, in comparison with other learning styles, the sensory learning style was used by most of the learners (18.4%). The visual learning style was the second most dominant learning style as 15.8% of the learners made use of the visual learning style. Thirdly, 10 % of the learners used the active style, which made it the third dominant learning style. Fourthly, 9.5% of the learners used the verbal learning style, while 5.3% of the learners used the intuitive learning style. This implies that there were five mostly used learning styles in the rural secondary schools of Lesotho. All other styles were represented by a low percentage of learners (less than 5% per style). Teachers should, however, use teaching styles that match all the learning styles in their classes, regardless of how many learners have the same style. At the same knowledge of the frequency of learning styles can help the teacher to group learners according to their preferences when assigning assignments (2.4.2.4, 3.5.1 & 3.6).

7.2.2.2 Dominant learning styles and gender

The literature and empirical findings indicated that there were differences in the learning styles of males and females (cf. 2.5.1.1 & Table 6.30). The empirical findings indicated that 15.9 % of the sensory learners were males whilst 20.6% of the sensory learners

were females. Further, 14.8% of visual learners were males, whilst 16.6% of the visual learners were females. Additionally, only 4.6% of the verbal learners were males, while 13.7% of the verbal learners were females. Moreover, 11.4 % of the active learners were males, while 8.8% of the active learners were females (cf. Table 6.30). These empirical findings imply that males were more inclined to the active learning style, while the females were inclined to the verbal and sensory learning styles (2.5.1.1 & 2.5.1.5).

7.2.2.3 Dominant learning styles and age

From the empirical study, the findings indicated no significant differences in learning styles of learners in the rural secondary schools of Lesotho (cf. Table 6.31). These findings implied that there were no significant changes in learning styles in the range of 14 to 24 years of age. On the other hand, the literature findings indicated that the abstract learning style dominated in the case of learners of 18 years of age and above (cf. 2.5.1.2). This not may imply that there were other factors, such as parenting styles in the rural areas of Lesotho, that influenced the development of learning styles of the learners (cf. 2.5.1.3 & 2.5.2)

7.2.2.4 Dominant teaching styles

Empirical findings indicated that most teachers (27.3%) used the verbal teaching style and this made it the most dominant teaching style in the rural secondary schools of Lesotho. The second dominant teaching style was the visual one, as 18% of the teachers used the visual teaching style. In the third place was the active teaching style because 12.6% of the teachers used the active teaching style. The fourth dominant teaching style was sequential because 8.4% of the teachers used the sequential teaching style. In the fifth place was the combination of the active and the visual teaching styles, because the empirical findings indicated that 7.4% of the teachers used the active-visual teaching style. Other mostly used teaching styles included the abstract, concrete and global teaching styles (cf. Table 6.31).

7.2.2.5 Dominant teaching styles and gender

From the empirical findings, the only significant differences in the relationship of dominant teaching styles and age were in the verbal and visual teaching styles. These findings indicated that most female teachers (39.6%) used the verbal teaching style, while there were only 11.9% of the male teachers who used the verbal style. On the other hand, most male teachers (31%) used the visual teaching style, whilst only 9.4% of the female teachers used the visual style (cf. Table 6.32). The implication of these findings is that most male teachers in the rural secondary schools used the visual teaching style while most female teachers used the verbal teaching style. There was also a relationship of styles in the case of female teachers and learners in that most of the female teachers used the verbal teaching style and most learners used the verbal learning styles. Therefore it might be possible that these female teachers were using the teaching style that corresponded with the learners' own learning styles (cf. 2.6.2 & 3.2.4).

7.2.2.6 Dominant teaching styles and age

From the empirical study, the most significant differences in teaching styles and age were found in the most dominant styles (cf. Table 6.33 & Table 6.31). In these findings, 40% of the abstract style was used by teachers between the ages of 31 and 40 years of age, whilst 20% of the teachers who were between the ages of 21 and 30 years, used this style. In this case, it can be concluded that the tendency to use the abstract teaching style was in the range of 31-40 years. With regard to the sequential style, 37.5% of the teachers were in the range of 31-40 years of age, whilst there were 25% of teachers in the ranges of 21-30 years and 41-50 years of age. This implies that middle-aged teachers (31-40 years) tended to use the sequential teaching style than other teachers and other teaching styles. In relation to the visual style, teachers in the range of 21-40 years of age tended to use the visual teaching style more than teachers of other ages. With regard to the active style, 41.7% of the teachers were in the range of 21-30 years of age, while 33.3% and 8.3% of the teachers were in the ranges of 31-40 and 41-50 years of age respectively. This implies that young teachers tended to use the

active teaching style more than older teachers. In other words, the cases of using the active teaching style decreased with the increase in age of teachers.

7.2.3 To what extent does matching teaching and learning styles improve learners' academic achievement?

From the empirical findings (cf. Table 6.73 & Figure 6.25), level 1 of achievement (not achieved) in the rural secondary schools of Lesotho was represented by 5.8% matching cases and 13.5% mismatching cases of teaching and learning styles. These figures indicated a huge number of mismatches that inhibited the academic achievement of learners. On level 2 of achievement (elementary achievement), there were 5.8% matching cases and 19.6% mismatching cases in teaching and learning styles. These findings showed that many learners in the elementary achievement level experienced many mismatches in their teachers' teaching styles and their own learning styles, and thus performed poorly.

On level 3 of achievement (moderate achievement), there were 17.8% matching cases and 30.6% mismatching cases of teaching and learning styles. This level of achievement was represented by many matching and mismatching cases in relation to teaching and learning styles. There were, however, more mismatches than matches, which implied that many learners experienced conflicts in the way they learned and the way they were taught. This situation could be the cause of low academic achievement (cf. 3.6 & 3.7)

On level 4 of achievement (adequate achievement), there were 20.3% of matching cases and 20.2% of mismatching cases in teaching and learning styles. Again, on level 5 (substantial achievement), there were 26.1% of matching cases and 12.4% of mismatching cases with regard to matching teaching and learning styles. Moreover, on level 6 of achievement (meritorious achievement), there were 15.8% of matching cases and 3.4% of mismatching cases while level 7 (outstanding achievement) was represented by 7.5% of matching cases and 0.3% of mismatching cases.

From level 4 to level 7 of achievement, which could be considered to be above the margin of success, there were 69.7% of matching cases and 36.3% of mismatching cases. From these figures, there were 33.4% more matching cases. In addition, from levels 1 up to 3 of achievement (below 50%), there were 34.3% more mismatching cases. This trend of differences indicated that matching teaching and learning styles enhanced learners' academic achievement to a large extent (cf. 3.6, 3.7 & 4.3.3.3).

Lastly, the empirical findings of this study indicated that there were 74.6% of totally mismatched cases and 25.4 % of totally matched cases of teaching and learning styles in the rural secondary schools of Lesotho. These figures implied that the majority of the teachers in these schools did not match their teaching styles with the learning styles of their learners.

7.2.4 What strategies can be deduced from these research findings to help in addressing learning styles of learners in the rural secondary schools of Lesotho?

7.2.4.1 Information-sharing sessions

From the empirical findings, 49.5% of the teacher respondents indicated that information-sharing sessions formed the most important strategy of improving teachers' knowledge on learning styles in the rural secondary schools of Lesotho. Additionally, 34.7% of the teachers pointed out that this strategy was the least important, while 9.5% said it was unimportant to use information-sharing sessions (cf. Table 6.75 & Figure 6.27). These findings indicated that about half of the teacher respondents were of the opinion that information-sharing sessions were very important. This implied that this strategy could be of benefit to teachers in terms of providing knowledge on teaching and learning styles.

7.2.4.2 Learner-centered curriculum

The majority (58.9%) of the teachers asserted that learning styles knowledge and individual learning styles could be accommodated mostly by the learner-centered curriculum. Again, 30.5% of the teachers indicated that the learner-centered curriculum was the least important strategy. On the other hand some teachers (6.3%) considered this strategy to be unimportant (cf. Table 6.76 & Figure 6.28). These empirical findings correlated with the literature in that the learner-centered curriculum is essential for guiding teachers to use teaching methods and styles that can develop creativity, independence and also address individuals' learning styles (cf. 2.3.5, 3.4.2, 3.4.3, 3.5.2 & 4.3.3.7).

7.2.4.3 Provision of teacher manual on learning styles

Most teachers (51.6%) pointed out that the provision of a teacher manual as the most important strategy in providing teachers with knowledge on accommodating learners' individual learning styles. At the same time, 34.7% of the teachers asserted that providing teachers with manuals was the least important strategy, while 8.4% of the teachers were of the opinion that this strategy was unimportant (cf. Figure 6.29 & Table 6.77). These empirical findings indicated that many teachers (total of 86.3%) were of the opinion that the provision of a teacher guide/manual in the rural schools of Lesotho could be very important to teachers in acquiring knowledge on accommodating their learners' learning styles, while 8.4% of the teachers did not agree with this notion.

7.2.4.4 Further studies

The empirical findings indicated that 49.5% of the teachers were of the opinion that furthering their studies could improve knowledge on learning styles and that, in turn, could enable them to accommodate individual learning styles in their classes. In addition, 35.8% of the teachers said further studies could help to improve knowledge on learning styles, but this strategy was the least important. On the contrary, 6.3% of the teachers contended that this strategy was unimportant (cf. Table 6.78 & Figure 6.30).

These findings indicated that a good number of teachers asserted and realized the need to further their studies in order to gain knowledge on learning styles (cf. 4.3.3.2).

7.2.4.5 Staff development sessions

From the empirical findings, 42.1% of teachers asserted that staff development sessions were most important in providing teachers in the rural secondary schools of Lesotho with adequate knowledge on learning styles. Again, 34.7% of the teachers said these sessions were the least important, while 15.8% of the teachers indicated that they were unimportant (cf. Table 6.79 & Figure 6.31). This strategy seemed to be the least important when considering the number of teachers who thought they could benefit from staff development with regard to other strategies.

In light of the above findings, it can be concluded that the learner-centered curriculum might be the most effective strategy that could increase teachers' knowledge about learning styles and help teachers to accommodate learners' learning styles in the rural secondary schools of Lesotho. Secondly, the provision of a teacher's manual was the second most-important strategy in addressing individual learning styles. Thirdly, further studies were ranked as the third most-important form of strategy in addressing these styles. The information-sharing sessions and staff development sessions were considered to be the least important in promoting teachers' learning style knowledge and addressing learning styles (cf. Table 6.34).

The literature review and empirical findings discussed above indicate that the research objectives of this study have been achieved. These objectives were: to determine whether teachers have adequate knowledge with regard to teaching and learning styles to direct their teaching to their learners' learning styles; to identify the predominant characteristic learning styles of learners and teaching styles of teachers in the rural secondary schools of Lesotho; to find the extent to which matching teaching and learning styles improve learners' academic achievement; and to provide a teacher's guide/manual in assessing and accommodating different learning styles in one class.

7.3 RECOMMENDATIONS

Since the literature and empirical findings of this study have been outlined and discussed, some recommendations can be made with regards to the research questions.

7.3.1 Teaching and learning style knowledge

Most teachers in the rural secondary schools of Lesotho seem to have limited knowledge on teaching and learning styles, while for some teachers, who have enough of this knowledge their attempts to address individual learning styles are affected by some inhibiting factors. In this respect, it is recommended that:

- Student-teachers should be given intensive guidance and training in teaching and learning styles at the universities and colleges. This is to ensure that teachers already possess knowledge in learning styles when they are employed at schools (cf. 2.6.2 & 4.3.3.2).
- Attempts to teach to learners' learning styles should be one of the main aspects when assessing student-teachers that are in teaching practice (cf. 2.6.2 & 3.6). This assessment should be done with regards to lesson planning, presentation and learner assessment, which cater for individual learning styles of learners (cf. Chapter 8).
- In-service training workshops in learning styles should be provided for unqualified teachers. All graduate teachers should also enroll in these workshops within the first year of their employment (cf. 2.6.2, 4.3.3.2 & 7.2.1.2).
- The NCDC in Lesotho should review the subject syllabus and reduce the content and incorporate activities and objectives that are relevant to learners with different learning styles. The syllabus should provide opportunity for a variety of

activities such as group-work, individual experiments, and guided projects, that are learner-centered (cf. 3.4.2, 4.3.3.7 & 7.2.1.3)

- Lesotho Ministry of Education should provide schools with resources, such as teaching aids, classrooms, libraries, and laboratories to ensure that teachers have the necessary resources to teach their learners. This will ensure that there are adequate teaching materials and space for addressing individual learning styles in classes (cf. 2.5.2.2, 4.3.3.1 & 7.2.1.3).
- Learners should be provided with a strong foundation in the English language, because communication in English inhibits the effectiveness of instruction for learners in the rural schools of Lesotho. At the same time, teachers who teach subjects other than the English language should receive intensive training in Basic English communication skills (cf. 4.3.3.5 & 7.2.1.3).

7.3.2 Predominant teaching and learning styles

Teachers can differ in the teaching styles they use, normally with a teacher using one or two predominant teaching styles. In the same manner, learners can also possess one or two dominant learning styles (cf. 2.2.3 & 2.4.2.2). In this respect, it is recommended that:

- Teachers in the rural schools of Lesotho should be provided with the instruments they can use for measuring their teaching styles and learning styles of their learners (cf. 2.5.6, 3.6, 8.4.1 & 8.4.2).
- Teachers should help learners to identify their own learning styles so as to understand their strengths and challenges (cf. 2.6.1 & 3.6).
- Teachers should measure their own teaching styles and their learners' learning styles at the beginning of each school year and each time they teach a new class (cf. 3.6 & 8.3). This implies that identification of the teachers' dominant teaching

styles and learners' predominant styles should be the basic exercise before the teaching and learning process can take place.

7.3.3 Matching of teaching and learning styles

The findings of this research indicated that mismatches do exist in the teaching styles of teachers and their learners' learning styles. It was also found that matching teaching and learning styles enhances academic achievement. In this regard, it is recommended that:

- Teachers should match their teaching styles with the learning styles of their learners in most lessons to enhance their learners' academic achievement. This implies that lesson planning, presentation and assessment should be directed to matching teaching and learning styles (cf. 2.4.2.3, 2.4.2.4, 3.4.3, 3.5.1 & 3.6).
- Teachers should dedicate one lesson per week to deliberate mismatches of teaching and learning styles. In this case, teachers should also establish and use teaching techniques that could address learners' challenges (cf. 3.4.3, 3.6 & 3.7).

7.3.4 Strategies on addressing learning styles in Lesotho

From the findings on strategies that can be employed to promote teachers' knowledge on learning styles and to ensure that learning styles are addressed, some recommendations can be made. In this respect, it is recommended that:

- The NCDC in Lesotho should find ways of ensuring that the teaching and learning process are entirely learner-centered, as required by the new curriculum. The implementation of learning styles in schools can be a drive for learner-centered learning environments in schools of Lesotho (cf. 4.3.3.7 & 6.6).
- Teachers in the rural secondary schools of Lesotho (qualified or unqualified) should be provided with teacher guides on the techniques that can be employed

to identify and address the individual learning styles of their learners (cf. 6.6 & Chapter 8).

- Lesotho Ministry of Education should encourage teachers to further their studies in education. This encouragement should include an increase in salaries for qualified specialist teachers. Again, to ensure that qualified teachers have interest in working in the rural schools, the Ministry of Education should provide reasonable incentives, such as mountain allowances and housing for these teachers (cf. 4.3.3.2).
- In-service training workshops that incorporate learning styles should be provided for teachers in the rural areas of Lesotho in order to promote knowledge of teaching and learning styles. Again, these workshops should be localized so that teachers in the rural schools are able to attend them.

In summation, the literature review and empirical findings indicate that consideration of teaching and learning styles is important for effective teaching and learning. The researcher contends from the constructivist perspective that the primary responsibility of the teacher is to create and maintain a collaborative problem-solving environment, where learners are allowed to construct their own knowledge and teachers serve as facilitators (cf. 2.3.5). It seems important for teachers in the rural secondary schools of Lesotho to understand how learners construct meaning in learning and how learning styles can be addressed to promote academic achievement. It also seems important for teachers to expose learners in the rural schools of Lesotho to the learner-centered learning environment that can promote independent learning and critical thinking skills. Again, it can be of importance that the Ministry of Education in Lesotho supports teachers by providing them with resources and training that is required to improve the knowledge of teachers and the implementation of learning style-directed teaching. To ensure this support, the Ministry of Education of Lesotho, through its departments, such as the National Curriculum Development Centre (NCDC), should develop and implement the Learning Styles Programme (LSP) in the secondary schools of Lesotho. Finally, teachers should use teaching styles that match their learners' learning styles in order to enhance academic achievement in the rural secondary schools of Lesotho.

7.4 RECOMENDATIONS FOR FURTHER RESEARCH

The following aspects of research in teaching and learning styles are recommended for further investigation:

- Similar research in the urban secondary schools of Lesotho should be conducted in order to determine the differences of the findings between rural and urban areas.
- Research should be conducted to determine the trend of learning styles with age.
- Further research is required to determine the relationship between learning styles and the pass rate across different school subjects.
- More research is required on the influence of matching teaching and learning styles on academic achievement.
- Research should be conducted on the aspects of developing and implementing learning styles programs in the primary, secondary and high schools of Lesotho.

7.5 CONCLUSION

This study is meant to enhance the academic achievement of learners in the rural secondary schools of Lesotho by matching teaching and learning styles. Findings from the literature and empirical investigation indicate that it is possible to enhance academic achievement by matching these styles. Therefore it is hoped that these findings can be used to improve the teaching and learning process and ultimately the level of success that learners can experience in school. As teachers, however, pay attention to matching teaching and learning styles, they should not deprive learners of some opportunities of improving weak learning styles. Again, teachers should be aware that there are other factors besides the use of appropriate instruction, which should be addressed in schools to promote the academic achievement of their learners. All in all, knowledge of teaching and learning styles can be a remedy for low academic achievement in the rural

secondary schools of Lesotho. The next chapter consists of guidelines that teachers can use in their respective classes to address the learning styles of their learners.

CHAPTER 8

TEACHER GUIDE ON TEACHING AND LEARNING STYLES FOR RURAL SECONDARY SCHOOLS

8.1 INTRODUCTION

This chapter comprises of the document that serves as a guide for teachers in the rural secondary schools of Lesotho. Teachers can use information outlined in this document to address the learning styles of learners in their schools. The contents of this chapter was gathered from the literature study (Chapter 2, 3 & 4), the empirical investigation (Chapter 5 & 6), and the personal experience of the researcher as a secondary school teacher in Lesotho.

8.2 DEFINITIONS

8.2.1 Teaching styles

A teaching style refers to the way various teaching approaches are combined to produce an optimal outcome in learning. Teaching approaches, strategies and methods are the elements of teaching styles and are used differently across teaching styles (Hoyt and Lee, 2002:3).

8.2.2 Learning styles

A learning style is the consistent pattern of behaviour and performance by which an individual approaches learning (Ellis, 2001:149).

8.3 PRINCIPLES FOR USING TEACHING AND LEARNING STYLES (CF. 3.6)

1) Know yourself and your teaching style tendencies

- Identify your dominant learning styles in order to know which learning preferences you have (cf. 2.6.2 & 3.6).
- Identify your dominant teaching styles in order to determine your teaching strengths (cf. 2.6.2, 3.2.4 & 3.6).
- Identify your weak teaching styles in order to determine your teaching challenges (cf. 2.6.2, 3.2.4 & 3.6).

2) Gain an understanding of each of your learners' learning styles and needs.

- Know the predominant learning styles of your individual learners in order to understand how to individualize instruction (cf. 2.6.2, 2.6.6 & 3.6).
- Know the dominant learning styles of your whole class in order to be able to determine which teaching styles to use, and to understand how each class differs from other classes (cf. 2.6.2).
- Promote learning style awareness to learners so that they understand their learning strengths and challenges (cf. 2.6.1).
- Provide clear directions on tasks and develop a culture of listening among learners (cf. 3.6)

3) Use teaching styles that promote the maximum degree of success for learners of all styles.

- Provide and communicate clear outcomes, objectives and assessment criteria to learners (cf. 3.6 & 3.5.1).
- Use teaching styles that match the learning styles of learners that you have identified in your class (cf. 3.4.3. & 3.6).
- Identify and use teaching methods and aids that are effective across many learning styles in your class (cf. 3.4.3 & 3.5.1).

4) Be mindful and respectful of the needs of learners in all learning style

dimensions.

- Be aware not to use teaching styles that favour your own learning styles. Use teaching styles that favour the learning needs of your learners (cf. 3.2.4).
- Be aware not to use your own dominant teaching style during lessons. Use different styles that correspond to the learning styles of your learners (cf. 3.2.4).

6) Provide opportunities for learners to work in their strengths areas and weak areas.

- Match teaching styles with the individual learning styles of your learners by individualizing instruction whenever it is possible. This is to create opportunities for each learner to work according to his/her particular strengths (cf. 3.6).
- Dedicate most of your lessons to matching teaching and learning styles. Plan objectives and use activities that match the learning styles of learners to improve their academic achievement (cf. 3.7).
- Identify and establish teaching styles and techniques that are outside the spectrum of learning styles you have identified in your class. This could address learners' challenges in learning (cf. 3.7).
- Once a week or in two weeks, use teaching styles that do not match the learning styles of learners that you have identified. Plan objectives and use activities and techniques that do not match your learners' learning styles (cf. 3.4.3).

These guidelines can assist teachers in the selection of teaching styles, lesson planning and presentation and in the assessment of their learners. Therefore, teaching objectives, activities and methods should be chosen with consideration of the learning styles they are meant to address.

8.4 TEACHING AND LEARNING STYLE INSTRUMENTS

Teachers can use the learning style instrument in Table 8.1 to measure the predominant learning styles and use the teaching style instrument in Table 8.2 to measure their predominant teaching styles (cf. 2.5.6).

8.4.1 Learning style instrument (cf. 5.3.1.2 & appendix A)

Teachers should use the learning style instrument in Table 8.1 to measure their own learning styles and the learning styles of their learners. Measurement of learners' learning styles should be done every time the teacher is allocated a new class in order to determine at first hand, the learning styles of his/her learners. Again, this instrument should be used annually for the same learners because learning styles can change over time.

Table 8.1: The Learning Style Instrument

LEARNING STYLE INSTRUMENT					
<u>SECTION A- Biographical information</u>					
Please fill in your details in the spaces provided below, and mark with an 'X' in the box next to your gender.					
1. Full name.....	2. Surname.....				
3. Age.....	4. Gender				
	<table border="1"><tr><td>Male</td><td><input type="checkbox"/></td></tr><tr><td>Female</td><td><input type="checkbox"/></td></tr></table>	Male	<input type="checkbox"/>	Female	<input type="checkbox"/>
Male	<input type="checkbox"/>				
Female	<input type="checkbox"/>				
5. Name of school.....					
<u>SECTION B-Learning style questions</u>					
For each of questions 1 to 44, circle either "a" or "b" to indicate your best answer. Please answer all questions and give only one answer for each question.					

1. I understand something better after I
 - a) Try it out.
 - b) Think about it.
2. I would rather be considered to be able to
 - a) Present things as they are.
 - b) Start something new.
3. When I think about what I did yesterday, I am most likely to get
 - a) A picture
 - b) Words
4. I normally
 - a) Understand the small parts of a subject rather than the overall structure
 - b) Understand the overall structure of a subject rather than the details.
5. When I am learning something new, it helps me to
 - a) Talk about it
 - b) Think about it
6. If I were a teacher, I would rather teach a subject
 - a) That deals with things that are known to have happened or true
 - b) That deals with ideas and theories.
7. I prefer to get new information in
 - a) Pictures, diagrams, graphs, or maps
 - b) Writing or verbal information
8. Once I understand
 - a) All the parts, I understand the whole thing.
 - b) The whole thing, I see how the parts fit.
9. In a study group working on difficult material, I am more likely to
 - a) Jump in and contribute ideas.
 - b) Sit back and listen
10. I find it easier
 - a) To learn facts

- b) To learn ideas and theories.
11. In a book with lots of pictures and charts, I am likely to
- a) Look over the pictures and charts carefully.
 - b) Concentrate on the written text.
12. When I solve math problems
- a) I usually solve a difficult problem in steps, one step at a time
 - b) I often just see the solution or the answer but I do not know the steps
13. In my previous classes
- a) I have known many of my classmates
 - b) I did not know many of my classmates.
14. In reading, I prefer
- a) Something that teaches me new things or how to do something
 - b) Something that gives me new ideas to think about.
15. I like teachers
- a) Who put a lot of diagrams on the board
 - b) Who spend a lot of time explaining.
16. When studying a story
- a) I think of things that happen and put them together to figure out the message.
 - b) I just know what the message is when I finish reading.
17. When I start a homework problem, I am more likely to
- a) Start working on solving it immediately.
 - b) Try to fully understand the problem first.
18. When studying, I prefer the idea of
- a) Feeling sure about things.
 - b) Set of opinions that explain something.
19. I remember best
- a) What I see
 - b) What I hear
20. It is important to me that the teacher

- a) Teaches in clear sequential steps
 - b) Gives me an overall picture and relates the subject to other subjects.
21. I like to study
- a) In a group
 - b) Alone.
22. I can be considered
- a) Careful about knowing my work.
 - b) Creative about how to do my work.
23. When I get directions to a new place, I prefer
- a) A map.
 - b) Written instructions.
24. I learn
- a) At a fairly regular pace. If I study hard, I'll understand better
 - b) In stops and starts. I'll be totally confused and then suddenly, I understand.
25. When doing things, I start by
- a) Trying things out.
 - b) Thinking about how I am going to do it.
26. When I am reading for enjoyment, I like writers to
- a) Clearly say what they mean.
 - b) Say things in a creative, interesting way.
27. When I see a diagram in class, I am most likely to remember
- a) The picture
 - b) What the teacher said about it.
28. When I read information, I prefer to
- a) Concentrate on little things and miss the whole message
 - b) Try to understand the whole message before getting into the details.
29. I more easily remember
- a) Something I have done

- b) Something I have thought a lot about.
30. When I have to do something, I prefer to
- a) Master one way of doing it
 - b) Come up with new ways of doing it.
31. When someone is showing me information, I prefer
- a) Charts or graphs
 - b) Written text.
32. When writing a composition, I am more likely to
- a) Think about or write the beginning of the composition and progress forward
 - b) Think about or write different parts of the composition and arrange them.
33. When I have to work on a group assignment, I first want to
- a) Have a group discussion where everyone contributes ideas
 - b) Think alone and then come together as a group to compare ideas.
34. I praise somebody well when I say he/she is
- a) Intelligent
 - b) Creative
35. When I meet people, I easily remember
- a) What they looked like
 - b) What they said about themselves.
36. When I am learning a new subject, I prefer to
- a) Focus on that subject, learning as much about it as I can
 - b) Try to make connections between that subject and other related subjects.
37. People can consider me to be
- a) Friendly and sociable.
 - b) Cool and shy.
38. I like subjects that include more
- a) Facts
 - b) Theories.
39. For entertainment, I like to

- a) Watch games in my village or television
 - b) Read a book.
40. Some teachers start their lessons by stating what they will teach. This is
- a) A little helpful to me.
 - b) Very helpful to me.
41. When doing homework in groups, giving same marks for everyone in the group
- a) Is good to me.
 - b) Is not good to me.
42. When I am doing long calculations, I tend to
- a) Repeat all my steps and check my work carefully.
 - b) Force myself to check my steps.
43. I am able to picture places I have been to
- a) Easily
 - b) With difficulty.
44. When solving problems in a group, I can
- a) Think of the steps to solve the problem
 - b) Think of the possible ways of solving the problem

8.4.2 Teaching style instrument (cf. 5.3.1.3 & appendix B)

In order to measure their strong/dominant and weak teaching styles, teachers should use the teaching style instrument in Table 8.2 below. It is recommended that these styles should be measured annually because they might change over time.

Table 8.2: The teaching style instrument

SECTION C- TEACHING STYLES INSTRUMENT

Please answer all questions and circle either 'a' or 'b' for questions 1 to 44. If both 'a' and 'b' applies to you, select the most frequent.

1. In my class, it is important that learners acquire
 - a) facts
 - b) concepts
2. To reinforce learners' understanding, I prefer to
 - a) Demonstrate procedures using examples.
 - b) Provide extra resources through use of textual reading materials and diagrams.
3. I plan my lessons in a way that
 - a) Provides real-life learning tasks and activities.
 - b) Incorporates enough flexibility in learning activities and assignments to allow creativity.
4. To emphasize a concept, I provide
 - a) Concrete and real-world examples.
 - b) Material such as diagrams and summaries, which reinforce fundamental understanding
5. In my class, I motivate learners to learn by
 - a) Encouraging and applauding answers that relate to real-life situations.
 - b) Encouraging and applauding creative solutions, even incorrect ones.
6. In solving a problem or performing a task,
 - a) I provide very clear guidelines with examples of how it can be done.

- b) I often show how various principles and concepts can be used.
7. I prefer to teach a subject that
- a) Provides illustrations of empirical experimentation and observation of surroundings.
 - b) Provides illustrations of generalization, logical reasoning, and pattern recognition.
8. When solving a problem, I encourage learners to
- a) Master one way of doing it.
 - b) Come up with new ways of doing it.
9. I expect learners to write assignments
- a) In a clear, simple way.
 - b) In creative, interesting ways.
10. Activities in my class encourage learners to
- a) Pay attention to detail and remembering content.
 - b) Develop their own ideas about content.
11. My teaching methods and activities
- a) Do not allow for individual and group work
 - b) Allow for individual and group work.
12. I mostly prefer to describe a concept through
- a) A picture
 - b) Words.
13. To teach difficult material, I prefer to use
- a) Pictures, diagrams, graphs, or maps.
 - b) Written or verbal information.
14. In group work, I ask learners to
- a) Draw diagrams and make models that illustrate a concept.
 - b) Exchange ideas verbally and write a report.
15. I frequently give learners assignment that engage them in

- a) Collecting material, drawing charts or making models.
 - b) Writing or verbal presentations.
16. When I teach my class, I would be most likely to
- a) Use visuals to reinforce understanding.
 - b) Spend more time talking and writing notes.
17. When using a textbook, I normally ask learners to
- a) Pay more attention to pictures and diagrams.
 - b) Concentrate more on the written content and discuss it.
18. In my class, I normally
- a) Provide notes in a form of charts, maps and images.
 - b) Provide elaborated written or auditory notes and explanations.
19. When setting tests, I usually include questions that require
- a) Use of diagrams and graphs to describe a concept.
 - b) Use of explanations and verbal information.
20. My teaching methods mainly include
- a) Demonstrations, experiments and visuals.
 - b) Writing notes and verbal explanations.
21. At the end of a lesson, I usually
- a) Draw a chart or diagram that summarizes the content.
 - b) Relate a list of the items in the content verbally.
22. I feel comfortable to teach in
- a) Demonstrations, experiments, and visuals.
 - b) Lecturing and group discussions.
23. When solving a problem, I usually encourage learners to
- a) Try it out in the least possible time.
 - b) Take time to think it through first.

24. In my class,

- a) I provide activities that encourage learners to be actively involved in learning.
- b) Lecturing is a significant part of how I teach.

25. I present my lessons such that

- a) Small group activities are given priority to help learners to develop critical thinking.
- b) There is little activity because there is more content to be covered in the subject.

26. In class I mostly engage myself in

- a) Providing individual and group activities.
- b) Writing notes and giving explanations.

27. During the lessons, I provide time intervals for learners to

- a) Form small group to discuss the material.
- b) Think about what they have been taught.

28. On homework assignments, I usually encourage learners to

- a) Co-operate and help one another.
- b) Do the work individually.

29. When I assign group work, I expect learners to

- a) Have a group discussion where everyone contributes ideas.
- b) Think alone and then come together to compare ideas.

30. When I am teaching, I would

- a) Ask and invite questions at certain time intervals to ensure learners' participation.
- b) Expect learners to listen attentively and memorize facts.

31. In class, I provide

- a) Team self-assessment to promote collaboration.
- b) Self-assessment to self-evaluate own understanding.

32. I usually give learners

- a) A certain time-frame to complete projects/assignments.

b) Opportunities to set their own pace to complete their work.

33. It is wise to

a) Allow learners to make decisions on how and when to do their projects.

b) Decide on everything that has to do with learning.

34. I always aim to

a) Provide learners with a detailed and step-by-step procedure for completing each task.

b) Provide learners with conceptual sequence for completing tasks.

35. When I teach my class, I would be most likely to

a) Give learners a specific way of solving a problem.

b) Allow learners to develop their own problem-solving process.

36. I teach my subject such that I

a) Focus on that subject alone.

b) Relate the subject to other similar subjects.

37. I begin my lessons by

a) Specifying the order in which the content will be presented.

b) Providing an overview of the content to be taught.

38. When writing tests, I encourage learners to

a) Answer the first question and progress forward.

b) Answer questions in any order they prefer.

39. I teach difficult concepts by

a) First describing its parts, and then showing how the parts form the concept.

b) Showing the connections between the concepts and other concepts.

40. When studying with diagrams, I normally ask learners to

a) Pay attention to the small details of what make up the whole diagram.

b) Pay attention to the whole diagram and the details later.

41. When solving problems, I would normally encourage learners to

- a) Think of the steps to solve the problem.
- b) Think of possible ways that can be used to solve the problem.

42. I teach to ensure that learners

- a) Develop skills of combining parts to form a whole (analyzing).
- b) Develop skills of breaking the whole into smaller parts (synthesizing).

43. In my class, I

- a) Emphasize the need to master one way of solving a problem.
- b) Encourage learners to apply different approaches to solving a problem.

44. After marking assignments, I

- a) Provide specific feedback for each step of the assignment.
- b) Provide overall feedback for the assignment.

8.4.3 Analysis of the instruments (cf. 5.4.1.2 & 5.4.1.3)

When analyzing the teaching and learning style instruments to identify the strong or dominant styles and the weak styles, teachers can use the guidelines below to guide them.

- There are 8 learning styles in the learning style instrument.
- There are 8 teaching styles in the teaching style instrument.
- Respondents can have one dominant style or a combination of two or more styles.
- There are 11 questions for measuring each of the learning/teaching styles. For example active and reflective styles are measured by the same questions, but (a) answers represent active style and (b) answers are for the reflective style. If the respondent chooses more (a) answers than (b) answers, this means his/her dominant style is active.

- The learning/teaching style which has the biggest number of responses when compared to all other learning/teaching styles, is considered to be dominant for each respondent.
- The learning/teaching style with the biggest number of responses when compared to all other learning/teaching styles is considered to be the weak style.
- Respondents can have a combination of styles when more than one of their learning/teaching styles has the biggest number of responses.
- Use Tables 8.3 and 8.4 to allocate the teaching/learning styles to the questions.

Table 8.3 Questions in the Learning Style instrument (cf. Table 5.1)

Style	ILS questions (answer a)	Style	ILS questions (answer b)
1. Sensory	2,6,10,14,18,22,26,30,34,38,42	2. Intuitive	2,6,10,14,18,22,26,30,34,38,42
3. Visual	3,7,11,15,19,23,27,31,35,39,43	4. Verbal	3,7,11,15,19,23,27,31,35,39,43
5. Active	1,5,9,13,17,21,25,29,33,37,41	6. Reflective	1,5,9,13,17,21,25,29,33,37,41
7. Sequential	4,8,12,16,20,24,28,32,36,40,44	8. Global	4,8,12,16,20,24,28,32,36,40,44

Table 8.4 Questions in the teaching style instrument (cf. Table 5.3)

Style	Questions (answer a)	Style	Questions (answer b)
1. Concrete	1,2,3,4,5,6,7,8,9,10,11	2. Abstract	1,2,3,4,5,6,7,8,9,10,11
3. Visual	12,13,14,15,16,17,18,19,20,21,22	4. Verbal	12,13,14,15,16,17,18,19,20,21,22
5. Active	23,24,25,26,27,28,29,30,31,32,33	6. Passive	23,24,25,26,27,28,29,30,31,32,33
7. Sequential	34,35,36,37,38,39,40,41,42,43,44	8. Global	34,35,36,37,38,39,40,41,42,43,44

8.5 TEACHING TO LEARNING STYLES

In order to ensure that the teaching and learning process is directed to the learning styles of learners, teachers need to incorporate and consider learning styles in their lesson plans, lesson presentations and in learner assessment. This implies that the lesson objective and activities should be directed to the type of learning styles of the class. In this case, teachers are supposed to use the following steps:

Step 1: Choose classroom activities

In this case, the first step is to identify which teaching and learning styles match, and then what activities can be used to accommodate each of the learning styles. Table 8.5 provides information on the type of learning styles and table 8.6 provides information on the classroom activities and styles that correspond.

Table 8.5 Description of learning style categories (cf. 3.5.1)

Questions	Student Learning	Type of flexibility & adaptivity	Instructional styles and strategies
1. What type of information does the student preferentially perceive?	Sensing learners- concrete, practical, oriented toward facts and procedures	-Flexible and adaptive content -Flexible and adaptive curriculum sequence	-Provide concrete and real world examples for new concepts and principles presented in the unit. -Demonstrate procedures by using examples. -provide real-world learning tasks that allow learners to have concrete learning experiences.

	Intuitive learners- conceptual, innovative, oriented toward theories and meanings		-incorporate enough flexibility in assignments and tasks to allow creativity for the concepts learned. -provide extra resources through the use of textual reading materials, summaries and diagrams.
2.Through what sensory modality is sensory information most effectively perceived?	Visual learners-prefer visual representations of material.	-Flexible and adaptive presentation	-Provide content in a form of charts, images, maps
	Verbal learners-prefer written and spoken explanations	-Flexible and adaptive selection	-Provide elaborated written and /or auditory notes with explanations with examples. -provide presentations and discussions
3.How does the learner prefer to process information?	Active learners-learn by working things out and working with others	-flexible and adaptive meta- cognitive approach and problem solving support	-provide problem solving and real-life tasks. -provide guidelines for effective teamwork. Provide opportunity for large group discussion.
	Reflective learners- learn by thinking things through, working alone		-provide individual tasks and assignments to allow each learner to work alone. -provide self- assessment tools for learners to evaluate themselves

4. How does the learner progress towards understanding?	Sequential learners- linear, orderly and learn in small incremental steps	-Flexible and adaptive meta-cognitive approach and problem solving support	-provide a detailed and step by step procedure for completing each task, both in text and visual form. -provide specific feedback for each step of a task.
	Global learners- holistic, system thinkers and learn in large leaps		-provide a conceptual sequence for lessons and completion of tasks. -provide an overview of the material and assignment in each unit. -provide holistic feedback for each step of the task

Table 8.6: Classroom activities across teaching and learning styles

Learning style	Corresponding teaching style	examples of activities in classrooms
Sensing	Concrete	<ul style="list-style-type: none"> -Introduce the lesson by indicating how the content will be presented. -provide hands-on activities and use repetition more often -when carrying out a procedure or assignment, show all the steps in a logical order. -use lots of examples to reinforce understanding. -use examples that relate to daily experiences. -avoid long lecturing of theory. -when studying diagrams or pictures, give details.

Intuitive	Abstract	<ul style="list-style-type: none"> -provide opportunities for creativity by giving challenging tasks or questions. e.g puzzles. -encourage and applaud creative solutions, even incorrect ones. -use little illustration and examples on a concept. -encourage learners to make projects of their own choice.
Visual	Visual	<ul style="list-style-type: none"> -use pictures, diagrams, graphs, charts, and videos as teaching aids. -use demonstrations and dramatizations to teach concepts. -use colour to capture learners' attention.
Verbal	Verbal	<ul style="list-style-type: none"> -lecture method with lots of verbal explanations and writing of notes. -use class and group discussions -use debates in class and among classes. -use more open-ended questions in class.
Active	Active	<ul style="list-style-type: none"> -assign learners to do some projects. -use many hands-on activities such as drawing, making models, etc. and experiments. -have learners work in groups. -use role-play to reinforce understanding. -include lots of action and avoid long theoretical lessons.
Reflective	Passive	<ul style="list-style-type: none"> -provide individual tasks -provide intervals during the lessons and in-between lessons for learners to think about what they have been taught. -when questioning, use wait time so that learners have enough time to think. -at the end of the lesson, ask learners to write a brief summary or formulate questions about the material just learned.

Sequential	Sequential	<ul style="list-style-type: none"> -indicate the order of content at the beginning of the lesson. -explain and show every step involved in a task or assignment. -steps should be followed in a linear way so that learners follow. -break up long problems/tasks into steps that learners can remember. -in a long problem, you can use codes of letters that represent every step. -encourage learners to answer the first question and progress forward in assignments or tests.
Global	Global	<ul style="list-style-type: none"> -show how new concepts relate to the previous knowledge and experience. -allow learners to use their own ways of solving problems. -relate your subject to other subjects. -allow learners to answer questions in any order they prefer. -reinforce creativity; applaud creative solutions, even incorrect ones.

Step 2: Make a lesson plan in consideration of learning styles

Teachers should consider learning styles of their learners when they plan the lesson objectives, activities and assignments. Table 8.7 gives an example of a lesson plan in a science class that incorporates learning styles. Figure 8.1 illustrates the learning activity that can be used in this lesson to reinforce understanding. Figure 8.2 illustrates the assignment the teacher can assign to learners to do at the end of the lesson to determine and assess the knowledge acquired.

Table 8.7: Lesson planning using learning styles

Teacher : Mr. A. Unknown		School: Mountain site H. School	
Class : Form A			
Subject : Science		Date: 28/03/1994	
Topic : Exploring matter		Time : 80 minutes	
KEY CONCEPTS:			
States of matter, properties of matter, changes in state of matter.			
KEY CONTENT:			
Solid, liquid, gas, and their physical properties. Particle theory to describe the three states of matter. Describe and distinguish between evaporation, melting, condensation, solidification or freezing and sublimation. Melting and boiling points.			
Teacher's actions:	Learner Activities:	Learning styles:	Resources:
1. Introduce the lesson by indicating how the content will be presented.	1. Listen.	<ul style="list-style-type: none"> Verbal, sequential, and sensing. 	1. Textbooks 2. Stones 3. Beakers 4. Water 5. Balloons
2. Give a short verbal introduction on the three states of matter. Give examples from the surroundings	2. Listen and ask questions.	<ul style="list-style-type: none"> Reflective and verbal. 	6. Tripod stands 7. Gauzes 8. Bunsen burners 9. Crushed ice 10. Charts
3. Give learners an activity of studying the physical properties of	3. Form groups and study the physical properties of stone, water in a container and air in a balloon. Allow learners	<ul style="list-style-type: none"> Active, reflective, and sensing. 	11. Thermometers

matter.	who do not want to form groups to work alone or in pairs.		
4. Facilitate the presentations of learners.	4. Learners present their findings	<ul style="list-style-type: none"> • Verbal 	
5. Use charts that illustrate the arrangement of particles in the three states of matter and relate that arrangement to their physical properties.	5. Study the charts and listen to the teacher's elaboration.	<ul style="list-style-type: none"> • Visual, sensing 	
6. Give notes on the states of matter and particle theory.	6. Write notes on the states of matter and particle theory.	<ul style="list-style-type: none"> • Verbal, reflective 	
7. Briefly explain the aim of the experiment and allow them to set up the apparatus.	7. Set up an apparatus using Bunsen burner, tripod stand, gauze, beaker, crushed ice, and the thermometer, which are provided. If there is a shortage of tools, learners can work in small group.	<ul style="list-style-type: none"> • Intuitive 	

8. Facilitate the experiment.	8. Observe changes and record temperatures when the ice starts melting and when the water boils.	<ul style="list-style-type: none"> • Active, visual 	
9. Engage learners in a whole-class discussion to present their observations.	9. Learners present and discuss their findings. Relate changes observed to the change in states of matter, and particle arrangement. Relate melting and boiling temperatures to the melting and boiling points respectively.	<ul style="list-style-type: none"> • Verbal, global 	
10. Give short notes on the processes involved in the changes of state of matter.	10. Write notes.	<ul style="list-style-type: none"> • Verbal 	
11. At the end of the lesson, invite questions and summarize the content in the order presented.	11. Learners ask and answer questions from the teacher.	<ul style="list-style-type: none"> • Reflective, sequential 	

Figure 8.1: Class activity- boiling and melting points

Boiling and melting points

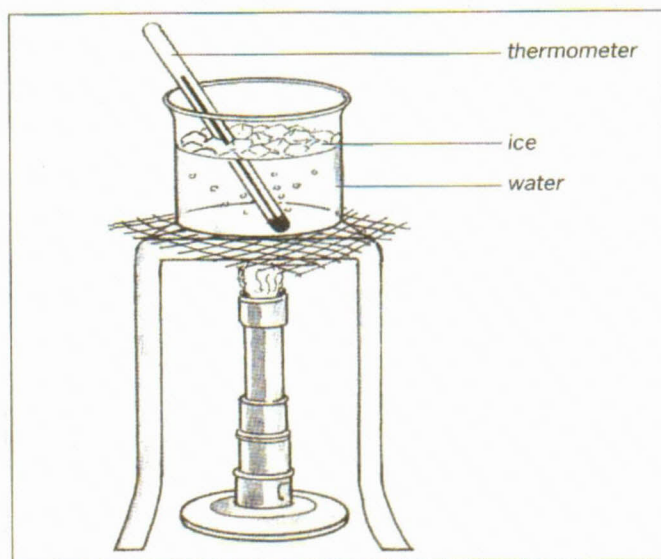
Experiment

Boiling point of water

Aim: To find the boiling point of water.

You need: beaker, tripod, gauze, thermometer, ice, Bunsen burner, pestle, mortar, timer or clock.

- Crush the ice in the pestle and mortar.
- Pour the ice into the beaker.
- Arrange the apparatus as shown in the diagram below.



- Light the Bunsen burner and note the time.
- Stir continuously and measure the temperature of water every minute until the water boils.

Observation

1 Copy the table below and put your results in it.

Time (min)	0	1	2	3	4	5	6	7	8	9	10	11	12
Temperature ($^{\circ}$ C)													

Conclusions

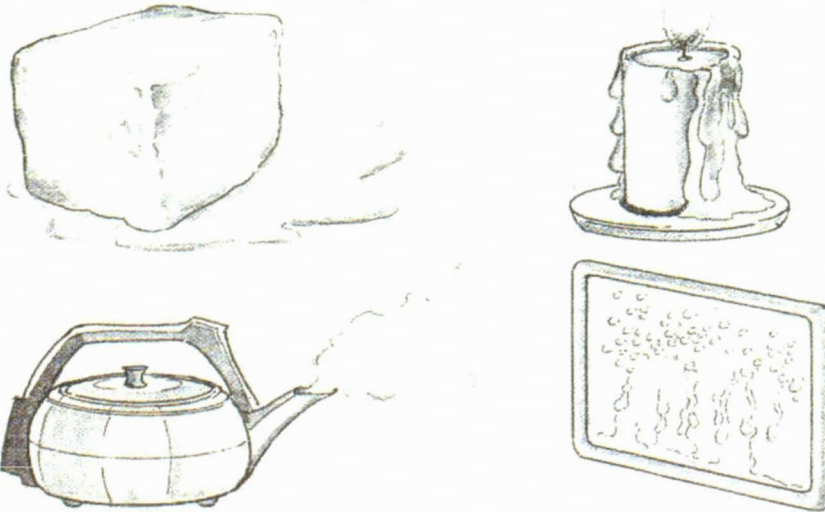
- 2 What can you say about the temperature of the ice and water at the beginning of the experiment and towards the end of the experiment?
- 3 At what temperature did the ice melt?
- 4 At what temperature did the water boil?

Exploring matter 31

Source: Mpeta, Khoarai, Khalieli, Ntoi, Mabejane & Makamane (2004:31)

Figure: 8.2: Class assignment- changes in state of matter

Can matter change its state?



These pictures show changes of state. Can you work out what is happening in each one?

Activity

Discuss what is happening in each of the diagrams above. Copy and complete the following table using the diagrams.

Changes in state of matter

Substance	State of matter	Changes into
Ice		
Candle		
Water		
Water vapour in the air	gas	liquid

Source: Mpeta et al. (2004:30)

8.6 CONCLUSION

To implement instruction that addresses learning styles of their learners, teachers can use this guide as a tool of guidance. Therefore, it is recommended that the rural secondary schools of Lesotho should use this document in their schools as a guiding tool for addressing learning styles. This document has, however, been designed for research purposes and can be adjusted according to personal conditions of a school.

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LIST OF APPENDIX

APPENDIX A

FELDER-SOLOMAN INDEX OF LEARNING STYLE

This questionnaire was used to conduct a survey on the learning styles of learners in the rural secondary schools of Lesotho. Only Form C learners were free to complete the questionnaire.

SECTION A- Biographical information

Please fill in your details on the spaces provided below, and mark with an 'X' in the box next to your gender.

2. Full name.....

2. Surname.....

3. Age.....

4. Gender

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

5. Name of school.....

SECTION B-Learning style questions

For each of question 1 to 44, circle either "a" or "b" to indicate your best answer. Please answer all questions and give only one answer for each question.

23. I understand something better after I

- c) try it out.
- d) think about it.

24. I would rather be considered to be able to

- c) present things as they are.
- d) start something new.

25. When I think about what I did yesterday, I am most likely to get

- c) a picture

- d) words
26. I normally
- c) Understand the small parts of a subject than the overall structure
 - d) Understand the overall structure of a subject than the details.
27. When I am learning something new, it helps me to
- c) Talk about it
 - d) Think about it
28. If I were a teacher, I would rather teach a subject
- c) That deals with things that are known to have happened or true
 - d) That deals with ideas and theories.
29. I prefer to get new information in
- c) Pictures, diagrams, graphs, or maps
 - d) Writing or verbal information
30. Once I understand
- c) All the parts, I understand the whole thing.
 - d) The whole thing, I see how the parts fit.
31. In a study group working on difficult material, I am more likely to
- c) Jump in and contribute ideas.
 - d) Sit back and listen
32. I find it easier
- c) To learn facts
 - d) To learn ideas and theories.
33. In a book with lots of picture and charts, I am likely to
- c) Look over the pictures and charts carefully.
 - d) Concentrate on the written text.
34. When I solve maths problems
- c) I usually solve a difficult problem in steps, one step at a time
 - d) I often just see the solution or the answer but I do not know the steps
35. In my previous classes
- c) I have known many of my classmates
 - d) I did not know many of my classmates.
36. In reading, I prefer
- c) Something that teaches me new things or how to do something
 - d) Something that gives me new ideas to think about.
37. I like teachers
- c) Who put a lot of diagrams on the board
 - d) Who spend a lot of time explaining
38. When studying a story
- c) I think of things that happen and put them together to figure out the message.
 - d) I just know what the message is when I finish reading.

39. When I start a homework problem, I am more likely to
- c) Start working on solving it immediately.
 - d) Try to fully understand the problem first.
40. When studying, I prefer the idea of
- c) Feeling sure about things.
 - d) Set of opinions that explain something.
41. I remember best
- c) What I see
 - d) What I hear
42. It is important to me that the teacher
- c) Teaches in clear sequential steps
 - d) Gives me an overall picture and relate the subject to other subjects.
43. I like to study
- c) In a group
 - d) Alone.
44. I can be considered
- c) Careful about knowing my work.
 - d) Creative about how to do my work.
23. When I get directions to a new place, I prefer
- a) a map.
 - b) written instructions.
24. I learn
- c) at a fairly regular pace. If I study hard, I'll understand better
 - d) in stops and starts. I'll be totally confused and then suddenly, I understand.
25. When doing things, I start by
- c) Trying things out.
 - d) Thinking about how I am going to do it.
26. When I am reading for enjoyment, I like writers to
- c) Clearly say what they mean.
 - d) Say things in creative, interesting way.
27. When I see a diagram in class, I am most likely to remember
- c) The picture
 - d) What the teacher said about it.
28. When I read information, I prefer to
- c) Concentrate on little things and miss the whole message
 - d) Try to understand the whole message before getting into the details.
29. I more easily remember
- c) Something I have done
 - d) Something I have thought a lot about.
30. When I have to do something, I prefer to

- c) Master one way of doing it
 - d) Come up with new ways of doing it.
31. When someone is showing me information, I prefer
- c) Charts or graphs
 - d) Written text.
32. When writing a composition, I am more likely to
- c) Think about or write the beginning of the composition and progress forward
 - d) Think about or write different parts of the composition and arrange them.
33. When I have to work on a group assignment, I first want to
- c) Have a group discussion where everyone contributes ideas
 - d) Think alone and then come together as a group to compare ideas.
34. I praise somebody well when I say he/she is
- c) Intelligent
 - d) Creative
35. When I meet people, I easily remember
- c) What they looked like
 - d) What they said about themselves.
36. When I am learning a new subject, I prefer to
- c) Focus on that subject, learning as much about it as I can
 - d) Try to make connections between that subject and other related subjects.
37. People can consider me to be
- c) Friendly and sociable.
 - d) Cool and shy.
38. I like subjects that includes more
- c) Facts
 - d) Theories.
39. For entertainment, I like to
- c) Watch games in my village or television
 - d) Read a book.
40. Some teachers start their lessons by stating what they will teach. This is
- c) A little helpful to me.
 - d) Very helpful to me.
41. When doing homework in groups, giving same marks for everyone in the group
- c) Is good to me.
 - d) Is not good to me.
42. When I am doing long calculations, I tend to
- c) Repeat all my steps and check my work carefully.
 - d) Force myself to check my steps.
43. I am able to picture places I have been to
- c) Easily

- d) With difficulty.
44. When solving problems in a group, I can
- c) Think of the steps to solve the problem
 - d) Think of the possible ways of solving the problem

APPENDIX B

TEACHING STYLES QUESTIONNAIRE

This questionnaire was used for the research on assessment of the teaching styles of teachers in the rural schools of Lesotho in order to find ways of matching them with learners' learning styles. Only Form C teachers could fill it in. Please answer all questions.

SECTION A- BIOGRAPHICAL INFORMATION

Please provide your details on the spaces and indicate your answer with an 'X' in the boxes provided. All information will be kept confidential.

1. Name of school:.....

2. Name of district:.....

3. Subject(s) that you are currently teaching:.....

4. Your highest academic qualification in the subject(s) you teach:.....

1-10
11-20
21-30
31+

5. Number of teaching years:

6. Your highest professional qualification in education:

None	
STC/ ACE	
Dip. Ed/ Dip. Science Ed./ Dip. Agric. Ed	
PGCE	
B.Ed/BSc.Ed/BA.Ed	
B.Ed(Hons)	
M.Ed	
PhD	

7. Number of learners in your class.....

8. Your Gender

Male		Female	
------	--	--------	--

9. Age

<20	21-30	31-40	41-50	50+
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SECTION B- TEACHING AND LEARNING STYLE KNOWLEDGE

1. Please indicate the best answer with an 'X' in the corresponding box of each question

Question	Strongly agree	Agree	Disagree	Strongly disagree
1.1. I have enough knowledge about learning styles				
1.2. I am aware of the learning styles of learners in my class				
1.3. I have enough knowledge about teaching styles				
1.4. I am sufficiently trained to teach learners with different learning styles				
1.5. I teach to address individual learning styles of my learners				
1.6. Knowing learners' learning styles is important for teachers				
1.7. I have enough time to use teaching styles that address individual learning styles in my class				
1.8. I know the factors that can influence each learner's learning styles				
1.9. Effective teaching can be enhanced by matching teaching and learning styles				
1.10. Teachers need special training in learning styles in order to fulfill learners' learning styles				

2. Which strategies can be employed to give teachers knowledge about learning styles and ways of accommodating individual learners in instruction? Rank your answer by allocating a number of 1 to the most important strategy, 2 to the least important strategy and 3 to the unimportant strategy.

2.1. Information sharing sessions	
2.2. Learner-centered Curriculum	
2.3. Provision of teacher manual on learning styles	
2.4. Further studies	
2.5. Staff development sessions	

2.6. Other strategies (specify).....

3. To what extent can/do these factors influence you in addressing individual learning styles in your class?

Factor	Not at all	Small extent	Large extent
3.1. Overcrowded classes			
3.2. Too much subject content and time pressure			
3.3. Following the strict syllabus			
3.4. Preparing learners for standardized external exams			
3.5. Use of various teaching aids			
3.6. Knowledge of the learning process			

4. If you experience other problems in addressing learners' individual learning styles, specify here.....

5. Do your teaching styles address a variety of learning styles in your class?.....
 Give comments on your answer
-
-
-

SECTION C- TEACHING STYLES INSTRUMENT

Please answer all questions and circle either 'a' or 'b' for questions 1 to 44. If both 'a' and 'b' applies to you, select the most frequent.

2. In my class, it is important that learners acquire
 a) facts
 b) concepts
- 2.To reinforce learners' understanding, I prefer to
 c) Demonstrate procedures using examples.
 d) Provide extra resources through use of textual reading materials and diagrams.
3. I plan my lessons in a way that
 c) Provides real-life learning tasks and activities.
 d) Incorporates enough flexibility in learning activities and assignments to allow creativity.
4. To emphasize a concept, I provide
 c) Concrete and real-world examples.
 d) Material such as diagrams and summaries, which reinforce fundamental understanding
45. In my class, I motivate learners to learn by
 c) Encouraging and applauding answers that relate to real-life situations.
 d) Encouraging and applauding creative solutions, even incorrect ones.
46. In solving a problem or performing a task,
 c) I provide very clear guidelines with examples of how it can be done.
 d) I often show how various principles and concepts can be used.
47. I prefer to teach a subject that
 c) Provides illustrations of empirical experimentation and observation of surrounding.
 d) Provides illustrations of generalization, logical reasoning, and pattern recognition.
48. When solving a problem, I encourage learners to
 c) Master one way of doing it.
 d) Come up with new ways of doing it.
49. I expect learners to write assignments
 c) In a clear, simple way.
 d) In creative, interesting ways.
50. Activities in my class encourage learners to
 c) Pay attention to detail and remembering content.
 d) develop their own ideas about content.

51. My teaching methods and activities
- c) Do not allow for individual and group work
 - d) Allow for individual and group work.
52. I mostly prefer to describe a concept through
- c) A picture
 - d) Words.
53. To teach difficult material, I prefer to use
- c) Pictures, diagrams, graphs, or maps.
 - d) Written or verbal information.
54. In group work, I ask learners to
- c) Draw diagrams and make models that illustrate a concept.
 - d) Exchange ideas verbally and write a report.
55. I frequently give learners assignment that engage them in
- c) Collecting material, drawing charts or making models.
 - d) Writing or verbal presentations.
56. When I teach my class, I would be most likely to
- c) Use visuals to reinforce understanding.
 - d) Spend more time talking and writing notes.
57. When using a textbook, I normally ask learners to
- c) Pay more attention to pictures and diagrams.
 - d) Concentrate more on the written content and discuss it.
58. In my class, I normally
- c) Provide notes in a form of charts, maps and images.
 - d) Provide elaborated written or auditory notes and explanations.
59. When setting tests, I usually include questions that require
- c) Use of diagrams and graphs to describe a concept.
 - d) Use of explanations and verbal information.
60. My teaching methods mainly include
- c) Demonstrations, experiments and visuals.
 - d) Writing notes and verbal explanations.
61. At the end of a lesson, I usually
- c) Draw a chart or diagram that summarizes the content.
 - d) Relate a list of the items in the content verbally.
62. I feel comfortable to teach in
- c) Demonstrations, experiments, and visuals.
 - d) Lecturing and group discussions.
63. When solving a problem, I usually encourage learners to
- c) Try it out in a less possible time.
 - d) Take time to think it through first.
64. In my class,

- c) I provide activities that encourage learners to be actively involved in learning.
 - d) Lecturing is a significant part of how I teach.
65. I present my lessons such that
- c) Small group activities are given priority to help learners to develop critical thinking.
 - d) There is little activity because there is more content to be covered in the subject.
66. In class I mostly engage myself in
- c) Providing individual and group activities.
 - d) Writing notes and giving explanations.
67. During the lessons, I provide time intervals for learners to
- c) Form small group discuss the material.
 - d) Think about what they have been taught.
68. On homework assignments, I usually encourage learners to
- c) Cooperate and help one another.
 - d) Do the work individually.
69. When I assign group work, I expect learners to
- c) Have a group discussion where everyone contributes ideas.
 - d) Think alone and then come together to compare ideas.
70. When I am teaching, I would
- c) Ask and invite questions at certain time intervals to ensure learners' participation.
 - d) Expect learners to listen attentively and memorize facts.
71. In class, I provide
- c) Team self-assessment to promote collaboration.
 - d) Self-assessment to self-evaluate own understanding.
72. I usually give learners
- c) A certain time-frame to complete projects/assignments.
 - d) Opportunities to set their own pace for complete their work.
73. It is wise to
- c) Allow learners to make decisions on how and when to do their projects.
 - d) Decide on everything that has to do with learning.
74. I always aim to
- c) Provide learners with a detailed and step-by-step procedure for complete each task.
 - d) Provide learners with conceptual sequence for completing tasks.
75. When I teach my class, I would be most likely to
- c) Give learners a specific way of solving a problem.
 - d) Allow learners to develop their own problem-solving process.
76. I teach my subject such that I
- c) Focus on that subject alone.
 - d) Relate the subject to other similar subjects.
77. I begin my lessons by
- c) Specifying the order in which the content will be presented.

- d) Providing an overview of the content to be taught.
78. When writing tests, I encourage learners to
- c) answer the first question and progress forward.
 - d) answer questions in any order they prefer.
79. I teach difficult concept by
- c) First describing its parts, and then showing how the parts form the concept.
 - d) Showing the connections between the concepts and other concepts.
80. When studying with diagrams, I normally ask learners to
- c) Pay attention to the small details of that make up the whole diagram.
 - d) Pay attention to the whole diagram and the details later.
81. When solving problems, I would normally encourage learners to
- c) Think of the steps to solve the problem.
 - d) Think of possible ways that can be used to solve the problem.
82. I teach to ensure that learners
- c) Develop skills of combining parts to form a whole (analyzing).
 - d) Develop skills of breaking the whole to smaller parts (synthesizing).
83. In my class, I
- c) Emphasize the need to master one way of solving a problem.
 - d) Encourage learners to apply different approaches to solving a problem.
84. After marking assignments, I
- c) Provide specific feedback for each step of the assignment.
 - d) Provide overall feedback for the assignment.

APPENDIX C

UNIVERSITEIT VAN DIE VRYSTAAT
UNIVERSITY OF THE FREE STATE
YUNIVESITHI YA FREISTATA



Fakulteit Geesteswetenskappe / *Faculty of the Humanities*
Skool vir Opvoedkunde / *School of Education*
Departement Psigo-Opvoedkunde / *Department Psychology of Education*

Dr. G. Alexander
Department Psychology of Education
03 September 2008
051-4019490

The Director
Teaching Service Department
Private Bag A94
Maseru
Lesotho

Dear Sir/Madam

RE : PERMISSION TO CONDUCT RESEARCH IN LESOTHO

I, Dr.G.Alexander hereby confirm that Mr. M.J. Letele (student no. 2006061390) is a full-time registered Master degree student under my supervision. As his promoter and study leader, I request permission from your directorate for Mr. Letele to conduct his research. His dissertation is entitled: "**Enhancing learners' academic achievement in rural schools of Lesotho: Matching teaching and learning styles**"

I am of the opinion that this area of research can make an unique contribution to the Ministry of Education's efforts in supporting educators in rural schools.

Thanking you in anticipation.

Yours in Higher education

Dr. G. Alexander

APPENDIX D

Mr. M.J. Letele
Bishop De Mazenod high School
P.O. Box 356
Mazenod 160
3 September 2008

The Director
Teaching Service Department
Private Bag A94
Maseru 100
Lesotho

Dear Sir/ Madam

RE: PERMISSION TO CONDUCT RESEARCH IN RURAL SECONDARY SCHOOLS OF LESOTHO

I am a teacher at Bishop De Mazenod high school and a student at the University of the Free State. I am currently doing a Masters degree in the department Psychology of Education. My dissertation topic is "Enhancing learners' academic achievement in rural schools of Lesotho: Matching teaching and learning styles."

I therefore ask for the permission to contact and visit principals, Form C teachers and learners, in rural schools in the country for completion of questionnaires. The findings of this study are aimed at making recommendations that may be of importance to the Ministry of Education and secondary schools in Lesotho.

Thank you in advance

Yours in education

Mr. J. Letele (+27786196311)

.....

FOR THE OFFICE OF THE DIRECTOR OF TEACHING SERVICES PERMISSION TO VISIT/DO RESEARCH IN RURAL SECONDARY SCHOOLS OF LESOTHO. Permission granted by..... Signature..... Date/stamp.....

APPENDIX E

University of the Free State
P.O. Box 339
Bloemfontein 9300 South Africa
06 September 2008

The Principal Secretary
Ministry of Education and Training
Maseru

Dear Sir

RE: PERMISSION TO CONDUCT RESEARCH IN YOUR SCHOOL

I am a teacher at Bishop De Mazenod high school and a student at the University of the Free State. I am currently doing a Masters degree in the Department Psychology of Education. My research is entitled "Enhancing learners' academic achievement in rural schools of Lesotho: Matching teaching and learning styles"

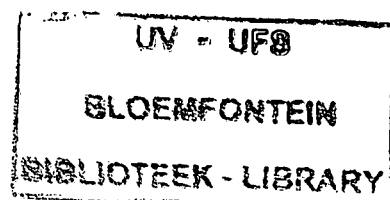
I therefore ask for permission to conduct research at your school. The findings of this study are aimed at making recommendations that may be of importance to the Ministry of Education's efforts in supporting rural schools.

Thanking you in advance.

Yours in Education

Moeketsi J. Letele

.....
Cell: 58858333/+27786196311



APPENDIX F

University of the Free State
P.O. Box 339
Bloemfontein 9300 South Africa
06 September 2008

Dear Principal

RE: PERMISSION TO CONDUCT RESEARCH IN YOUR SCHOOL

I am a teacher at Bishop De Mazenod high school and a student at the University of the Free State. I am currently doing a Masters degree in the Department Psychology of Education. My research is entitled "Enhancing learners' academic achievement in rural schools of Lesotho: Matching teaching and learning styles"

I therefore ask for permission to conduct research at your school. The findings of this study are aimed at making recommendations that may be of importance to the Ministry of Education's efforts in supporting rural schools.

Enclosed with this letter, are teacher and learner questionnaires that are to be filled in and sent back to the address provided on the return envelope. The questionnaires must be filled in by 5 Form C teachers and 10 of their learners. All information will be treated confidentially.

Thanking you in advance.

Yours in Education

Moeketsi J. Letele

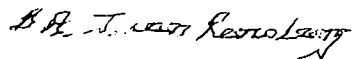
.....
Cell: 58858333/+27786196311

APPENDIX G

Striata NW 11
Private Bag X20702
Universitas
Bloemfontein
9321
2009.05.23

TO WHOM IT MAY CONCERN

I hereby certify that Mr. Moeketsi Letele's dissertation was language edited by Mrs. B.A. Janse van Rensburg, former lecturer in the Department of Didactics, Faculty of Education at the University of the Free State



B.A. Janse van Rensburg

Any enquiries may be directed to me at (051) 5220879 or to the above address.